### Table of Contents

| SECTION 1: OVERVIEW OF ADVENTIST HEALTH LODI MEMORIAL | 4 |
| · Introduction | |
| · Directions and contact information | |
| · In-hospital dining | |
| · Your orthopedic team | |
| SECTION 2: INTRODUCTION TO KNEE ARTHRITIS AND CALIPERED KINEMATICALLY ALIGNED TOTAL KNEE REPLACEMENT | 7 |
| · What is arthritis of the knee? | |
| · Who might benefit from a total knee replacement? | |
| · Why should you consider a calipered kinematically aligned total knee replacement? | |
| SECTION 3: INITIAL OFFICE VISIT | 9 |
| · Assessment of the severity of arthritis | |
| · Design and material of a total knee replacement | |
| · The Oxford Knee Score: a reliable indicator of preoperative disability and pace of recovery after knee replacement | |
| SECTION 4: PREPARING FOR YOUR KNEE REPLACEMENT SURGERY | 10 |
| · Scheduling the surgery | |
| · Attend a pre-surgery educational class on calipered kinematically aligned total knee replacement | |
| · Adventist Health patient outcomes assessment tool | |
| · Checklist of things to bring to the hospital | |
| · Choose a personal coach | |
| · Prepare your home | |
| · Checklist to reduce your risk of a fall at home | |
| · Follow the advice of the pre-admission nurse | |
| · Reduce the risk of infection by showering with special cleansers five days before surgery | |
| · Ways to reduce the risk of postoperative knee infection | |
| · Arrange transportation home from the hospital | |
| SECTION 5: DAY OF SURGERY CARE | 13 |
| · Check in at Adventist Health Lodi Memorial | |
| · Pre-operative care in the ambulatory procedure unit | |
| · Care in the operating room | |
| · Post-operative care in the recovery room | |
| · Post-operative care in the ambulatory procedure unit | |
| SECTION 6: CARE AFTER SURGERY | 14 |
| · Managing discomfort | |
| · Managing swelling and reducing the risk of blood clots | |
| · Managing constipation | |
| SECTION 7: ACTIVITIES AND EXERCISES THAT REHABILITATE YOUR KNEE | 15 |
| SECTION 8: LEARNING WHAT TO DO AT HOME IN THE FIRST SIX WEEKS AFTER SURGERY | 19 |
| · Discharge medications and instructions | |
| · Bathing and wound care | |
| · Reducing the risk of blood clots | |
| · Guidelines for exercise and activities at home | |
| · Prone exercise for straightening your knee after removal of staples | |
| · Managing discomfort and constipation | |
| · Follow-up visit at six weeks to assess the pace of recovery | |
| SECTION 9: ANSWERS TO FREQUENTLY ASKED QUESTIONS | 22 |
| SECTION 10: OUR COMMITMENT TO YOU | 24 |
| SECTION 11: REFERENCES | 25 |
| SECTION 12: NOTES | 26 |
Section 1: Overview of Adventist Health Lodi Memorial

Introduction
We are delighted you chose Adventist Health Lodi Memorial for your calibrated kinematically aligned total knee replacement surgery. Our staff will provide you with a personalized experience designed to meet your needs and exceed your expectations. Please review the information in this Patient Education Guidebook as it is intended to:

- Prepare you, family members and caregivers for your knee replacement surgery.
- Introduce Adventist Health Lodi Memorial and the resources available to you.
- Educate you about preparations needed at home before surgery, what to expect during the day of surgery and how to prepare for discharge home.
- Reduce anxiety by reviewing proven methods for managing nausea, discomfort and constipation.
- Provide a list of equipment for use at home.
- Instruct you on activities and exercises, managing swelling, and safe techniques for moving your knee while walking, dressing, bathing and climbing stairs.
- Provide a convenient place to store all handouts received during pre-surgery appointments.

Visit DrSteveHowell.com or LodiMemorialOrthopedics.org to download an electronic version of the guidebook to your computer, tablet or mobile device and easily share it with family and friends who will take care of you.

Directions and contact information

ADVENTIST HEALTH LODI MEMORIAL

Medical Center
975 S. Fairmont Ave., Lodi, CA 95240
Main phone number: 209-334-3411

Directions to Medical Center:
From the North on CA-99: Follow CA-99 south toward Fresno. Take Exit 264B. Turn right on Kettleman Lane. Drive 2 miles and turn right on Ham Lane. The hospital is less than a mile on the right.
From the North on I-5: Follow I-5 south towards Lodi. Take Exit 264A. Turn right on Kettleman Lane. Drive 2 miles. Turn right on Ham Lane. The hospital is less than a mile on the right.
From the South on I-5: Follow I-5 north towards Lodi. Exit CA-12 and turn right onto Hwy. 12 after exiting the freeway. Drive 5.9 miles and make a left on Ham Lane. The hospital is less than a mile on the right.

Sacramento Office - Orthopedics
Adventist Health Physicians Network
Medical Office – Orthopedics
8120 Timberlake Way, Suite 112
Sacramento, CA 95823
Dr. Howell: 916-689-7370

Lodi Office - Orthopedics
Adventist Health Physicians Network
Medical Office - Vine Orthopedics
1235 W. Vine St., Suite 22
Lodi, CA 95240
Dr. Nedopil: 209-334-8520

In-Hospital Dining
Adventist Health Lodi Memorial visitors can choose from several meal options.

