Guidelines for Patients having a Total Knee Replacement

UPMC Beacon Hospital
This information booklet has been written to give you and your family a basic understanding of what is involved when you require a total knee replacement.

In this booklet we provide information, including things you should know before and after your operation. It is important for you to understand the advantages but also the possible problems, which may occur after this form of surgery.

Throughout your stay in UPMC Beacon Hospital, you will receive continuous advice and support from all members of the team.
What is a Total Knee Replacement?

A total knee replacement is designed to replace a knee joint that has been damaged by arthritis. Replacing the painful and arthritic joint with an artificial one gives the joint a new surface which moves smoothly and painlessly. This is a surgical procedure in which the injured or damaged parts are replaced with artificial parts.

The procedure is performed by separating the muscles and ligaments around the knee to expose the knee capsule (the tough, gristle-like tissue surrounding the knee joint). The ends of the thigh bone (femur) and the shin bone (tibia) are removed and sometimes the underside of the kneecap (patella) is removed. The new knee consists of a metal shell on the end of the femur, a metal and plastic cover on the tibia. The parts are sometimes cemented into place with special cement. The operation normally lasts about 90 minutes.

What can I expect from an artificial knee?

An artificial knee is not a normal knee, nor is it as good as a normal knee. The operation will provide pain relief for ten years or more.

If the replacement provides you with pain relief and if you do not have other health problems, you should be able to carry out many normal activities of daily living. The artificial knee may allow you to return to active sports or heavy labour under your physician’s instructions. Activities that overload the artificial knee must be avoided. About 90 percent of patients with stiff knees before surgery will have better motion after a total knee replacement.

Potential Complications of Knee Replacement Surgery

**Incidence:** The majority of patients who undergo knee replacement surgery have a pleasant experience without any complications. Of all patients who undergo total knee replacements more than 96% have no complications. The following is a comprehensive list of all problems that could potentially occur. For informed consent it is important that you know of these problems but please be reassured that the vast majority of patients suffer no complications.

**Infection:** The major potential complication of joint replacement is infection. It may occur just in the area of the wound or deep around the prosthesis (replacement). It may occur during the hospital stay or after you go home. Infections in the wound area are generally treated with antibiotics. Deep infection may require further surgery and removal of the prosthesis. Infection is now a rare complication occurring in less than 1% of patients. Strict protocols in the operating theatre, intra-operative antibiotics, special surgical gowns and meticulous attention to surgical detail have helped achieve this low number, but for the unlucky 1% it is a catastrophic outcome.

**Wear:** Although wearing down of the bearing surface may occur, it is usually minimal. Wear may contribute to loosening and may require corrective surgery if it is excessive.

**Loosening:** Loosening of the prosthesis causes pain and, if the loosening is significant, a second joint replacement may be needed or performed. This operation is significantly more complicated than the original joint replacement.

**Impaired Nerve Function:** Rarely, nerves in the vicinity of the knee joint are stretched or damaged during the operation (a neuropraxia). Total knee replacement surgery is done under tourniquet (where a blood pressure cuff
is applied to your leg) and occasionally a nerve by the side of the knee can get damaged. This is often only noticed upon returning to the ward where the patient may complain of altered sensation in the foot or, in more severe cases, inability to move their foot outwards. Fortunately, the majority of these neuropathies resolve over a period of time, sometimes months. In a very small minority the damage may be permanent.

Deep Venous Thrombosis & Pulmonary Embolism: There is a risk of deep venous thrombosis (DVT) after joint replacement surgery. Patients are treated in hospital with medications and mechanical devices to prevent this. In most cases the measures taken are effective. However, despite all these precautions some patients still develop clots and may require treatment with further medication. Pulmonary embolism (PE) may occur if the clot detaches from the vein and travels to the lung.

Late Infection: Spread of infection from another part of the body to a joint replacement can occur, sometimes years after the operation. To prevent such infections, persons with a joint replacement are generally given antibiotics with extensive dental procedures, urinary tract infections or surgery as well as before other types of surgery. If an infection occurs anywhere in the body it must be treated promptly with antibiotics.

Periprosthetic Fracture: This complication can occur after a knee replacement if the bone is weak, especially in the first two months after surgery. Sometimes it is caused by a fall or stumble. Periprosthetic femoral fracture causes thigh pain with weight bearing and may cause shortening and rotation of the limb.

Heterotropic Ossification: There is a small risk of developing ossification or calcification in the muscle tissue around the knee after surgery. In the majority of cases, this involves small islands of bone that do not cause any functional restriction and are only noticeable on x-rays. Rarely, in less than 1% of cases there may be more extensive ossification that may cause stiffness and pain. This can be corrected by surgical removal but only after 12 months have passed since the surgery.

