

Total Knee Replacement



Patient Guide



Preparing for Your Knee Replacement Surgery

A Note from Your Surgeon:

Thank you for trusting me to perform your knee replacement surgery. My team's goal is to provide you with high-quality, compassionate health care from your very first office visit and throughout your treatment and rehabilitation. We understand that joint replacement surgery may leave you feeling anxious about what lies ahead. To help ease your anxiety, we have prepared this detailed handout to help guide you on this journey. We are excited to get you back to doing the things that you love. We are here for you if you have any questions.

The best way to contact me or any one of my team members for non-urgent questions or requests is to call my medical assistants, Sarah or Shelby. If we don't answer the phone right away, we will do our best to get back to you within 24 hours. If it is after hours and you need a call back right away, call the main BBJP line. An answering service will pick up and they will page the on call doctor to assist you. This may or may not be me. You can find these and other important phone numbers in the contact information section of this packet. If you have an emergency, call 911.

You will have several steps that need to be completed prior to your surgery and this handout can help keep you organized. It is a great place to keep all your important appointment dates and questions so that you stay on track. Please bring this handout to all of your appointments. I look forward to working with you on this journey.

A handwritten signature in black ink, appearing to read "Boone", enclosed within a hand-drawn oval.

Christopher R. Boone, MD

Bellevue Bone and Joint Physicians

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Meet Your Team

Your Surgeon

Christopher R. Boone, MD



Dr. Boone is a fellowship trained Orthopedic Surgeon specializing in joint replacement surgery and complex fracture care. He has extensive experience in the treatment of complex disorders of the hip and knee.

Dr. Boone received his undergraduate degree in Biology from Western Washington University in Bellingham. He went to medical school at the University of Washington in Seattle and then completed his orthopedic residency at Beaumont Hospital in Michigan. After residency, Dr. Boone completed a Fellowship in Traumatology and Hip and Pelvic Reconstruction at Stanford University in Palo Alto, California.

Dr. Boone believes in taking an integrated and individualistic approach to your injuries. He uses a combination of tried and true techniques with cutting edge technology including the Mako robotic-arm assisted system to ensure you have the best outcome possible. He has been a productive research scientist, presenting his work at national meetings and publishing articles in peer reviewed journals. He has been named Seattle Top Doc in 2015, 2016, and 2017.

In his spare time, Dr. Boone enjoys skiing and the occasional pickup basketball game. He and his wife Carmen live in Redmond and spend much of their free time playing with their 3 boys.

Physician Assistants

Kato Gossett, PA-C



Kato enjoys working with patients to help them get back to doing the things they love. She understands that joint pain can not only affect a patient physically but also emotionally and she wants to help patients regain control of their lives. She plays an integral role throughout the surgical process; she prepares patients for surgery, assists during the procedure, and sees patients post-operatively as well. Her goal is to give patients the confidence they need to feel good about proceeding with joint replacement surgery.

Kato earned her undergraduate degree in athletic training from the University of Utah, followed by a Master's degree in Applied Anatomy and Physiology from Boston University. After working for 2 years as an athletic trainer, she returned to school to get a Masters of Physician Assistant Studies from the University of Utah. She has been working at BBJP for 3 years. She is proud to be among the growing number of women in the orthopedic field.

Daniel Lane, PA-C



Dan's priority is to do all he can to take the fear out of surgery. He understands that joint replacement surgery can provoke a lot of anxiety and he will take the time to give patients a clear understanding of the process. His experience preparing patients for surgery, assisting during surgery, and seeing them through the recovery give him in-depth knowledge in which patients find both comfort and confidence.

After working for 8 years in the academic, research, and clinical settings as a medical photographer, he returned to school, earning a Master of Science degree in Health Sciences from The George Washington University's Physician Assistant Program in Washington, DC. He has been working at Bellevue Bone and Joint Physicians for 8 years.

Medical Assistants

Shelby Mills



Shelby has always had an interest in watching the body work to its fullest potential. Being a member of a team that helps patients become not only pain-free but gets them back to their potential is something she takes pride in. She is happy to be an integrated member of Dr. Boone's squad in helping direct patient questions, and assisting with care in the pre- and post-operative stages.

Shelby earned her Bachelor of Science degree in Biology at Gonzaga University. As a former collegiate athlete and world class runner, she enjoys learning and practicing the best treatment to keep us pain-free and enjoying the activities we love to do. As an added perk, she enjoys having Dr. Boone's wisdom on how to treat all the running injuries she continues to incur. Shelby's goal is to be a physician one day.

Sarah Moritz



Sarah has worked at Bellevue Bone and Joint Physicians for the past 2 years. In her time with the practice, she has found great joy in educating and preparing patients as they approach their total joint replacement. Sarah has been an active athlete all her life and understands the setbacks our bodies can impose. She enjoys getting people back to achieving their daily and life goals. Combined with a major in Biological Sciences from the University of Denver, clinical knowledge, and personal experience, Sarah

loves to provide patients with comprehensive and easy to understand steps of how to set yourself up for a successful surgery with Dr. Boone. She is also working toward a career in medicine and is studying diligently for the MCAT.

Surgery Scheduler

Brooke Davis



Brooke has worked at BBJP for about 4 years. She originally started in the billing office but took over surgery scheduling in 2016. Brooke will be your point of contact for scheduling your surgery or making any changes. She will also schedule your pre-op exam as well as your first post-op visit.

Pre-Operative Appointment Checklist

- Schedule a Joint Camp appointment with our surgery scheduler. This class occurs every Thursday morning from 9-10:30am in our downstairs conference room. Please come early if you need assistance getting down the stairs. If you are unable to go down stairs, we can take you around the outside of the building to a handicap ramp that leads into the lower level.
- Schedule a CT scan. If Dr. Boone will be using the MAKO robot during surgery, you will need to schedule an appointment for a CT scan. This can be done at the Center for Diagnostic Imaging (CDI) in Bellevue, Kirkland, Everett, or Lakewood, or at Evergreen Hospital in Kirkland or Monroe. Please call to schedule this appointment. You may complete this any time before your surgery but please don't wait until the last minute in case issues occur. If Dr. Boone is not using the MAKO robot during your surgery, you do not need to schedule this appointment.
- Visit the pre-op clinic at Evergreen Hospital. This is a walk-in clinic that is open Monday-Friday from 8:30-4:30pm. Here you will complete an anesthesia screening assessment tool to help plan for your surgery. They may also draw blood or perform an EKG to make sure it is safe for you to proceed with surgery. Please bring a current, complete medication list to this visit. They will tell you what medications you can and cannot take leading up to your surgery.
- Schedule a pre-operative exam at BBJP. This appointment will need to be within 30 days of your surgery. At this appointment, you will meet with Dan or Kato. We will go over your medical history, do a physical exam, and go over any questions that you may have. Please bring a list of all medication/supplements you are taking. At this time, you will receive your pre-op soap scrub, post-op medication prescriptions, handicap parking permit, referral for pre-op PT visit, and DME prescriptions depending on each patient's individual needs.
- Schedule a pre-op physical therapy consultation. You will be given a referral for this visit at your pre-op exam. You may go to any physical therapist BEFORE your surgery date. You should take your walker or crutches to this visit so the physical therapist can adjust these to a proper fit and show you how to use them safely. They will also show you how to navigate stairs and some basic exercises that you can do immediately post-op.
- Depending on your medical history, you may also need to go see your primary care physician or specialist (ex: cardiologist, pulmonologist) in order to make sure it is safe for you to undergo surgery and general anesthesia.
- If needed, go see your dentist at least 4 weeks prior to your surgery. If you have an active infection/abscess in your mouth it must be resolved before proceeding with your surgery.