Vineyard Café
Full cafeteria offering breakfast, lunch, dinner and snacks
Monday–Friday 7 a.m.–6:30 p.m.
Saturday–Sunday 7 a.m.–2 p.m.

Vineyard Express
Coffee bar with grab-and-go meal options
Monday–Friday 6 a.m.–1 p.m., 3–9 p.m.
Saturday–Sunday 2:30–9 p.m.

In-Room Dining
Visitors staying with a patient are welcome to order meals from an ambassador. The meal tray will be delivered with the patient’s food. Guest meals may be paid for by cash, check or credit card in the Vineyard Café or Vineyard Express.

ADDITIONAL LODI MEMORIAL SERVICES/RESOURCES

Adult Day Services ________ 209-369-4443
Home Care Services ________ 209-333-3131
(after hours ___________ 209-334-3411)
Outpatient Rehabilitation Services
Physical, Occupational, Speech Therapy ________ 209-333-3136

CONTACT INFORMATION
Pre-admitting Nurse ________ 209-339-7502
Patient Financial Services ________ 209-339-7543
Orthopedic Nurse Navigator ________ 209-339-7870

To register for the pre-surgery educational class on kinematically aligned total knee replacement, please call 209-339-7870.

HOTELS NEAR THE HOSPITAL

Wine and Roses
4-star hotel 2.9 miles (9 min) from the hospital
2505 W. Turner Rd.
Lodi, CA 95242
209-334-6988

Fairfield Inn & Suites – Lodi
2-star hotel 2.5 miles (8 min) from the hospital
262 Rocky Lane
Lodi, CA 95240
209-288-7500

Hampton Inn & Suites – Lodi
3-star hotel 2.2 miles (8 min) from the hospital
1337 S. Beckman Rd.
Lodi, CA 95240
209-369-2700

Candlewood Suite Hotel
2-star hotel 2.4 miles (8 min) from the hospital
1341 E. Kettleman Ln.
Lodi, CA 95240
209-333-3355

Holiday Inn Express – Lodi
2-star hotel 2.4 miles (8 min) from the hospital
1341 E. Kettleman Ln.
Lodi, CA 95240
209-210-0150

Upon booking your reservation, please ask for the Adventist Health/Lodi Memorial special rate.
Your orthopedic team

Hospital
At Adventist Health Lodi Memorial, we are committed to providing the best care and experience for you and your family. Our care team is dedicated to making your stay pleasant and the transition home as smooth as possible.

Orthoped surgeons
Stephen M. Howell, MD, is a board-certified orthopedic surgeon and world-renowned expert in the treatment of arthritic disorders of the knee and developed calipered kinematic alignment in 2006. He will work with you to provide the most advanced care. Learn more about Dr. Howell at DrSteveHowell.com

Alexander J. Nedopil, MD, PhD, is a fellowship-trained orthopedic surgeon specializing in primary and complex hip and knee reconstruction. He cares for patients with osteoarthritis, sports injuries, failed arthroplasty and more. He has published more than 15 studies on calipered kinematically aligned total knee replacement.

Physician assistants
Vanessa Ferrario PA-C, is a board-certified physician assistant who works alongside Dr. Howell and Dr. Nedopil in the operating room and office. She assists in surgery and helps care for you during and after your surgery.

Hannah E. Keller, MSN-PA-C, FNP-C is a board-certified physician assistant trained in orthopedic surgical care. She provides physical exams and assists with surgery for those that need treatment for knee arthritis and more.

Orthopedic nurse navigators
Our navigators, Gail Rodrigues, RN, and Tina Robinson, RN, will coordinate your care journey from pre-surgery through recovery, including education, therapy and other services. They can be reached at 209-339-7870.

Nursing team
During your hospital stay, our nursing staff will be here to meet your needs 24 hours a day. Nurses will assist with your recovery and work with the rest of the team to ensure your stay is as pleasant as possible.

Chaplain
Our chaplains are specially trained to serve your spiritual needs, as well as those of your family, regardless of your denomination. A chaplain is available upon request.

Anesthesiologist
Your anesthesiologist will consult with you before surgery and manage any discomfort, medical conditions and vital functions during surgery and in the recovery room.

Physical and occupational therapists
Our therapists will instruct and assist you with mobility and exercises for bending and straightening your knee after surgery; provide tips for safely performing daily activities and managing swelling of the knee.

Orthopedic nurse navigators
Our navigators, Gail Rodrigues, RN, and Tina Robinson, RN, will coordinate your care journey from pre-surgery through recovery, including education, therapy and other services. They can be reached at 209-339-7870.

Section 2: Introduction to knee arthritis and calipered kinematically aligned total knee replacement

What is arthritis of the knee?
The cause of osteoarthritis of the knee is cartilage wear that often results in severe pain, stiffness, loss of knee motion, a bowed or knock-kneed deformity at the knee, and a limp. The loss of cartilage narrows the space between the femur, tibia and patella and is referred to as “bone on bone” contact on radiographs. Knee replacement surgery restores a smooth joint surface by replacing worn surfaces with femoral, tibial and patella implants made of metal and plastic.