Stroke or Sudden Death: Although these complications can occur following surgery, they are extremely rare following joint replacement.

Preparing for Admission Checklist

Clothing: Loose comfortable clothing is advised e.g. long shorts, tracksuit bottoms or loose three-quarter length trousers.

Footwear: Comfortable lace up or slip on shoes with a low heel are recommended. Please ensure there is a back to these shoes.

Valuables: Please leave all valuables and jewellery at home.

Dentist: It is important that your teeth and gums are healthy before your operation as bad teeth can be the source of infection. Please make sure that you have had a dental check up in the last six months.

Manage Your Pain

Pain is a common occurrence following any surgical procedure. It can be well managed with medications, special pain management devices and ice. The pain will naturally reduce as your wound heals. It is imperative to keep your pain well controlled so you can mobilise comfortably, perform your physiotherapy exercises and resume normal activities after your surgery.

You will be asked to rate or score your pain regularly after your surgery. The score will depend on how your pain feels to you.
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Assign the number you feel best describes your pain. The nurses will administer appropriate treatments/medications depending on your pain score. The nurse will reassess your pain score after the treatment to make sure it has worked to reduce your pain.

Analgesics are painkillers and can include tablets, suppositories and injections into your veins or skin. You will receive analgesics at regular intervals throughout your recovery to ensure your pain is better controlled. You can ask your nurse for extra painkillers if you need them for soreness or before your exercises.

If you have any medication allergies or experience any side effects, please tell your nurse and doctor. Side effects are very easily treated and can include constipation, nausea, vomiting, itchiness, drowsiness and urinary retention.

The special pain management devices can include a Patient Controlled Analgesic (PCA) pump or an Epidural Infusion/Patient Controlled Epidural Analgesia (PCEA) pump.

A PCA allows you to administer a small amount of analgesic into a tube (cannula) in your arm. You press a special button to activate the pump if you feel pain. This pump can be used for 1-2 days after your surgery.

**Physiotherapy**

When muscles are not used, they become weak and do not perform well in supporting and moving the body. Your leg muscles are probably weak because you haven’t used them much due to your knee problems.

The surgery can correct the knee problem, but the muscles will remain weak and will only be strengthened through regular exercise. You will be assisted and advised how to do this, but the responsibility for exercising is yours.

**Exercise Programme**

Exercise is very important following knee replacement surgery.

**Frequency:** You will need to exercise at least three times a day to ensure you reach your rehabilitation goals.

Please be sure to read the exercises carefully and ask your physiotherapist any questions that you may have before you leave the hospital.

The following exercises start as soon as you are able. You may feel uncomfortable at first, but these exercises will speed your recovery.

**1) Ankle Pumps**

- With your legs straight, bend your ankles up and down, towards and away from your face.
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2) Knee Flexion
- Lie on your back with your legs straight
- Slowly bend your knee by sliding your foot up towards your buttocks as far as you can.
- Hold for count of 5.
- Relax and repeat 10 times.
- Every day you should be able to bend it a little further. Your therapist will measure the amount of bending. You may also practice knee bends while sitting on the bedside or in a chair.

3) Quadriceps Setting
- With your leg straight out in front of you, tighten the muscles at the front of your thigh, pushing the back of your knee down into the bed.
- The result should be straightening of the knee.
- Hold the contraction for 5 seconds.
- Repeat 15 times.

4) Inner Range Quadriceps
- Place a towel in at the back of the knee of the operated leg.
- Push the back of the knee into the towel and lift the heel up off the bed.
- Hold the contraction for 5 seconds.
- Slowly return to your starting position.
- Repeat 15 times.

5) Knee Extension
It is critical that you are able to straighten your knee fully, for normal knee function.
- Place a small rolled towel under your heel.
- Tighten your thigh muscles trying to push your knee downwards fully straightening your knee.
- Hold for 5 seconds.
- Repeat 10 times.

You are also encouraged to put your foot on a foot stool when sitting out for long periods both to reduce swelling and to maintain knee extension.

6) Standing Knee Extension
- While holding on to a supportive surface, bend your operated knee slightly.
- Gently pull back your knee by tightening your thigh muscles, straightening your knee.
- Hold for 5 seconds. Repeat 10 times.

7) Straight Leg Raising
- Start by tightening the muscles at the top of your leg.
- Keeping your operated leg straight, raise the leg about 6 to 10 inches off the bed.
- Hold for 5 seconds.
- Lower the leg slowly to the bed.
- Repeat 10-15 times.
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**Use of Ice:** Your knee may be hot, red and swollen after surgery. Ice may therefore be used during your hospital stay and at home, to help reduce the pain and swelling in your knee. A bag of crushed ice may be placed in a towel over your knee for 15-20 minutes. Your sensation may be decreased after surgery, so use extra care.