Important Dates and Contact Information

Scheduled Appointments for your upcoming surgery

COMPLETE

Joint Camp Date at BBJP: _____
CT Scan Date: _____
Pre-op Labs: Evergreen Walk-in clinic open M-F 8:30-4:30pm
Pre-op Exam Date at BBJP: _____
Pre-op PT Date: _____
Surgery Date: _____
Follow-up at BBJP or Monroe: _____

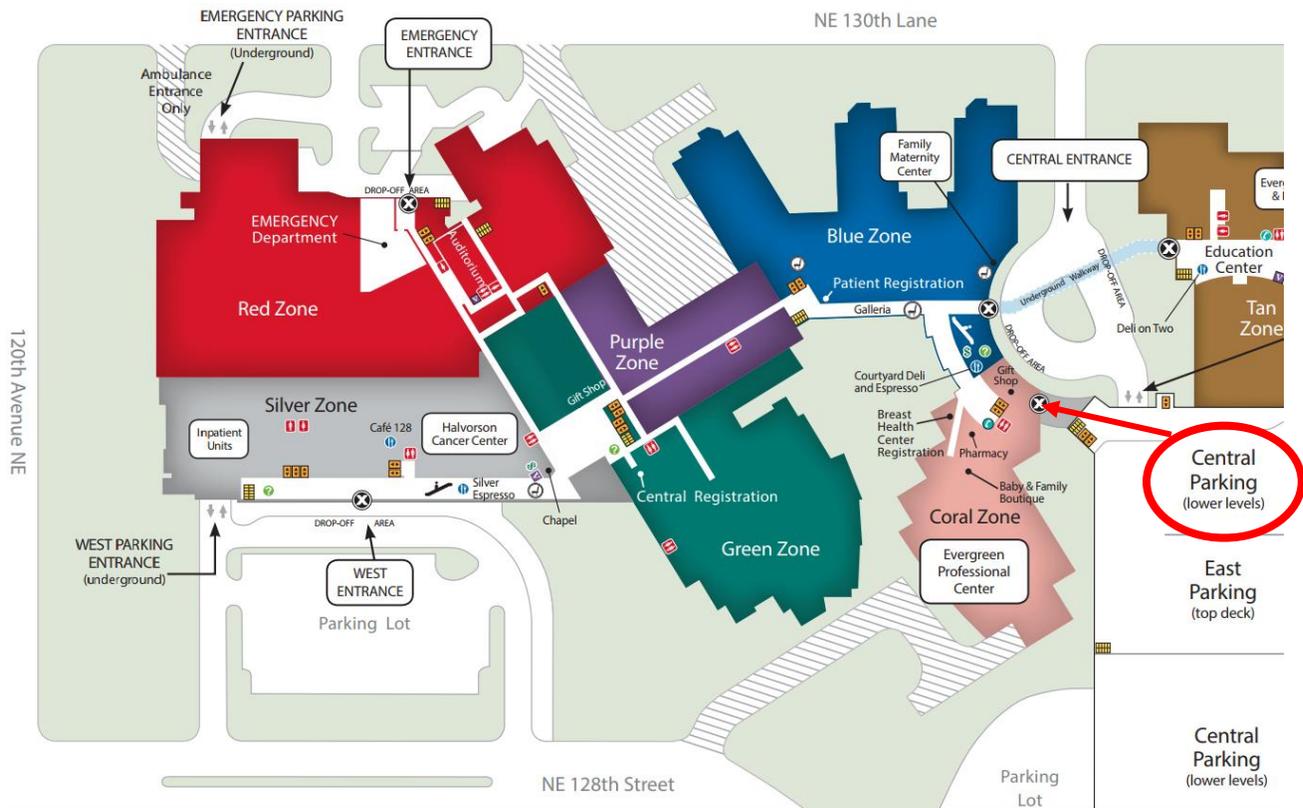
Contact Information

Bellevue Bone and Joint Physicians	425-462-9800
Sarah/Shelby Direct Line	425-732-3087
Bellevue Bone and Joint Physicians Fax	425-732-3081
Brooke Davis, Surgical Scheduling	425-732-3063
Evergreen Hospital- Kirkland	425-899-1000
Evergreen Hospital- Monroe	360-794-7497
Evergreen Pre-Op Clinic	425-899-2706
CDI Bellevue	425-637-9729
CDI Kirkland	425-821-3472
CDI Lakewood	253-682-1666
CDI Everett	425-740-5000

The following website has a lot of useful information about Pre-surgical Preparation at Evergreen.

<https://www.evergreenhealth.com/when-your-surgery-is-scheduled>

Evergreen Kirkland Campus Map



Address: 12040 NE 128th Kirkland, WA 98034

Where to check in for surgery – Blue Zone 3rd Floor

- From the ground floor of the central parking garage, enter Evergreen Health Medical Center. The Gift Shop will be to your left.
- Walk straight ahead into the Family Maternity Center entrance, turn left and walk down the hallway until you reach the Blue elevators.
- Take the Blue elevator to the third floor and follow the signs to the Surgery waiting area.

Where to go for pre-op labs – Blue Zone 1st floor

- From the ground floor of the central parking garage, enter Evergreen Health Medical Center. The Gift Shop will be to your left.
- Walk straight ahead. There will be a volunteer desk on your left and then a set of escalators. Take the escalators down to the first floor and the pre-op clinic will be right in front of you at the base of the escalators.
- Or you can take the coral elevator (located next to the gift shop) down to the first floor and straight ahead past Whidbey Coffee. The pre-op clinic is at the base of the escalators.

Leading Up to Your Surgery

What time is my surgery?

Two days before your surgery, someone from Evergreen hospital will contact you between 3:30-7 p.m. and give you your admission time for surgery. If you like, you can contact Inpatient Registration (425-899-2717) after 3:30 p.m. to get your time.

Your time might be subject to change due to care needs or cancellations. They will ask you for a contact number where you can be reached on the day of your surgery should your time change.

14 Days Before Surgery

- Make sure you have either scheduled or completed all required pre-op appointments. Utilize the “important dates checklist” on page 5 to help you with this.

10 Days Before Surgery

- Start thinking about your plan for your hospital stay and after surgery
 - Make arrangements for care of your family members and pets
 - Plan your ride home from the hospital. Note: Patients are not allowed to drive after surgery and same day outpatients must have someone with them overnight.
 - Think about arranging your home floor plan for your post-operative needs
 - Get night lights for the bathroom or other dark areas
 - Think about how you will stock your home with groceries or other home needs in anticipation for your return home
- Arrange for someone to drive you around after surgery as needed
 - If you have your right knee operated on, you may not drive for at least 6-8 weeks after surgery
 - If you have your left knee operated on, you may not drive for at least 2 weeks (assuming you have an automatic car) after surgery
 - AND in any case, you may not take narcotic pain medications within 8 hours of driving

7 Days Before Surgery

- Stop taking anti-inflammatory medications, if applicable
 - Examples include ibuprofen, aleve, meloxicam, etc.
- Stop taking all vitamins and supplements, if applicable
- Possibly stop taking some blood thinners per your doctor or cardiologist’s recommendations
- Stop taking estrogen supplements, if applicable
- Stop taking methotrexate, if applicable, and if recommended by your rheumatologist

*** See “Manage Your Medications” on page 9 for more information on these

5 Days Before Surgery

- Stop taking Coumadin/Warfarin, if you're taking it per your doctor's recommendations
 - In some cases, your doctor may want you to take a short-acting blood thinner instead
- Make sure you have picked up your post-op prescriptions
- Make sure you have picked up durable medical equipment (ex: walker, shower chair, etc.)

2 Days Before Surgery

- Start taking stool softener once a day if you do not have loose stools
- Expect a phone call from the hospital between 3:30-7:00pm to tell you what time you should arrive at the hospital for your surgery. You can contact Inpatient Registration (425-899-2717) if you don't receive a call from them.
- Shower in the evening and use chlorhexidine soap
- Don't shave areas over or near your surgical site for at least 48 hours prior to your surgery.