Who might benefit from a total knee replacement?
The goal of total knee replacement is to improve the patient’s function in daily life. The ideal candidate is someone who has difficulty walking short distances, shopping, getting in and out of a car, ascending and descending stairs, and participating in recreational activities such as gardening, tennis, golf, biking, bowling and hiking. Pain in the knee should be present for three months or more and persist after a trial of anti-inflammatory agents, weight loss, exercises, injections, and/or use of a knee brace or cane. A patient who has knee pain for 1–2 months or walks 1–2 miles a day is not ready for total knee replacement.

Why should you consider a calipered kinematically aligned total knee replacement?
In 2006, Dr. Howell developed a personalized surgical technique known as calipered kinematic alignment, so patients would experience a quicker recovery and have a more normal feeling knee after total knee replacement than those treated with the one-size fits all technique called ‘mechanical alignment’1. Mechanical alignment changes the patient’s joint lines, which requires the release of perfectly normal ligaments and causes pain, stiffness and instability 2,3. If you want to learn more about the technique, you may order the book from Amazon entitled The Ten Commandments of Calipered Kinematically Aligned Total Knee Arthroplasty: A Primer for the Orthopedic Surgeon and an Introduction for the Discerning Patient.

Calipered kinematic alignment uses a series of intraoperative verification checks and caliper measurements of the small pieces of bone the surgeon removes to accurately fit the total knee replacement. These steps restore the patient’s pre-arthritic joint surfaces within 0 ± 0.5 mm, which makes the technique more accurate than robotics and navigation instrumentation. The kinematic alignment of the prosthetic components with the three kinematic axes of the knee has the same beneficial effect on function as aligning new tires on the axles of a car to restore a smooth ride 4,5.

Stephen M. Howell, MD
DrSteveHowell.com
The stability of the ACL and function like a normal knee 17,18. The most important tool in total knee replacement is the caliper, which measures the thicknesses of the small portions of bone removed from the femur. These are adjusted until they are within ± 0.5 mm of the thickness of the replacement parts and recorded as verifications. Dr. Nedopil’s studies have shown the calipered technique restores the patient’s joint lines more accurately than robotic surgery 1,5.

Ten randomized or case-control studies from around the world showed patients treated with Dr. Howell’s calipered kinematic alignment technique experienced better results in terms of patient satisfaction, function, quicker recovery, fewer ligament releases, better motion and orientation of the components during weight-bearing than mechanical alignment 8-16. In 2017, Drs. Howell and Nedopil began using an ‘athletic-like’ knee prosthesis with a ball-in-socket designed to provide releases, better motion and orientation of the components during weight-bearing than mechanical alignment 8-16.

An Australian study reported the combination of Dr. Howell’s kinematic alignment with a ball-in-socket prosthesis resulted in higher function, as measured by the Forgotten Joint Score than the use of traditional components that perform like a knee without an ACL and meniscus 11. Collectively, Drs. Howell and Nedopil perform more than 600 calipered kinematically aligned total knee replacements each year with the ‘athletic-like’ prosthesis. There are many benefits from using calipered kinematically aligned total knee replacement, including more accurate implant alignment than robotic surgery, use of a minimally invasive surgical (MIS) exposure, low risk of infection from the implants are made of plastic and metal, they may occasionally click or make noise when they contact each other. Although a small amount of clicking is normal, the frequency becomes less as the swelling subsides in the knee and is not a sign of a loose implant.

The Oxford Knee Score asks 12 questions, each worth four points, and is very helpful for assessing the satisfaction and function of your knee before and after total knee replacement. The score for a normal knee is 48 points. The range of scores of those patients needing a total knee replacement is between 0 to 30 points, with an average of 20 points 2,7,15. Patients with an Oxford Knee Score of 30 points or lower may consider a total knee replacement. The cement quickly sets in 10 minutes, which enables the patient to put full weight and walk on their knee within an hour after surgery. Because the implants are made of plastic and metal, they may occasionally click or make noise when they contact each other. Although a small amount of clicking is normal, the frequency becomes less as the swelling subsides in the knee and is not a sign of a loose implant.

The Oxford Knee Score: a reliable indicator of preoperative disability and pace of recovery after knee replacement. The Oxford Knee Score asks 12 questions, each worth four points, and is very helpful for assessing the satisfaction and function of your knee before and after total knee replacement. The score for a normal knee is 48 points. The range of scores of those patients needing a total knee replacement is between 0 to 30 points, with an average of 20 points 2,7,15. Patients with an Oxford Knee Score of 30 points or lower may consider a total knee replacement. If your knee hurts, take the Oxford Knee Score online (drstevewhowell.com/knee-quiz) for free. A postoperative Oxford Knee Score indicates the pace of your recovery after knee replacement. At six weeks, when you are 50% recovered, the Oxford Knee Score ranges between 28 to 36 points with a mean of 32. At this point, most patients walk without a cane and drive their car 11. At three months, when you are 70% recovered, most patients enjoy recreational activities such as gardening, tennis, pickle ball, golf, biking, bowling and hiking. At six months, when you are 90% recovered, the Oxford Knee Score ranges from 36 to 48 with a mean of 43 points 2,11.