You may continue to ice regularly during the day both as an in-patient and on discharge home in order to help control swelling and any pain and also to encourage healing.

**Your Rehabilitation Goals**
- Independent getting in and out of bed.
- Independent walking with crutches or walker on a level surface.
- Independent walking up and down stairs.
- Achieve targeted joint range of motion.
- Achieve required muscle power and be independent with exercise programme.

**Day of Procedure**
You will be asked to do deep breathing exercises and ankle exercises hourly.

**Day One**
You may have a check x-ray to check the position of your new knee. The physiotherapist will assess your new joint and start some simple bed exercises with you. Cryocuff (ice therapy) will be applied to your knee by the nursing staff to reduce the swelling. A Continuous Passive Motion (CPM) machine will be used to increase your knee joint range. If you are feeling well enough, you will take your first few steps with the physiotherapist. You may also be allowed to sit out of bed for short periods of time.

**Day Two**
You will walk for a short distance with a walking aid today and you may also sit out for longer periods in the chair. The physiotherapist will progress your exercises and at this stage you should be able to get in and out of bed independently. On day two, you should aim to have 70-75 degrees knee bend.

**Day Three**
Regular exercise throughout the day is required to increase your knee movement and strengthen your leg muscles. Walking is part of your exercise programme and you should be increasing your walking distance on the ward daily. At this stage you should be aiming to have 80 degrees of a knee bend.

**Day Four until Discharge**
By day four, you should be mobilising independently at ward level and have anywhere between 80 and 90 degrees active knee bend. The physiotherapist will have escorted you to the stairs and by discharge you will have climbed a flight of stairs safely and independently. You must have a 90 degree bend by the time you are discharged from hospital.

**Walking**
In most cases, after an uncomplicated first knee replacement (primary total knee replacement) you will be encouraged, when using crutches for support, to put your full weight through the operated leg. Your consultant will advise you when you can reduce your support to one crutch or progress to a stick in the opposite hand to the knee.

If you have had a complicated primary total knee replacement or a revision total knee replacement, you will be instructed to reduce the amount of weight bearing on your leg. In such a case you will be given specific instructions on how to proceed by your consultant and physiotherapist.
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Stairs Technique

Going upstairs
- Maintain crutches/walking stick on the step below.
- Lead with the un-operated leg up onto the step above.
- Take your weight onto the un-operated leg by pushing on crutches/walking stick and banister.
- Follow with the crutch/walking stick onto the same step.

Going downstairs
- Put crutch/walking stick down onto the step below.
- Follow with the operated leg.
- Take weight onto the operated leg using the crutches and banister for support.
- Follow with the un-operated leg onto the same step.

General Recommendations

Sleeping
While in hospital some patients find it harder to sleep for various reasons, e.g. different bed and environment. If you find that you are having this problem please let the nursing staff know as you may require something to help you sleep.

Nausea
Some of the medications you may be prescribed can cause nausea. Please inform the nursing staff if you feel sick or are getting sick. Your medications may need to be changed/adjusted and the nursing staff can also get medication prescribed to help relieve this nausea.

Driving
In order to be safe driving a motor vehicle, you must be in control of the pedals effectively. It is recommended that you not drive a motor vehicle until you have complete control over your leg. This does not normally occur until at least 6 weeks after your surgery. When you feel capable of driving, it is recommended...
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to complete a trial period in an empty car park to accustom yourself to your new knee.

**Travel**

Prolonged periods of sitting on airlines may predispose to leg swelling and deep venous thrombosis, and it is recommended that you avoid this until 6 weeks after your surgery. If you must travel, wear your elasticated stockings and keep your leg elevated as much as possible. Please discuss with your consultant any imminent travel arrangements.

**Activities**

During the first 6 weeks after your surgery, we recommend limiting your activities to walking with support, or when the dressing has been removed, to swimming in the shallow end. We recommend that you refrain from more strenuous activities such as golf and social tennis for a period of 3 months. The following are some of our recommendations:

**Dangerous Activity After Surgery**

- Jogging or running
- Contact sports and high impact aerobics

**Not Recommended After Surgery**

- Vigorous walking or hiking
- Skiing
- Tennis
- Repetitive lifting exceeding 50lbs

**Expected Activity After Surgery**

- Recreational walking
- Golf

**Sexual Activity**

Resumption of sexual activity is possible on discharge. However, care should be taken to avoid excessive force on the knee and the wound should be protected.

**General Safety Advice for Home:**

Please be aware of the hazards in your home as this will make your recovery easier and safer.

- Move electrical cords, phone lines and ensure clear pathways.
- Store items within easy reach specifically in the kitchen and bathroom areas.
- Remove rugs including bath mats and entrance mats.
- Be careful with pets and young children.
- Be aware of water spills, slipper floors and always think before you move.
- Pace yourself and take your time.