1 Day Before Surgery

- If no special diet restrictions are given by your doctor, you can eat normally throughout the day. Drink plenty of water (6 to 8 glasses).
- You may start taking one stool softener per day if you do not have loose stools already.
- Prepare a bag with loose fitting clothes to take with you to the hospital. Bring a pair of shoes with sturdy soles. If you use a CPAP or inhaler, make sure to bring those with you to the hospital. Do NOT bring your prescription medications unless previously told to do so.
- After midnight on the night before your surgery, you will be expected to have nothing to eat or drink. This includes gum, LifeSavers, breath mints, cough drops, cigarettes or chewing tobacco. Failure to fast may result in cancellation of your surgery.
- Please shower in the evening with chlorhexidine soap and don't apply lotions or deodorants.
- If you are under the age of 70, place scopolamine patch behind your ear before you go to bed. If you are over 70, it is not recommended to use scopolamine patches.
- Use a q-tip to swab your nostrils with povidone/iodine solution in the evening.

Surgery Day

- No eating or drinking the day of surgery unless you are instructed by the hospital. If you were told you could take your meds in the morning, you may take those with a sip of water.
- Take a shower again using the chlorhexidine soap. Do not apply lotions or deodorants. Put on clean, loose fitting clothes to go to the hospital in.
- Again, swab your nostrils with povidone/iodine solution.
- Take bag of clothing, CPAP (if applicable), and inhaler (if applicable) with you to the hospital
- Report to the hospital at the appointed time. It is easiest to park in the Central Parking garage. Take the blue elevator up to the 3rd floor and follow signs to surgery check-in. Bring your insurance card and photo ID. Bring a list of your medications, and a health directive if you have one.

Managing Your Medications

The following section provides some general guidelines to managing your medications/vitamins/supplements prior to surgery. It is best if you discuss all your medications with your primary care provider or specialist prior to surgery and come up with a definitive plan. In general, any change in medication can have unexpected consequences. If at all in doubt, please discuss any or all medications with a member of the joint team or your non-orthopedic physician.

If you are taking over-the-counter medications, prescription drugs, vitamins, or herbal supplements, please review the following information. You may need to stop taking some or all of these substances prior to your surgery. **Make sure to bring a list of all your medications to your pre-op visit so we can discuss what can and cannot be taken.**

Anti-inflammatory Medications

If you take anti-inflammatory medication to manage knee pain, we recommend that you discontinue taking them 7 days prior to surgery. The reason for this is because they thin your blood which increases the risk of blood loss during surgery.

Examples of anti-inflammatory medications include:

- Aspirin, Excedrin
- Advil, Motrin, Ibuprofen
- Aleve, Naprosyn, Naproxyn
- Indocin, Indomethacin
- Mobic
- Voltaren

Many more NSAIDs exist. Please discuss any unknown medications with your primary care physician or with one of the PAs at your pre-op visit.

You may continue to take the following pain medications up until the day of surgery if necessary:

- Acetaminophen (Tylenol)
- Tramadol
- Prescription narcotic medication such as Codeine, Hydrocodone (Vicodin or Norco), Oxycodone (Percocet), and Hydromorphone (Dilaudid).
- Please run any other medications or supplements you plan to take by one of the PAs at your pre-op visit.

Blood Thinners

Some patients have health problems that require that they take a daily blood thinner. Some commonly prescribed blood thinners include Coumadin, Plavix, Pradaxa, Eliquis, Xarelto, Lovenox, and Aspirin.

If your doctor has given you a blood thinner to take every day, tell him or her about your upcoming surgery, and ask for their advice about when or whether to discontinue taking it.

Typically, your doctor will advise that you stop taking prescription blood thinners 2-7 days prior to surgery depending on the medication. But, this is not always the case! In some cases your doctor may feel that it is too dangerous for you not to be on a blood thinner for any period of time. If so, your doctor may recommend that you take a different, short-acting blood thinner (such as Lovenox) in order to “bridge” the days between when you quit your regularly prescribed blood thinner and the date of your surgery.

If you are taking a blood thinner because you have a drug-eluting stent in your heart, you must consult with your cardiologist before surgery to get his or her advice about when or whether to stop it prior to surgery.

Diabetes Medications

The following are generic guidelines regarding management of diabetes medications. It is best if you come up with a definitive plan with your primary care provider or specialist prior to surgery.

Please consider these recommendations for the **morning of surgery**:

- A. If you take a pill to manage your blood glucose:
 - a. DO NOT take the pill the morning of surgery.
- B. *If you take insulin to manage your blood glucose, please consider these guidelines:*
 - a. If you take a *short/rapid acting form of insulin*: DO NOT take it the morning of surgery.
 - b. If you take a *long or intermediate acting insulin*: modify the dose according to these recommendations:
 - i. If you take it 1 time a day, take 1/2 of the usual dose the morning of surgery.
 - ii. If you take it 2 or 3 times a day, take 1/3rd of the usual dose the morning of surgery.
 - c. If you have an *insulin pump*, continue the usual basal infusion.
 - d. Hold your insulin the morning of surgery if your morning blood glucose is 120 mg/dl or less.

Hormone Replacement Medications

If you are taking estrogen replacement therapy, we recommend that you stop taking these medicines 1 week prior to surgery. You should avoid resuming estrogen replacement therapy, if at all possible, until 3 weeks after surgery. The reason for this recommendation is that estrogen medications increase the risk of a deep-venous thrombosis (DVT)—commonly referred to as a blood clot—in the leg after knee replacement surgery. But if you are unable or unwilling to stop these types of medications, please let us know and we can place you on a stronger blood thinner after surgery to help prevent blood clots.

Rheumatoid Arthritis/Inflammatory Arthritis

If you have inflammatory arthritis (a less common kind of arthritis such as rheumatoid arthritis or Lupus) and take Methotrexate, or other disease modifying medications, we suggest that you consult with your rheumatologist about whether you should continue taking these medications before and after your surgery. There is some concern among joint replacement specialists that taking these medications may increase the risk of wound healing problems and infection after surgery.

If you are taking a daily oral steroid (such as Prednisone) to manage arthritis, reduce the daily dose, if possible, but continue taking it up until the morning of surgery. ***Please remember to remind me and your anesthesiologist on the morning of surgery if you are taking Prednisone or other oral steroids.***

Vitamins and Herbal Supplements

If you take vitamins and/or supplements, including herbal remedies, fish oil, etc., please discuss these with Dr. Boone or one of the PAs. Typically, we will have you stop taking all of these substances 7 days prior to surgery. Some of these substances contain blood thinners, and like we explained above, we don't want your blood to be thin on the day of your surgery.

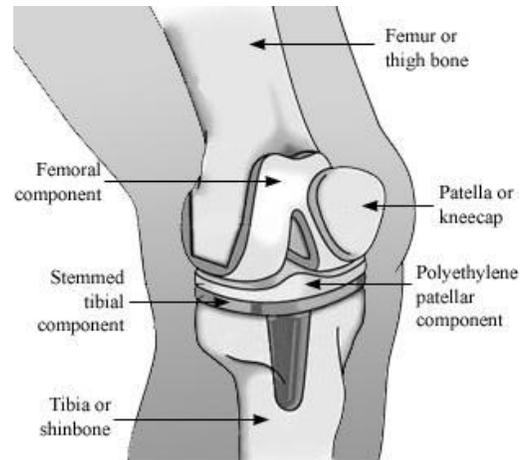
Other Prescription Medicines

If you take prescription medicines not mentioned above, such as medicines for high blood pressure or GI reflux, unless your doctor advises otherwise, continue to take them up until the day of surgery as directed.

Knee Replacement Surgery

What is knee replacement surgery?