The process for undergoing total knee replacement may be broken into four steps. These include preparing for knee replacement surgery, care of the day of surgery, discharge home the day of surgery, and care at home that enables rapid recovery.
Scheduling the Surgery

The timing of total knee replacement depends on the patient’s needs. There is never a rush, as waiting a few months or even a year rarely affects the outcome. Surgery may be scheduled on the day of your initial visit or afterwards by calling your surgeon’s office. Scheduling surgery 6-8 weeks in advance increases the likelihood your requested date will be available.

- Visit your family physician or internist as soon as surgery is scheduled. If you have a history of heart disease, also see your cardiologist. Instruct each office to fax:
  1. A form titled ‘Assessment of Patient’s Risk for Knee Surgery’ signed by the physician.
  2. One copy of an EKG
  3. A copy of the consultation to Dr. Howell’s office at 916-688-5610 or Dr. Nedopiil’s office at 209-334-2109.

- We will give you a laboratory order for blood tests, which should be completed three to four weeks prior to surgery. When convenient, use an Adventist Health laboratory as the lab results are linked directly to your electronic health record (call 209-339-7897 for locations and hours of operation).

- If you are taking an anti-inflammatory medicine, you may continue until the day before surgery. If you routinely take aspirin, continue until the day before surgery.

- On the day before surgery, unless contraindicated for you, we suggest taking the following over-the-counter medications to assist with pain control after surgery.
  - Naprosyn (Aleve) one tablet (220mg), one in morning and one in the evening.
  - OR Ibuprofen (Motrin, Advil) 400-600mg once in morning, afternoon and evening. Also take two 100mg tablets (1000mg) Acetaminophen (Tylenol extra strength) once late morning and with dinner. This will also be your non-narcotic regime starting the first morning post surgery at home. Following these instructions will reduce the amount of narcotics needed after surgery. Also take Colace, a stool softener, one tablet the day before surgery, then after surgery one tablet twice a day until you establish normal bowel habits.

- Stop all herbs and supplements at least one week before surgery. Specific agents with known risks in the perioperative period include: echinacea, garlic, gingko, ginseng, kava, St. John’s Wort, valerian, fish oil and turmeric.

- For those patients that take a blood thinner or anticoagulant medication for atrial fibrillation or a history of blood clots, PLEASE ask your cardiologist, internist or family physician who prescribed it, to specify the number of days you should discontinue prior to surgery. From a surgical perspective, we prefer stopping Eliquis (Apixaban), Xarelto (Rivaroxaban), Pradaxa (Dabigatran), or Plalet (Clostranaz) two days before surgery. For those on Coumadin (Warfarin), we prefer you take ½ your normal daily dose beginning five days before surgery. We prefer stopping Plavix (Clospodreg) or Brilinta (Ticagrelor) seven days before surgery. Those on aspirin can continue to take it daily until the day of surgery.

- If you take medication for rheumatoid arthritis, consult your rheumatologist about when to stop medication before surgery and when to restart after surgery.

Prepare your home

Purchase and prepare meals ahead of time. We will teach you to walk up and down stairs, so you can use a bedroom on the second floor. However, this is not encouraged for the first few weeks. Consider setting up a temporary bedroom near the first floor near a bathroom.

Checklist to reduce your risk of a fall at home

Check each room and conceal electric cords and store small objects on the floor that may be a tripping hazard.
- Place a phone or your cell phone in easy reach.
- Install nightlights for trips to the bathroom at night.
- Use a cushion to raise the seat of a low chair. A chair that sits higher, with a firm back and armrests, will help you stand more easily.
- Consider installing handrails on stairs inside and outside your house.
- If you have pets, consider boarding them for a few days after your return home.

Follow the advice of the pre-admitting nurse

Expect a phone call from a pre-admitting nurse at Adventist Health Lodi Memorial Hospital within one week of surgery. You also may call 209-339-7502 within one week of your scheduled surgery. The nurse will review and update your health history; medications, allergies and confirm the date and time of surgery. When speaking with the pre-admission nurse, you may request a visit with an anesthesiologist to review your health history and risks prior to surgery.

The nurse will instruct you to arrive at the hospital approximately two hours before surgery. The following list is helpful to review in advance of arrival:

- Have an accurate list of your medications including the name, dose and frequency. (Make a note of which medications you should stop taking before surgery)
- Remember the time you are told to arrive at the hospital.

Do not eat, drink fluid or chew gum beginning at midnight the night before surgery. Surgery is canceled when these instructions are not followed.

- You may have sips of water, no more than 4 ounces, up until 5:30 a.m. the morning of surgery.
On the day of surgery, take only the medications the nurse or physician instructed you take for hypertension, seizures, Parkinson’s disease, indigestion, thyroid problems or depression with a sip of water (no orange juice, coffee or food).

Most patients are discharged late afternoon, the same day of surgery. You may return home that day or stay overnight in a local hotel if you live further away. Some patients need to stay overnight for further monitoring and are discharged home the following morning.

Reduce the risk of infection by showering with special cleansers five days before surgery

Most patients who develop a postoperative wound or knee infection have high concentrations of bacteria on their skin and in their nose and mouth before surgery. You may receive a cleaning kit to kill bacteria at your office visit, or we will receive one when you attend the pre-surgery education class. The kit contains chlorhexidine (CHG) soap and five one-time use wash mittens for scrubbing your entire body during a shower. Povidone-iodine (PI) swabs for painting the inside of the nose or Bactroban antibiotic ointment to place inside your nostrils, and antiseptic oral rinse swabs for wiping your mouth and teeth. Let us know at your office visit if you have an allergy to any of these agents, and we will prescribe a different agent.