**Car Transfers**

Your consultant will tell you when you are allowed to drive again after your operation. When travelling in the car you should sit in the front passenger seat. It is important that you avoid long journeys if possible.

Before getting into the car, make sure you are standing on level ground and not on a curb. Your driver should move the seat back as far as it will go and recline the seat slightly.
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When **getting into the car**, stand with your back to the car and lower yourself down slowly onto the seat, keeping your operated leg slightly out in front of you. Slide back into the centre of the passenger seat allowing your operated leg to come onto the seat with slightly knee bent. Keep leaning backwards, twist your bottom and swing your legs into footwell of the car.

When **getting out of the car**, reverse the above procedure and ensure operated leg is out in front of you before standing up.

**Stockings**

Your consultant may wish for you to go home with elasticated stockings. These can be an important part of preventing the development of deep vein thrombosis (blood clots in the legs). It is recommended to wear these for 6 weeks after surgery.

**Antibiotics**

Following knee replacement surgery there can be a greater risk of developing an infection in the knee with some procedures. Antibiotics to prevent the development of an infection in the knee should be taken when having a bladder catheter inserted, urinary surgery (e.g. prostatectomy) or when having infected teeth removed. Always tell your dentist that you have had a total knee replacement.

**Discharge Instructions**

You will be discharged from hospital 6-7 days after your operation. Some people go straight home, while others require some time in a convalescent home. When you leave the hospital you will be given an appointment to see your consultant, usually around 6 weeks after the operation. This is for a routine check-up which will make sure you are progressing satisfactorily and x-rays will be taken. It is important to still bring your old x-rays with you at this time.

Subsequent appointments may be at 6 months, 1 year, or 2 years after surgery.

You will also be offered outpatient physiotherapy in the hospital and encouraged to attend this 2-3 weeks post discharge to improve your recovery. It is advisable to attend physiotherapy in this hospital as the physiotherapists will have access to all of your medical notes. The physiotherapy team are also in direct contact with your surgeon should a problem arise.

On discharge from hospital, your consultant will prescribe you some medications. One of the medications prescribed will be for pain. Plan to take your pain medication 30 minutes before your exercises. Preventing pain is easier than chasing pain. If pain control continues to be a problem, contact the orthopaedic centre or your general practitioner.

**Wound Care**

You will leave the hospital with a simple surgical wound. Before leaving the hospital your dressing will be changed and the wound site checked. Keep the wound dressing clean and dry for 72 hours. You may then remove the dressing after showering and leave exposed.

Infection may occur despite your very best efforts. If any of the symptoms below occur then you will need to see your GP or liaise with the centre for orthopaedics for advice and possibly antibiotics.

**Signs of Infection**

If you develop any of the following signs of infection, it is important to report them to your doctor. The signs of infection include:

- Redness around the wound site
- Increased pain in the wound
- Swelling around the wound
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• Heat at the wound site
• Discharge of fluid – may be green or yellow
• Odour or smell from the wound
• Feeling of being generally unwell
• Fever or temperature

Most people will have sutures (stitches) that will need to be removed approximately 10-14 days after surgery. This may be done by the GP, Dressing Clinic, consultant or in the convalescence centre.

Nutrition
Aim to follow a well balanced diet which includes protein, fats and carbohydrates. It is important to be well nourished to promote wound healing, so eat well and do not attempt to lose weight at this time.

The following nutrients are particularly important to promote wound healing:
• Protein
• Vitamin A
• Vitamin C
• Iron
• Zinc

• Protein can be found in meat, fish, eggs, milk, cheese, yoghurt, beans and pulses.
• Vitamin A can be found in liver, fortified milk, carrots, turnips, and leafy green vegetables.
• Vitamin C can be found in citrus fruits, potatoes and leafy green vegetables.
• Iron can be found in liver, red meat and leafy green vegetables.

• Zinc can be found in fortified breakfast cereals, red meat and leafy green vegetables.

If you are on a special diet or have any queries, please discuss with your doctor, nurse or dietician.

Conclusion
We hope that you have found this booklet useful and that it has helped to relieve some of your fears and anxieties regarding your surgery.

During your hospital stay, your medical team will be available to discuss anything mentioned in this booklet or to answer any other queries you may have.

We look forward to meeting you soon.
### Individual Patient Notes

Consultant Name:

Date of Surgery:

Surgery Note:

Weight Bearing Status:

Walking Device:

Date for Removal of Sutures (Stitches):

Other Recommendations:

### Exercise Checklist

- [ ] Ankle Pumps
- [ ] Knee Flexion
- [ ] Quadriceps Setting
- [ ] Inner Range Quadriceps
- [ ] Knee Extension
- [ ] Standing Knee Extension
- [ ] Straight Leg Raising
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