Knee replacement is an operation that replaces the damaged surfaces of the knee joint with artificial surfaces. It is, essentially, a resurfacing procedure. All three bones—the femur (the thigh bone), the tibia (the large lower leg bone) and the patella (the knee cap)—that articulate (or rub) at the knee joint are resurfaced. The lower end of the femur is resurfaced with a metal implant. The top of the tibia is resurfaced with a plastic implant (there's usually a metal tray underneath to support the plastic). The back side of the patella is resurfaced with a plastic cap. These metal and plastic implants simulate the original surfaces of the knee joint, they fit together congruently, and they articulate during walking and standing without pain and with little friction. The muscles and tendons about the knee as well as two or three of the four knee ligaments are preserved.



The materials used in knee replacement surgery are cobalt chromium for the tibia and the femur and an ultra high molecular weight polyethylene for the tibial insert and patella.

Who will be doing my surgery?

Dr. Boone will be performing your surgery. Given recent headlines in the news regarding your physician not being present during surgery, we feel like we should specifically mention this. Dr. Boone does not have any fellows/residents/trainees working with him. He will have a PA assisting him with positioning, retracting, and suturing.

What factors influence a favorable long term outcome?

The answer to this question is complex, but it seems that the two most important factors ensuring a good long term outcome are: 1) avoiding complications from surgery, and 2) placing the knee implants properly and securely at the time of surgery.

Avoiding surgical complications and properly placing and positioning the knee implants are factors almost exclusively under the control of your surgeon. The skill with which he or she plans for the surgery, performs the surgery, and then monitors your post-operative care is the controlling effect on the long term outcome of your knee surgery. A skilled and experienced knee replacement specialist will be the most likely surgeon to get you safely through the surgery and help you achieve the long term outcome you desire.

The Mako Robotic System

What is the mako robot?

Mako is in essence a robotic arm that acts like a personalized anatomic GPS system during surgery. It allows for patient specific pre-op planning and provides a degree of precision not achievable by the human eye. Before your surgery, we send you for a CT scan of your operative knee. This generates a 3D model of your anatomy which is then loaded into the Mako software to create this plan.



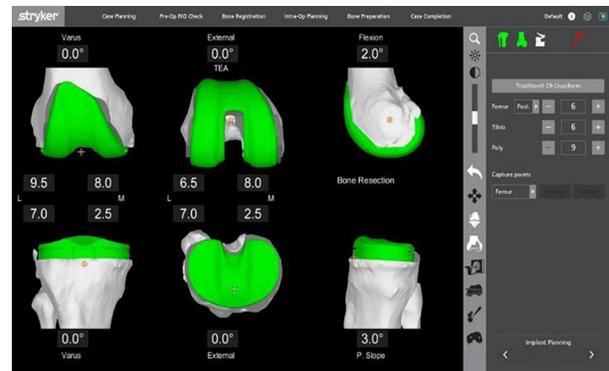
In the operating room, Dr. Boone guides the robotic assisted arm to prepare the bone for the implants. The robot helps keep Dr. Boone within the planned boundaries based on the pre-operative plan. Dr. Boone can also make adjustments to the plan as needed during surgery based on intraoperative findings.

What the mako robot is not...

- A self-sustaining robot
 - Dr. Boone does not press a button and let the robot do the surgery. He is in direct control of the robot at all times.
- A decision maker
 - Dr. Boone makes all final decisions about bone cuts and implant positioning. The robot is simply a tool that allows Dr. Boone to make these decisions on a more precise level.

What happens if the robot breaks?

Dr. Boone performs over 400 joint replacements per year. He has completed thousands of these procedures prior to using the robot. It is not required for surgery. Dr. Boone finds that it helps improve surgical times and decreases procedural invasiveness. But if the robot is not functioning properly, Dr. Boone and his team are well prepared to proceed without it.



Mako Total Knee Animated Video

<https://player.vimeo.com/video/231753567>

Risks and Potential Complications of Surgery

Knee replacement surgery is a generally safe and successful procedure, but as with every other kind of major surgery, there are risks and potential complications. The most common risks and potential complications of knee replacement surgery are listed below (in no particular order). Please read through these carefully and ask Dr. Boone or his PAs if you have any questions or concerns.

Anesthesia

Knee replacement surgery requires that you undergo either a general or a regional anesthetic, or a combination of the two. On the day of your surgery you will have the chance to meet your anesthesiologist, and he or she will explain your options with regard to anesthesia, and the attendant risks. The anesthesiologist may also offer you a nerve block to help reduce pain in the immediate post-operative period. This is very helpful for many patients, but also has associated risks. Please discuss these risks with your anesthesiologist prior to surgery.

Infection

Although the risk of suffering a deep joint infection after knee replacement surgery is low (about 1% on average), infection is a serious problem. Treatment of an infection often requires further surgery, prolonged antibiotic therapy, lengthy hospital stays, and prolonged disability. In the worst kinds of infections, the knee implants must be removed for several months while patients are treated with IV antibiotics. Then after the infection is eradicated, these patients require another operation to put the implants back in place. The risk for infection may be increased if you have certain diseases, such as diabetes, rheumatoid arthritis, or HIV; if you take drugs that suppress your body's immune system, such as prednisone; or if you are significantly overweight.

Bleeding Possibly Requiring Transfusion

Knee replacement surgery is major surgery, and although we do our best to limit blood loss, some blood loss is unavoidable. Excessive bleeding can lead to increased pain, stiffness, need for reoperation, or set back in recovery. In some cases the extent of blood loss may necessitate a blood transfusion. Although blood transfusions are generally safe, they are not risk free. Transfusions may cause problems like transfusion reactions, viral infections, and bacterial infections. Fortunately, these kinds of problems are rare.

Note: If you have objections to blood transfusions under any circumstances, it is important that you discuss this with our team well in advance of the surgery.

Damage to Nerves and Blood Vessels

Very large blood vessels in your leg lie just behind the knee joint. Because of the proximity of these vessels to the knee replacement surgical site, it is possible for these vessels to be injured at the time of surgery. If this were to happen, surgical repair by a general or vascular surgeon would likely be necessary. These kinds of injuries are rare.

Nerve damage after knee replacement surgery is uncommon. Patients who have a significant “knock-knee” deformity pre-operatively are at particular risk for an injury of the common peroneal nerve. Injury to this nerve would leave the outside of your foot and lower leg numb, and your foot and ankle so weak that you would likely need a brace in order to walk. Fortunately, injuries to this nerve resolve in most patients, either partially or completely.

The skin incision performed at the beginning of your knee surgery almost always cuts a small skin nerve that gives sensation to the outside part of the knee. Cutting this nerve will leave a patch of skin on the outside of your knee incision feeling numb. This numbness is of no particularly consequence and although the sense of numbness may diminish with time, it is likely permanent.

Blood Clot (DVT or Deep Venous Thrombosis)

Deep venous thrombosis (DVT) is not uncommon after knee replacement surgery or, for that matter, any other kind of leg surgery. A DVT is a blood clot that forms in a vein in the leg. Blood clots are often asymptomatic; patients who get them are often unaware of the problem. Unexplained calf pain, swelling of the limb, and prolonged cramping are common symptoms of DVT.

Although blood clots can cause swelling of the leg, they are relatively benign problems. They become extremely dangerous problems, however, if they dislodge from the leg vein where they initially formed and travel through the venous system to the heart and lungs. A blood clot that travels to the lung is called a pulmonary embolus. A pulmonary embolus is a serious and potentially life-threatening problem. Signs of a pulmonary embolus include shortness of breath, chest pain, and cough. If you have these symptoms, you should go to the nearest emergency room right away.

In an effort to avoid the formation of a blood clot, we prescribe a blood thinner for you to take after your surgery. You will stay on some kind of blood thinner for at least 35 days after your surgery.

Some patients are at increased risk of developing a blood clot. This includes patients who have had a blood clot or a pulmonary embolus in the past, patients who have had cancer within the past 2 years, patients taking estrogen replacement therapy, patients who are obese, and patients who have abnormalities with their body’s blood clotting mechanisms (a problem often suggested by a history of several family members having had blood clots).