Beginning five days before surgery, place clean sheets on your bed (only the first night is necessary), scrub your body, paint the inside of your nose, and swipe your mouth and teeth with these antibacterial agents, twice a day. Performing this cleansing protocol daily reduces the risk of infection.

After each shower, dry yourself with a clean towel and wear a fresh set of pajamas to bed each night. During these five days, do NOT shave the leg that is to be operated upon and do not apply skin moisturizers, body lotions, perfumes or powders anywhere on your body.

Ways to reduce the risk of postoperative knee infection

- **Dental care:** Complete all dental work, including cleaning, before surgery. When dental problems arise prior to your surgery date, please call the surgeon’s office.
- **Clean hands:** Hand hygiene is very important. You will notice caregivers use alcohol-based hand sanitizer when entering your room. We encourage the use of the hand sanitizer by your visiting family and friends to reduce the spread of bacteria that cause infection.
- **Illness:** If you become ill with a fever, cold, sore throat, flu or any other illness, let the surgeon’s office know as soon as possible, so your procedure may be rescheduled.
- **Nutrition:** Healthy foods provide your body with the energy and nutrition it needs to fight off infections, accelerate healing and increase strength. Be sure to include assorted fruits, vegetables, good fats, dark leafy greens, protein and water in your diet. Even if you are not hungry, be sure you are getting adequate nutrition. (try a smoothie loaded with lots of fruit and greens).
- **Skin rash:** Broken skin or rashes should be reported to your surgeon.
- **Shaving:** It is very important you do not shave your leg or use any hair removal products anywhere near the surgical area for FIVE days prior to surgery. Studies show an increased risk of surgical site infection associated with shaving. This is attributed to macroscopic cuts in the skin that allow bacteria to enter. If necessary, we will use a clipper to remove hair from the skin in the preoperative area prior to surgery.
- **Stop smoking:** Not smoking for six weeks prior to surgery lowers the risk of infection. Smokers have a higher risk of developing post-operative infections and delayed wound healing because smoking deprives the body of the oxygen required to repair and build cells. Cessation of smoking increases oxygen delivery, which is the foundation for healing the skin incision and deep tissues in the knee.
- **Special safety notice for pet owners:** Do not let your pet touch or lick your incision site in any way. Avoid sleeping with your pet, and do not allow them onto your bedding for five days before surgery and until your first post-op appointment. Always wash your hands after touching your pet and before touching the incision or bandage.
- **Manage your blood sugar:** If you are diabetic, monitor your blood sugar and keep your A1c below 8.0. The risk of wound complications is more than three times higher for patients who have high blood glucose before and after surgery and for those with poor long-term diabetes control.
- **Arrange transportation to and from the hospital:** Whether you are spending the night or going home the same day of surgery, have your coach available for teaching and instructions along with the ride home. If your surgery includes an overnight hospital stay, you will need to arrange for someone to drive you home the next day.

Check in at Adventist Health Lodi Memorial Hospital

Arrive at the hospital at the time instructed by the pre-admitting nurse. Enter the building at the Outpatient Services entrance located on Vine Street between Ham Lane and South Fairmont Avenue. Park in the outpatient services lot in front of the entrance. If you require assistance, use the phone located at the bottom of the entrance ramp. Check-in at the registration window, where you will be directed to the pre-operative area. Please note: This entrance is locked between the hours of 5:30 p.m. and 5:30 a.m.

Pre-operative care in the ambulatory procedure unit

You will be asked to wash your body with a warm cloth containing a special cleanser (Chlorhexidine) and apply nasal and oral disinfectants. Within 1–2 hours of surgery, we will start an intravenous (IV) line and infuse two antibiotics to reduce the risk of infection. One of the antibiotics (Vancomycin) may cause itching or flushing of the upper body that is minimized by giving you IV Benadryl, which may make you a little sleepy. We will also give you IV Toradil for discomfort and IV Decadron to reduce nausea and an upset stomach. Sequential compression devices will be applied to compress the calf area of the lower legs to reduce the risk of blood clots. Your surgeon will ask you which knee is to be operated on, and they will draw the course of the skin incision and write their initials in large letters above the kneecap for everyone to see.

Your anesthesiologist will visit you in the pre-operative area. Your medical history will be reviewed and the anesthetic options, benefits and risks will be discussed with you. Because the calipered kinematically aligned total knee replacement has a relatively short surgical time, the use of general anesthesia is preferred. Let the anesthesiologist know if you are prone to nausea, or if you have had any difficulties with anesthesia in the past. They are experts at administering the right combination of medications to give you the best outcome possible.

Your surgeon and/or physician assistant will notify your coach when surgery is completed.

Care in the operating room

We use a sequence of ten caliper measurements within 0.5 mm that accurately position the implants and balance the ligaments of the knee, which are shown in this online video. During the surgery and before applying the dressing an antibiotic (Vancomycin 1 gm) is added to the cement that binds the implants to the bone to reduce the risk of infection. Just before applying the dressing, two medicines that numb the knee for 24–36 hours (Marcaine and Toradil) and one medicine that reduces the risk of bleeding (Tranexamic acid) will be injected into the knee.

Post-operative care in the recovery room

You will stay in the recovery room for 60–90 minutes and be closely monitored by a specialized nurse as you recover from the effects of anesthesia. The nurse will monitor your blood pressure, heart rate, respiratory rate, oxygen saturation and assist with managing any discomfort you may experience. Oxygen may be administered through soft tubing placed in your nose. Compression devices will be used around the lower legs to reduce the risk of blood clots, and ice therapy will be placed on the surgical area.

Post-operative care in the ambulatory procedure unit

After leaving the recovery room you will return to the area where you were prepared for surgery. You will be given a menu to order lunch. The nurse will call your coach to come in to receive education with you. Your therapist will teach you how to ambulate with a walker; bend and straighten the knee; get in and out of the shower and car, and walk up and down stairs. Your therapist and nurse will also review the handouts regarding post-operative care at home with you and your coach. Your coach is encouraged to take notes. You can expect to be discharged on the day of surgery directly to home or to a local hotel depending on the patient’s preference. In some circumstances you may spend the night following your surgery in the hospital.
Section 6: Care after surgery

Managing discomfort
Our goal is to make you as comfortable as possible throughout recovery, so you can walk and care for yourself. The nurse will ask you to rate your discomfort on a scale of 0–10, with 10 being the worst. The nurse will administer medication, along with monitoring vital signs and sedation, until your discomfort is reduced to your tolerable level. Many patients require minimal to no narcotics after they leave the recovery room, as their pain is at a tolerable level. Always eat a little something when taking pain medication. Complete relief of discomfort has drawbacks as it may compromise breathing and nauseate you.

- During your stay, you will receive intravenous doses of an anti-inflammatory medication called Toradol. Anti-nausea medicine may be requested if your stomach feels queasy.

Discomfort in the upper thigh area of the operated leg is normal and a result of the tourniquet used to prevent blood loss during the surgery. It will resolve itself within a week or so after surgery.

Managing swelling and reducing the risk of blood clots
Your legs will be elevated on a bolster above your heart to decrease swelling and discomfort and promote bending and straightening of the new knee. We encourage use of the bolster under your surgical leg, and preferably both legs, while in bed. At night, if you are unable to sleep this way, you may remove the bolster as sleep is more important. You also may lie on your side for comfort. When awake, frequently pump your ankles up and down to reduce the risk of blood clots.

Managing constipation
Pain medication frequently causes constipation. Consider taking a stool softener, such as over-the-counter Colace or Metamucil, starting 1–2 days before surgery. There are a variety of remedies you may use at home. Continue the medication for constipation until your normal bowel habits return.

Section 7: Activities and exercises to rehabilitate your knee

It is important to begin rehabilitating your total knee replacement within a few hours after surgery. Because the implants are cemented to the bone, you may place all your weight on the new knee. Physical and occupational therapists will teach you how to get in and out of bed, straighten and bend your knee, walk down the hall with a walker, go up and down stairs, and take care of yourself while recovering at home. Recovery is faster when you get out of bed and use the bathroom rather than staying in bed and using a bedpan. Activate the bedside call light to request a nurse, aide or therapist assist you. Patients who can get in and out of bed, walk 50 feet with a walker, climb stairs and feel ‘peppy’ are discharged home.

Sitting exercise for bending the knee
1. Sit on the edge of a bed or chair.
2. Place the ankle of the non-surgical leg in front of the ankle of the surgical leg.
3. Use the non-surgical leg to bend the surgical knee until you feel a stretch and no discomfort.
4. Hold this bend while slowly counting to 10 and then relax.
5. Repeat your bend of the non-surgical knee to bend your surgical knee until you feel a stretch and mild discomfort.
6. Slightly increase bend for an additional 10 seconds.
7. Repeat this cycle of stretches 5 to 10 times every time you walk.

Sitting exercise for straightening the knee
1. Sit on the edge of a bed or chair and place the heel of the surgical leg on a chair in front of you.
2. Push on the front of the thigh (arrow) to move the back of the knee down towards the floor.
3. Hold this position while slowly counting to 10 and then relax.
4. Repeat this stretch 5 to 10 times every time you walk.
Tips for getting out of bed
1. Use the non-surgical leg to shift your body to one edge of the bed. (Figure 1)
2. Use your elbows and hands to help you sit up. (Figure 2)
3. Bring your legs over the edge of the bed to sit up. (Figure 3)
4. Reverse these steps to get back into bed.

Standing up and walking with a walker
We will contact your insurance company to provide a walker if you don’t have one.
1. Use your arms to slide your body to the edge of the chair while keeping the surgical leg out in front of you. (Figure 1)
2. Push up using the armrests and the non-surgical leg for support. (Figure 2)
3. Transition hands from armrests to your walker, one at a time. (Figure 3)
4. Reverse this process to sit down, reaching back for the armrests and slowly lowering yourself.
5. When walking with a walker, first advance the walker, step forward with your surgical leg, then step forward with the other leg, supporting some of your weight with your arms on the walker as needed.

Climbing stairs
1. To climb stairs, grasp the railing and place the foot of the non-surgical leg on the next step and extend the knee. (Figures 1, 2)
2. Next, lift the foot of the surgical leg up to the same step. (Figures 2, 3)
3. When going downstairs, step down with the surgical leg then follow with the non-surgical leg. (Figure 4)
4. When no railing is available, use a cane in one hand for support.