At the present time, no one blood thinner is perfect for every patient. In fact, blood thinners cause an increased risk of bleeding, therefore a balance is needed between blood clot prevention and risk of bleeding. Most patients will be started on aspirin 325mg twice a day after surgery. Please let Dr. Boone or one of the PAs know if you have any of the above risk factors, as you may require a stronger blood thinner after surgery.

Fracture

Placement of the metal implants in your knee may result in fracture of bone, either the femur or tibia. You may be at increased risk for fracture if your bone is osteoporotic, or if your knee replacement surgery involves removal of plates, pins or screws placed about the knee during previous knee operations. Usually any fractures that occur during knee replacement surgery are discovered intra-operatively and any necessary corrective measures are performed immediately. Occasionally, however, fractures that occur during surgery are not obvious and are only discovered after surgery by post-operative exam and x-rays. In some cases, treatment of these fractures may require additional surgery, but this is rare. Broadly speaking, intra-operative fractures that are repaired during surgery are of little long-term significance and only rarely compromise outcome after knee replacement surgery.

Stiffness and Ongoing Pain

Initially after surgery, bleeding inside the joint can lead to stiffness and pain. This may cause a setback in recovery. We try to have a balance between bleeding and DVT prophylaxis.

Ongoing knee stiffness can result in chronic knee pain, difficulty with sitting, difficulty with climbing stairs, and chronic limp. Stiffness is a problem that is almost always avoidable, but it requires determination on your part. Your physical therapist will help you. Getting good knee motion after knee replacement surgery is a race against time. *It is essential that you obtain good knee motion within the first 2 or 3 weeks after surgery. Our goal for you is 90° by 2 weeks and 110°+ by 6 weeks.* (For further discussion, see “Get Your Move On” starting on page 28.)

The best predictor of motion after surgery is motion before surgery. Therefore, if you have significant knee stiffness before surgery because of previous knee operation(s) or previous knee injury, your ability to get good motion after surgery may be limited. Sometimes a second surgery called a manipulation is necessary to break up scar tissue that has formed to help gain knee ROM.

Loosening or Wear

Knee replacement surgery lasts a long time in most patients— 15 years or more. Eventually, over time, your knee implants will most likely wear out. Patients with worn or loose knee implants often experience pain that is similar to the pain that led them to surgery in the first place. Treatment of loose or worn out knee implants almost always involves further surgery. Sometimes a surgery is needed to exchange the poly that sits between in the tibia and femur. This is often due to wear. In other cases, the implants may loosen from the bone and some or all knee components may need to be revised. Each subsequent knee operation is more difficult for your surgeon to perform, is associated with increased risks (as compared with your first knee replacement operation), and may involve more recovery time. Keeping this in mind is especially important if you are young and need knee replacement surgery.

Medical Complications

Knee replacement is a major surgery and going through it can represent a significant stress to your body. Most patients in good health can handle the stress of surgery without difficulty. Patients with serious health problems, however, may experience medical complications as a result of this stress. For example, patients who have heart disease may experience an exacerbation or worsening of their heart condition after surgery, or the onset of new heart problems such as a heart attack or an irregular heart rhythm. Patients who have pulmonary or lung disease such as asthma or COPD are at risk for breathing complications after knee replacement surgery. Patients who have diabetes--in particular, poorly controlled diabetes--are at significantly increased risk for infection and other medical complications after surgery. Patients who are obese are at increased risk for wound healing problems and infection.

How long will my surgery take?

Surgical time can vary but typically knee replacement surgery takes between 1 to 2 hours. Family or friends waiting for you can stay in the waiting area by the surgical check-in desk on 3 blue or may choose to leave the hospital. Dr. Boone typically calls your family or friends as you are being awakened from anesthesia.

What happens after surgery?

Immediately after your surgery, you will be taken to the recovery room next to the OR. Your family members or friends will be able to join you once you have arrived in the post-op discharge area or on the orthopedic floor.

When can I start walking after surgery?

We want you up and walking as soon as it is safe for you to do so. Most patients are walking the same day as their surgery, but some may need to wait until the following day.

How long will I be in the hospital?

Length of hospital stay is determined on an individual basis. Most patients will spend one night in the hospital but some do leave the same day as surgery. This is typically determined by pain control and whether or not the patient feels safe to go home.

Reasons to stay overnight:

- Surgery late in the day
- Complications
- Pain
- Difficulty ambulating from other conditions

If you are not quite ready to go home after surgery but do not need the level of care provided in the hospital, we can arrange for you to go to a skilled nursing facility. The social worker in the hospital will help set this up during your hospital stay.

Option for Post-operative Pain Management

We work closely with Dr. Zachary Fisk at Acute Pain Therapies. He acts as an extension of hospital based acute pain management services but in an outpatient setting. His office is located across the street from Overlake Hospital. If you have concerns about post-operative pain management or are currently taking narcotic pain medications regularly, we can refer you to him to discuss potential treatment options including temporary nerve catheters or nerve cryotherapy. Typically you meet with him prior to your surgery to discuss post-operative needs. You then follow-up with him the day of your discharge to begin treatment. If you are interested in this option, please let us know and we can send a referral. His contact information is below.

Acute Pain Therapies

1310 116th Avenue N.E., Suite A
Bellevue, Washington 98004
Phone: (425) 440.3351
Fax: (425) 440.3439

Discharge Instructions

Wound Care

- Your incision will be down the middle of the knee. You may also have two small incisions on the front of the lower leg.
- Here are examples of what you will see post-operatively



- Both the picos dressing and the honeycomb dressing should remain intact until the first post-op visit. It is normal to have some bleeding on the dressing. Bleeding only becomes a concern if it continues for several days. If you notice that the whole dressing has become saturated with blood, please call Dr. Boone's office right away. We will likely have you send a picture to Sarah or Shelby so they can relay it on to us. Her email address is sarahm@bbjp.net. If it is leaking, reinforce the dressing with a sterile dressing. In some cases we may refer you to the emergency room or an urgent care to have it looked at.
 - If for some reason the honeycomb comes off, do not remove the clear mesh dressing that is laying right over the incision (prineo). This stays in place for at least 3 weeks after surgery. If the mesh dressing begins to peel off at the edges, it is okay to trim off the loose portion with scissors.
- The picos bandage provides a negative pressure wound therapy to help promote healing. You can turn it on and off using the orange button. Leave it in the on position at all times unless showering. It is programmed to shut itself off after seven days of use. Once it no longer is providing suction, you may cut the cord close to the bandage and leave it uncovered. Leave the dressing intact until your first post-op visit. It is okay to shower with the cord cut.
- It is okay to shower starting 72 hours after your surgery only if there is no drainage. If you decide to shower, please ensure that you have adequate help to avoid falling. A shower chair may be necessary depending on your stability and individual needs.

- If you have a picos dressing, press the orange button to pause the therapy. You can then disconnect the tube from the power pack by unscrewing the two parts of the connector. Make sure the end of the tube attached to the dressing is pointing downwards so that water cannot enter the tube. When done showering, reattach the two connector ends and press the orange button to resume therapy.
- Do not bathe or submerge the wound in water until cleared by Dr. Boone. This typically occurs around the 6 week post-op visit.
- Ice packs to the wound may be used as needed for pain/swelling. Do not put ice directly on the skin.
- Do not rub any lotions or ointment on the incision.

Activity

- Most patients will be weightbearing as tolerated on the operative extremity.
- Ambulatory aids may be used as needed and as determined by the physical therapy service. Most patients will choose to use a walker but some may use crutches.
- Do not drive or operate heavy machinery while using narcotic pain medication.
- Activity as tolerated and as directed by your home or rehabilitation physical therapy service.
- RANGE OF MOTION. RANGE OF MOTION. RANGE OF MOTION. Perform range of motion exercises multiple times per daily. Two weeks after surgery, the goal is 90 degrees of flexion and 0 degrees of extension (straight). At six weeks, the goal is 110+ degrees of flexion and 0 degrees of extension. [See “Get Your Move On” on page 28 for more details.](#)
- If your right knee was replaced, you may not drive for at least 6 weeks post-op. If your left knee was replaced, you can typically start driving earlier depending on narcotics use. We will discuss this at your first post-op visit.