Transferring in and out of a bathtub
1. If you only have a tub/shower combo bathroom set-up, consider buying a bathtub bench. (Available on Amazon for approximately $60.) (Figure 1)
2. Sit down on the bathtub bench with your back facing the bathtub. (Figure 2)
3. Pivot into the bathtub and lift each leg one at a time over the side of the bathtub. (Figures 3, 4)
4. Reverse these steps to get out of the bathtub.
Transferring in and out of a walk-in shower
1. If you have a walk-in shower at home, consider buying a shower chair. (Available on Amazon for approximately $30.)
2. Enter and exit the shower using a side-step technique. (Figures 1, 2)
3. Sit on the shower chair when washing your body.
4. Consider adding slip-resistant bath mats and wall-mounted grab bars for stability.

Going up and down a curb with a walker
1. When going up a curb step, get as close to the curb with the walker as possible.
2. Lift the walker and place it on top of the curb and check that the four legs of the walker are secure. (Figure 1)
3. Step up with your non-surgical leg, lean forward on the walker, then step up with the surgical leg. (Figures 2, 3)
4. Go down the curb by lowering the walker to the ground and step down with the surgical leg followed by the non-surgical leg. (Figure 4)

Getting in and out of a vehicle
1. Park the car several feet away from the curb to allow entry from a level surface.
2. To maximize leg room, move the passenger seat as far back as it will go and recline the seat.
3. Back up to the car, reach back for the seat. (Figure 1)
4. Gently sit on the car seat while keeping your surgical leg straight and in front of you. (Figure 2)
5. Slide back, pivot into the seat and face forward bringing one leg at a time into the car. (Figures 3, 4)
6. Reverse these steps to get out of a vehicle.

Discharge medications and instructions
Before surgery, your surgeon or physician assistant will electronically send a prescription for pain medication to your pharmacy. The nurse will provide written and verbal discharge instructions and answer any questions you may have.

Bathing and wound care
Remove the outer wrap next morning after surgery at home. Leave honey comb bandage in place for 5–7 days. You may shower and get the dressing wet as it is waterproof. If you continue to notice moderate drainage after surgery, call your surgeon’s office. You will receive further instructions. Expect to see bruising, swelling, blistering, redness and warmth around the knee and leg for 5–6 weeks after knee replacement.

On the seventh day post-surgery, you must change the dressing and replace it with two sterile 4” x 8” adhesive dressings. Refer to the technique demonstrated during the pre-operative education class and the received handout. Apply fresh dressings daily until the staples are removed at 12–15 days.

You can purchase these dressings online for approximately $16–35. (Amazon: Coviden 7541 Telfa Adhesive Dressing box of 25, or Primapore Adhesive Dressing box of 20)

As long as the incision is dry, you may shower. Let soapy water run over the staples and then rinse with clean water. DO NOT scrub the incision. Pat the incision dry with a clean towel. Don’t soak the knee in a bathtub, hot tub or swimming pool until staples are removed at 12–15 days following surgery.

At 12–15 days post-surgery, you will return to the surgeon’s office in Sacramento or Lodi to have your staples removed. If you traveled from a distance for the procedure and would prefer to have the staples removed by a provider closer to home, we will provide a suture removal kit to take home from the hospital. After removal, wait a day before swimming, soaking in the hot tub or applying lotions and creams on the incision.

If you see an uneven edge on the incision, please don’t worry. This may occur from a shifting of the staples during motion of the knee. Nature will flatten the unevenness within 3–4 weeks.
Reducing the risk of blood clots
Patients who take aspirin or anti-inflammatory medicines will be prescribed low dose chewable aspirin (81 mg) two times a day (one at breakfast and one at dinner) for 30 days after surgery to reduce the risk of blood clots.

Patients who are on anticoagulants (blood thinners) such as Pradaxa (dabigatran), Xarelto (rivaroxaban), Eliquis (apixaban), Coumadin (warfarin), Plavix (clopiogrel) or Brilinta (tricagrelor) preoperatively will have adjustments to their medication after surgery that will be coordinated with your cardiologist.

Patients who cannot take aspirin or anti-inflammatory medicines will be given one of the anticoagulants (blood thinners) listed above. These medications often need preauthorization, so let your surgeon know if you cannot take aspirin before surgery so authorization can be obtained and your discharge home won’t be delayed.

Guidelines for exercise and activities at home
During the first six weeks, your goal is to regain knee motion, reduce the degree of swelling, and limit the use of strengthening exercises. Please follow the guidelines below as other exercises and activities may cause pain and be counterproductive.

· Every hour you are awake, elevate your leg. After at least one hour of elevation, get up and walk a few minutes.
· After the walk, sit on the sofa or end of the bed and perform the bending and straightening exercises described in Section 6 for 3–5 minutes.
· When not walking, lie on the bed or sofa and elevate your leg 1½–2 feet above your heart using a bolster or pillows as described in Section 6.
· Consider buying a DMI Ortho Bed Wedge (for approximately $30) or EZ UP Pillow (available on Amazon or see flyer from class for approximately $50).
· Other ideas for elevation will be discussed at the education class. Practice proper elevation before your surgery, so you are prepared when you go home.