Blood Clot Prevention

- Early and frequent mobilization
 - Everyone will be up and walking the day of surgery or the following day
- Ankle pumps
 - Do ankle pumps whenever you are lying down. This involves pointing your toes then bringing them back towards your shin.
- Blood Thinner
 - Everyone is required to be on a blood thinner for at least 35 days after surgery
 - Please refer to the discharge medications above



Common Discharge Medications

The following medications may have been prescribed to you at your pre-op exam visit. These are just examples. The prescriptions given to you will be based off of individual history.

- Blood Thinner (You need to be taking ONE of these for at least 35 days post-op)
 - Aspirin 325mg tablet. Take one tablet twice a day.
 - If prescribed, you will also be prescribed Prilosec to help protect your stomach. Take the Prilosec once a day 30 minutes before your start eating.
 - Xarelto 10mg. Take one tablet once a day.
 - Eliquis 2.5 mg. Take one tablet twice a day.
 - Pradaxa 110mg. Take one tablet twice a day.
 - Lovenox 40mg. Inject one syringe subcutaneously once a day.
 - Coumadin: dosage varies. The anti-coagulation clinic will determine dosage based on your INR.
- Over the Counter Pain Medications
 - Tylenol 500mg tablet. Take 2 tablets 3-4 times per day as needed for pain. Do not exceed 4000mg/day
 - If under 65, do not exceed 4000mg/day
 - If over 65, do not exceed 3000mg/day
 - Use caution with this medication if you have liver impairment
 - NOTE: Some narcotic pain medications also include Tylenol so you may need to take this into consideration when calculating your maximum daily dose.
- Narcotic Pain Medications (You will likely be prescribed one of these)
 - Oxycodone 5mg tablet. Take 1-2 tablets every 3-6 hours as needed for pain
 - Dilaudid 2mg tablet. Take 1-2 tablets every 3-6 hours as needed for pain
 - Norco 5/325mg tablet. Take 1-2 tablets every 3-6 hours as needed for pain.
 - If taking this medication, do not take Tylenol separately.
- Stool Softeners
 - Senna-docusate 8.6-50mg tablet. Take 1 tablet two times daily as needed for constipation
 - We recommend you take these as long as you are taking a narcotic pain medication
- Anti-nausea medication
 - Zofran 8mg tablet. Take one tablet by mouth every 8 hours as needed for nausea
- Urinary Retention Prevention
 - Flomax (tamulosin) 0.4mg by mouth daily.
 - This medication is only prescribed if history shows a need for it.

Frequently Asked Post-operative Questions

- When should I follow up after my joint replacement?
 - You're first follow-up visit occurs about 2 weeks after your surgery. This visit should have been made at the time you scheduled your surgery. It is typically scheduled with a PA. After that visit, typical follow-up occurs at the 6 week, 12 week, and 6 month mark.
- How long am I going to be on a blood thinner?
 - In general you will take a blood thinner for 35 days post-op. In some cases, you may be placed on a blood thinner for longer than this.
- Will I get home health physical therapy?
 - Yes. A physical therapist should visit 2-3 times a week for the first 2-3 weeks after surgery.
 - If you have not received a call or visit from the home health agency after two days, call our clinic and we will assist you with this issue.
- What do I do after home health has discharged me?
 - At your first post-operative appointment (2 weeks after surgery), you will be given a prescription for outpatient physical therapy that you may take to any outpatient physical therapy location that is convenient for you. This should be started right away. You should schedule this in advance to ensure availability of your 1st choice. We recommend consideration of physical therapy at Bellevue Bone and Joint Physicians if this location is convenient for you, as our PT's have regular communication with Dr. Boone.
- What are the signs of infection I should look for?
 - It is very common for the knee to be red, warm and even bruised after surgery. Most of the time this is completely normal.
 - Our suspicion for infection rises with any of the following:
 - There is persistent drainage from the incision.
 - Your temperature is over 101.5 degrees for a prolonged period of time and does not improve with Tylenol.
 - It becomes much more painful to move the knee or hip through a gentle range of motion for a prolonged period of time – 12 hours or longer.
 - IF ANY OF THESE THREE OCCUR, PLEASE CONTACT OUR OFFICE RIGHT AWAY
- What should I do about the leg swelling I am experiencing after surgery?
 - It is very common (almost universal) to see swelling in the leg after knee surgery.
 - Please ice/elevate at least 4 times per day for 30 minutes at a minimum. This is especially critical in the first 2 weeks after surgery.
 - When elevating, please make sure the surgical leg is higher than the heart. A good way to do this is to lay completely flat and put your ankle on the arm rest of your couch with a few pillows underneath the ankle.
 - Please make sure the leg is straight at the knee when elevating; do not put pillows under the knee when you are sleeping or resting. This will help you regain full extension of the knee.
 - Do not place the ice directly on the skin. The skin should get cold but not frozen as this could cause skin or wound damage.
 - If you are short of breath, or have new and significant calf pain, please call our office or the on-call physician for further instructions immediately. If you cannot get ahold of anyone, go to the emergency room.

- When will my staples or sutures be removed?
 - Dr. Boone ordinarily uses several layers of sutures that are all underneath the skin. This means that no sutures or staples have to be removed. The honeycomb dressing will be removed at your first post-op visit but the prineo mesh dressing should remain intact for at least 3 weeks post-op.
- When can I shower?
 - You can shower starting 72 hours after surgery as long as there is no drainage from the incision. If you decide to shower, please ensure that you have adequate help to avoid falls
- When can I go in a hot tub/bath/pool/lake?
 - When your incision has COMPLETELY healed (no remaining scabs or open areas). This typically takes at least 6 weeks. Do not soak your incision until one of the providers has given you the okay to do so.
 - You should not submerge the wound until the skin is completely healed.
- When can I drive?
 - If you had your right knee operated on, you may not drive for at least 6 weeks after surgery.
 - If you had surgery on your left knee, do not drive for at least 2 weeks after your surgery. We can discuss driving at your 2 week post-op visit.
 - Questions to ask yourself before driving include:
 - Can I get in or out of a car quickly and safely in case of emergency?
 - Do I feel able to quickly and forcefully step on the gas or brake if necessary?
 - You are not allowed to drive within 8 hours of taking narcotic pain medications.
 - These may include: Norco, Percocet, Oxycodone, Oxycontin, Dilaudid, Tramadol
- How do I get a handicap placard?
 - This should have been offered to you at your pre-op exam visit. If you did not receive the paperwork for one at the time, please contact our office and we can fill out the form for you. Someone will have to stop by our office during the day to pick this up for you.
 - Take the paperwork to the Division of Licensing to get a temporary placard
- How do I get a refill on my pain medications before my next appointment?
 - Please call our office with your refill request. All narcotic pain medications require a hand written prescription and cannot be faxed or called in to a pharmacy. This means you or a family member/friend will need to come to BBJP and pick it up.
 - Please understand that refill requests will be taken care of as quickly as possible (within 24 - 48 hours), but WILL NOT be handled by an on-call physician at night or over the weekend.
 - We do not prescribe narcotic pain medications after 6 weeks post-op
- When can I fly after surgery?
 - There is no good evidence telling us when it is safe for you to fly after knee replacement surgery. There is a theoretical increased risk of developing a blood clot while flying. While some surgeons may say it is okay to fly a couple weeks after surgery, Dr. Boone recommends that you wait at least 6 weeks after surgery to fly. In addition, you should take a stronger blood thinner than just aspirin if you will be flying. If you are considering flying after surgery, please discuss this with Dr. Boone BEFORE your surgery.

Post-Operative Goals

- Independent by 5-15 days post-op
- Return to work in 2-6 weeks
 - This depends on what you do for work
- Off narcotics in 2 weeks
- 90% healed in 12 weeks
- Full recovery in 1 year

How long will I need help?

- You should not be alone for at least 24-48 hours after surgery
- Most patients require assistance anywhere from a couple days to a couple weeks
- Make sure your care provider is familiar with your surgery and post-operative needs
 - They are often the person managing your care (i.e. telling you when it's time to move around a little, preparing your meals, getting you ice bags, giving you post-op meds)
 - They are also commonly in contact with Dr. Boone and his team regarding your questions or concerns
- If you need more assistance than what is available to you at home, a skilled nursing facility is an option

Future Dental Procedures and Antibiotics

- Please avoid going to the dentist for any routine procedures for at least 3 months post-op
 - If you have an immediate issue such as tooth ache, please have that taken care of right away even if it is within 3 months of your surgery
- Dr. Boone recommends that you take an antibiotic prior to all future dental appointments
 - This is a one time high dose antibiotic taken 30-60 minutes before your dental visit
- Be sure to tell your dentist about your total joint when you schedule your appointment
- Your dentist may be able to prescribe the antibiotic or you may call our office and we can call a prescription into your local pharmacy

Post-Op Expectations

Post- op Day 1

- This is your first day after a big surgery. It is common for your knee to be swollen and bruised. If you received a pre-operative pain block, you may still be benefiting from this. Typically the nerve block covers pain in the front of the knee so it is not uncommon for you to initially only notice pain behind the knee. The effects typically wear off between 24-48 hours after surgery.
- If you are still in the hospital, your nurse and/or physical therapist will help get you out of bed to walk around and show you range of motion exercises. If you are home, you should get up and walk around at least 6-8 times per day (even if only short distances. To be safe, always use your walker or crutches and make sure someone is nearby to help you. This will help prevent blood clots and pneumonia.
- Whenever sitting or lying down, you should perform at least 10 ankle pumps per hour while awake. Example- do ankle pumps during each commercial break while watching TV
- Multimodal pain management- try to stay ahead of the pain in the initial post-op period. Take your pain medications every 3-4 hours.
 - As the nerve block starts to wear off, you may notice an increase of pain in the knee. Icing, elevating, compression with ace bandage, taking Tylenol and if needed narcotic pain meds may help with this pain.
 - Common side effects of narcotic pain medication are constipation and nausea
 - If taking narcotic pain meds regularly, also take a stool softener to prevent constipation
 - Eating frequent small meals may help reduce nausea. Make sure to eat something before you take your pain medication.
 - You should have been prescribed Zofran at your pre-op exam visit. If you are nauseous, you may take this medication as directed.
 - Do NOT take anti-inflammatories because this may increase your chance of bleeding post-operatively. See page 9 for examples of these medications.
- Starting about 23 hours after your surgery ended, you should start taking a blood thinner. If you are in the hospital, they will give you what we prescribed for you. If you are at home, start taking the blood thinner that was prescribed to you at your pre-op exam visit.
- Be aware of signs of a blood clot in your legs including significant calf tenderness and swelling.
- You may resume a regular diet. Do not drink alcohol. You may resume supplements 48 hours after surgery.

Post-op Day 2-3

- Day 2 is usually but not always the worst. It is not uncommon to notice an increase in pain or throbbing on days 2 or 3. This is because the pre-operative nerve block has completely worn off. You will likely still have significant swelling and bruising from the thigh down to the toes.
- Continue with multimodal pain management.
- Continue to ice, elevate, and compress using an ace wrap to help with pain and swelling.
- Continue taking blood thinner and doing hourly ankle pumps to prevent blood clots from forming. Also continue to monitor for signs of a blood clot in your legs.
- Work on your range of motion exercises multiple times a day. Refer to the [“Get your move on”](#) section for more details. This is very important.
- Make sure to get up and move around frequently, even if only a few steps. Try to sit at a table when eating meals. It is not uncommon to feel fatigued after doing simple tasks throughout the day. This will improve over the next few weeks.
- Monitor your incision. You will be able to see any drainage from your incision in the honeycomb dressing. A few spots of drainage in the honeycomb is nothing to worry about. If the entire dressing is completely saturated, please call Dr. Boone’s medical assistant if during daytime hours (425-732-3087) or the on-call physician after hours (425-462-9800). If you are unable to get ahold of someone, the best thing to do is to reinforce with dry dressing and an ace wrap until you can get ahold of someone. As always, if there is urgent concern you may go straight to the Emergency Department.

Post-op Days 4-13

- Continue with multimodal pain management. Take the least amount of narcotic pain medication as possible.
- Continue taking a blood thinner and doing ankle pumps to help prevent blood clots from forming. You should also be monitoring for signs of a blood clot which include increased calf tenderness and swelling.
- It is not uncommon for you to have knee pain during the night that makes it hard to get comfortable or difficult to sleep. Sometimes taking your narcotic pain medication right before bedtime can give you a few hours of good sleep.
- Home health physical therapy (PT) will work with you in your home 2-3 times per week. Your focus should be on walking with the walker and range of motion exercises.
 - Even though PT works with you 2-3 days per week, you need to be working on range of motion exercises every day, multiple times a day.
- Continue to monitor your incision for signs of infection. Call with any questions or concerns.

Two Weeks Post-op

- You should have a follow-up appointment scheduled at BBJP or Monroe around this time.
- Continue weightbearing as tolerated. At this point, you may or may not feel like you need to continue using the walker. When you feel comfortable, you may transition away from the walker/crutches to a cane.
- We will remove your honeycomb dressing at your post-op visit.
- At your post-op visit, you should receive a prescription for outpatient physical therapy. You may go wherever is convenient for you. If you do not receive a prescription for PT, please contact our office.
- Your range of motion goal at this point is full extension and at least 90-110° of flexion.
- Continue taking a blood thinner to help prevent blood clots from forming. You should also be monitoring for signs of a blood clot including increased calf tenderness and swelling.
 - You should be taking a blood thinner for 35 days from your surgery date
- Start to wean yourself off of narcotic pain meds as tolerated

Six Weeks Post-op

- You should have another post-op appointment scheduled around the 6 week mark.
- All patients recover at different speeds. While most patients have transitioned to a cane at this point or are no longer using a walker, some patients may still feel unsteady on their feet. These patients should continue to use a walker/crutches as needed.
- Your range of motion goal at this point is full extension and 110°+ of flexion.
 - If stiffness is an issue for you at this point, we start to consider a procedure called a manipulation under anesthesia. As the name implies, you are placed under a general anesthetic then the surgeon moves your knee to break up scar tissue that may be causing stiffness. If this procedure is needed, we will talk about it more at your postop visit.
- By this point, you should have stopped your blood thinner unless you were directly told to stay on it longer.
- You should be completely off narcotic pain medications at this point although some patients may take one at nighttime to help with lingering night pain and sleeping.
- Most people are able to return to work (depending on what you do)

Three Months Post-op

- At the 3 month mark, you can expect be 80-90% healed. The last 10-20% of healing occurs over the next 6-9 months.
- Most people have started to get back into their normal activities.
- It is now safe for you to go to the dentist for routine cleanings or other procedures. We would like you to take an antibiotic prior to all dental procedures. Either your dentist can prescribe this, or you may call our office and we can call it in to your pharmacy.

Get Your Move On

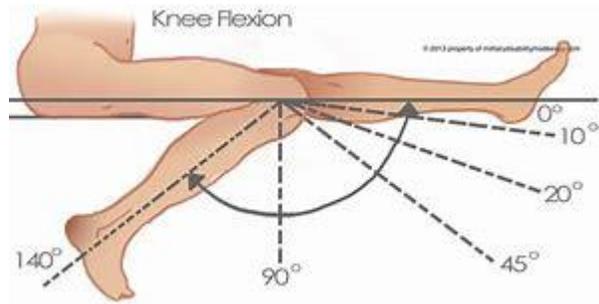
Range of Motion After Knee Replacement Surgery

Stiffness after knee replacement surgery is a common reason for failure after knee replacement surgery. Artificial knees that won't straighten out all the way, or bend back very far, or some combination of the two, are troublesome. Patients with stiff knee replacements have trouble walking, climbing, and sitting. For these and other reasons, stiff knees are almost always painful. If you're having knee replacement surgery, stiffness is a problem you want to avoid at all costs. Fortunately, stiffness is almost always avoidable.