For the first two weeks, limit sitting and standing.
· When you overdo it, elevate the leg on the bolster, ice the knee and rest for the remainder of the day.
· After two weeks, increase activity when the knee bends easily to a right angle or 90 degrees.
· When you can walk safely with a normal gait without the walker, discard it.

Prone exercise for straightening your knee after removal of staples
1. Apply a 5 to 10 pound weight around the ankle of the surgical leg.
2. Turn on your stomach and slide toward the edge of the bed.
3. Hang your kneecap over the edge and lower leg off the bed.
4. Let gravity straighten the surgical knee and hold for 1–2 minutes.
5. When discomfort is felt, flex the knee 10 degrees.
6. Repeat straightening and bending of the knee 20 times.
7. Repeat this cycle three times per day until your limp disappears.

Managing discomfort and constipation
If you can take anti-inflammatory medication like Ibuprofen (Motrin), Advil, Naproxen (Aleve) and Acetaminophen (Tylenol), take as suggested at discharge.

When your discomfort is not tolerable with over-the-counter medications alone, add prescribed narcotics, as needed. As the pain lessens, stop taking the narcotic. Then as pain permits, gradually stop over-the-counter medications. Before taking narcotics, always reposition your knee or walk. Fifty percent of the time, the pain will subside or be tolerable.

Continue to take over-the-counter Colace (stool softener) to reduce the risk of constipation. Narcotics and immobility are causes of constipation. As needed, you also may add prunes, Metamucil or Milk of Magnesia.

Follow-up visit at six weeks to assess the pace of recovery
The following are signs of a good pace of recovery at five to six weeks:
· Straightening the knee close to 0 degrees
· Bending the knee from 90 to 110 degrees
· Walking without a walker or cane
· Climbing stairs
· Driving the car

At five to six weeks, expect your recovery to be 50 percent and your Oxford Knee Score should be 28 to 32 points. It is normal to still sense some swelling, redness, warmth, stiffness, soreness and numbness on the outside of the incision. Patients with difficulty straightening and bending their knee before surgery take longer and must work harder to regain motion than patients who had full motion. You may return to recreational activities such as gardening, tennis, golf, biking, bowling and hiking when you and your new knee feel up to it. At three months, recovery is about 70 percent. At six months, recovery is about 90 percent. You should assess your pace of recovery by comparing improvements month-to-month rather than day-to-day.
Section 9: Answers to frequently asked questions

Q: How long does a total knee replacement last?
A: There is a 90% chance that the original parts we put in your knee will continue to work for 20 years without another operation.

Q: When can I drive a car?
A: You may return to driving at your own pace. Begin putting and chipping, progress to the short irons and then to the driver.

Q: Does the feeling of stretching when bending the knee ever cause the wound to split open?
A: No, the wound is closed in three layers with three sets of sutures and staples. Feel confident when straightening and bending that the knee with the wound is secure.

Q: When will the swelling and pain disappear in my knee?
A: Swelling is normal and will gradually subside over 3–4 months. Elevation and short frequent exercises for a few minutes are the best way to managing swelling. Forceful exercising for extended periods of time will keep the knee swollen, even with elevation. You are the best person to determine what your knee will let you do. Once the swelling subsides, the pain will too.

Q: When will the warmth and redness disappear?
A: Warmth and redness in the knee is normal and will gradually subside over 3–4 months. It does not indicate an infection and is caused by increased blood supply, which brings a high concentration of nutrients to help heal the knee.

Q: Why is there occasionally a clicking or noise in the knee when I use it?
A: Contact between the metal and plastic tibial and femoral implants causes clicking and is more frequent when the knee is swollen. It does not indicate parts are loose or broken. The frequency and loudness of the noise becomes less as the swelling of the knee subsides.

Q: Will my total knee replacement set off the metal detectors at airports, stadiums and government buildings?
A: Yes, it will. Expect to be patted down. Presenting a card showing you have had a knee replacement does not help.

Q: Is a total knee replacement like a normal knee?
A: Not. About 30% of patients report their knee with the kinematically aligned total knee replacement feels normal, while others notice a difference. Those who notice a difference do sense the knee is better than before surgery.

Q: Can I kneel on my knee to do household chores and garden?
A: Kneeling will not hurt the knee. However, without practice it may cause your knee to hurt. Try kneeling on a foam pad for support. Patients who kneel frequently have less pain.

Q: Is it true I might need antibiotics if I have dental work or other surgical procedures?
A: The American Dental Association no longer recommends the routine prophylactic use of antibiotics before dental procedures according to the following ADA chairside guide. Here is the link to the 2019 Key Points on Antibiotic Prophylaxis: [https://www.ada.org/en/member-center/oral-health-topics/antibiotic-prophylaxis](https://www.ada.org/en/member-center/oral-health-topics/antibiotic-prophylaxis)
Section 10: Our commitment to you

Our care is motivated by the powerful forces of integrity, compassion, respect and excellence.

During your stay we promise to:
- Tell you who we are and what we are doing
- Partner with you to plan your care
- Listen and respond to your needs
- Round on you hourly
- Safely control your pain
- Respond to your call button in a timely manner
- Wash or sanitize our hands
- Explain your medications

Section 11: References

Section 12: Notes

Blank space is provided for the purpose of taking notes.