How do you measure knee motion?

Knee motion is typically measured by two endpoints:

- 1) maximum extension, or the most the knee will straighten
- 2) maximum flexion, or the most the knee will bend.



These endpoints form an arc of motion in which the knee itself is the center (or vertex) of the two rays or limbs emanating from it. One ray emanating from the knee is the thigh; the other is the lower leg. When the thigh and the lower leg form a right angle, the knee is said to flex to 90 degrees. When the thigh and the lower leg form a straight line, the knee is said to flex to 0 degrees. The arc (or range) of motion, in this example, would be from 0 to 140 degrees (see illustration).

Frequently Asked Questions About Knee Range of Motion

- What is the range of motion of a normal knee?
 - 0 to 140° of flexion.
- What is the range of motion I need after knee replacement surgery?
 - 0 to 110+° of flexion.
- So, you don't get normal knee range of motion after knee replacement surgery?
 - No, not always. However, 0 to 110+° of flexion is enough motion to do almost everything you will want or need to do after surgery.
- How do I get the range of motion I need after knee replacement surgery?
 - The key to getting good range of motion after knee replacement surgery is a determined patient—that's you! If you are determined to do whatever it takes to get the motion you need after your knee replacement surgery, you're almost certain to get it.

- So, my goal after surgery is to get motion from 0 to 110+° degrees?
 - Yes, but there's more. Your goal after surgery is to get motion from 0 to 110+° degrees of flexion *within the first two to four weeks after surgery.*
- Within the first 2 to 4 weeks after surgery....What's the rush??
 - The reason for the rush is that the first month after surgery is the best window of opportunity to get good motion in your knee after surgery. Scar tissue starts forming right away and you need to dictate how that forms. This means that you can't wait to start moving your knee. You have to start moving your knee right away. You've got to get your move on... *early on!*
- Wait, won't it hurt to move my knee early on?
 - Yes it will hurt to move your knee the day of surgery, and the day after that, etc. Unfortunately, you don't have the luxury of waiting until it doesn't hurt to move your knee. You'll have to work on bending and straightening your knee several times each day even though it hurts. You can take breaks, of course, and let the knee rest comfortably. However, you will need to work on moving it several times each day, sometimes with the help of a physical therapist, and sometimes on your own. To reduce the pain during these sessions, take some pain medication about a half hour before. And then, even though it hurts, push to bend and straighten your knee. After all, the pain that you feel when you do this is what I call a good pain.
- A good pain....??
 - I know that's a strange characterization of pain, but hear me out. Ordinarily, pain is an alarm alerting you that something's wrong with your body, or that you're doing something wrong. After knee replacement surgery, the pain you get when you move your knee does not mean either of those things. You're not harming your knee when you feel this kind of pain. You're not tearing anything apart inside your knee. You're actually helping heal your knee. The pain you feel when you move it is a signal that you're doing what your knee needs you to do in order to heal and, ultimately, to feel less pain.
- Why is it that I only have one month to get knee motion?
 - Scar tissue begins to form inside the knee right after your surgery. This scar tissue matures rapidly. Unless you "train" the forming scar tissue to allow your knee to move, after it matures, the scar tissue will permanently bind your knee. If this happens, you can't move your knee even if you want to. Getting good motion after knee replacement surgery is, essentially, a race against time. You must get the motion you need early on, *before* the scar tissue matures.
- Once I get the knee motion I need, do I have to fight to keep it?
 - No. Generally speaking, once you get motion in your knee, you don't have to fight to keep it. Once you get your knee to bend to 110° of flexion, 110° of flexion is yours to keep. You've trained the scar tissue to allow that arc of motion. The scar tissue can't stop you anymore. The next time you bend your knee, it will flex to 120 degrees much easier, with less resistance and less pain.

- My physical therapist will help me get the knee motion I need, right?
 - Yes. Tell your therapist about your goal: 0 to 110+° of flexion within the first 2-4 weeks of surgery.
- What if I'm having a bad day and I need to take a break?
 - You will have good and bad days after surgery. Take a break on a bad day if you need to, but don't wait too long to get back on track. Keep in mind that the scar tissue maturing inside your knee doesn't take a break on a bad day.
- What do I do if I'm not getting the motion I need?
 - If you are struggling to get the motion you need within the first two weeks of surgery, tell me right away. Trouble shooting with knee stiffness is much more successful early on than later on.
- If I don't get the motion I need early on, is there a "Plan B"?
 - Yes, there is a Plan B, but it isn't failsafe. And the Plan B is a procedure performed inside the hospital that requires anesthesia. The procedure is called a "manipulation under anesthesia." Essentially, you are brought to the operating room and anesthetized. Then, by using carefully measured force, I bend and/or straighten the knee. By doing so I disrupt or tear the scar tissue inside your knee. This gives you a second chance to get the motion you need, but it has its own set of risks, and it doesn't always work.
- If I don't get good motion after knee replacement, is it all my fault?
 - No, in some cases there may be problems outside of your control. A small set of patients form very aggressive scar tissue after any kind of surgery, and this makes getting good motion very difficult. Sometimes complications from surgery, such as infection or damages to knee ligaments or tendons, make it difficult to get good knee motion. Patients with very stiff knees before surgery have a difficult time getting good motion after surgery. However, pre-operative knee stiffness can be overcome in many cases by a skilled surgeon, a dedicated physical therapist, and a determined patient—that's you!

Get Equipped

When you return to your home after your hospitalization for knee replacement surgery, you will need assistive devices to walk such as a walker, crutches, or cane. You may also find other devices helpful for toileting, showering, and dressing. For your convenience we have prepared a list of devices or products you may wish to consider purchasing before your surgery.

The only necessary item is a front-wheeled walker, although some patients prefer to use crutches instead. A cane may be helpful when you are ready to graduate from use of the walker or crutches.

Some items listed below may be purchased from BBJP, or from local medical equipment retailers including some retail drug stores. You may also choose to purchase these items online. Another option is to rent these items from a local retailer. If you want, we can give you a prescription to Bellevue Healthcare to rent or buy these items. Insurance companies may not reimburse you for the cost of many of these items. You should purchase any equipment you wish to have available at your home *prior to your admission to the hospital*.

Front-Wheeled Walker

A walker is a necessity, especially if you don't feel steady on crutches. We recommend the foldable walker with 5" front wheels.



Crutches

Patients who are steady on their feet may prefer crutches to a walker. Many insurance companies may cover part of the cost of a pair of crutches.

Cane A single prong cane is recommended. It is common after surgery to transition from a walker or crutches to a cane.



Raised toilet seat

A raised toilet seat allows you to not have to squat down as low when you need to use the restroom. Need for this item often depends on how tall you are or how low your toilets are at home. While this is not required, some patients do find this to be helpful.



Shower Chair

A shower chair can be placed inside a bath tub or shower to give you some place to sit down if you don't have a bench in your shower already. You are not allowed to submerge your incision in water for at least 6 weeks from surgery so some patients find this device helpful.

Long-handled Shoehorn

Extends reach for those with difficulty bending forward. The smooth surface prevents the foot from sticking to the shoehorns, helping it slide easily into the shoe.



Easy-pull Sock Aid

You may find it difficult to bend your knee far enough to allow you to put your socks on. This device aids you in putting your socks on without bending too far forward or squatting.



[Note: BBJP offers front wheeled walkers, crutches, and canes for purchase](#)

