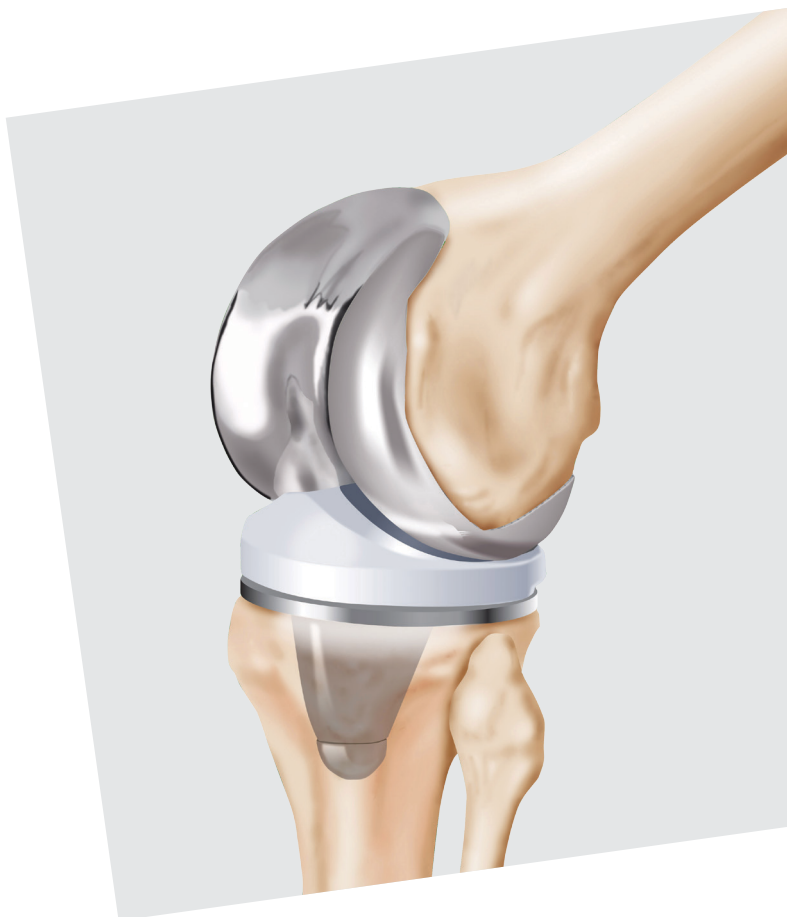


Total Knee Replacement



The Department of Orthopaedics offers specialist medical and surgical treatments on musculoskeletal disorders, joint replacements, foot and ankle disorders, among other trauma injuries. Our consultants and surgeons work closely with sports medicine physicians, physiotherapists, podiatrists and other healthcare professionals to help patients return to their normal activities after surgery.

Contents

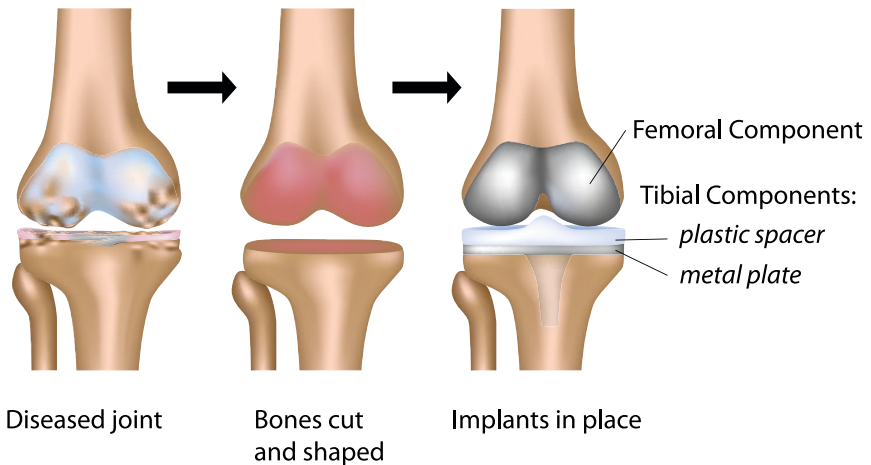
Our Multi-disciplinary Team	3
What is a Knee Replacement?	3-4
Benefits of a Knee Replacement	4
Risks of a Knee Replacement	5
Before Surgery	6
Pre-operative Education and Physiotherapy	6-8
What Can I Expect From a Knee Replacement Surgery?	8
Your Health Matters	9
Your Hospital Stay	9-10
What to Expect After Surgery	11
Continuous Passive Motion	12-14
Throughout Your Hospital Stay	15-24
Occupational Therapy	25
Dos and Don'ts of Daily Activities	25-26
Discharge	27
Preparing Your Home and Identifying a Caregiver	28
At Home	29
Frequently Asked Questions	29-31

Welcome

This booklet was specially written for you, the patient, to address any concerns you may have about a Total Knee Replacement surgery at Ng Teng Fong General Hospital.

It contains information about what you can do before, during and after your surgery so that your surgery is as successful as possible.

Total Knee Replacement



Our Multi-disciplinary Team

It is normal to encounter many hospital staff as you journey towards a knee replacement. A multi-disciplinary team will care for you to make your experience as pleasant as possible as we strive to deliver the highest quality of medical care to you.

The team includes:

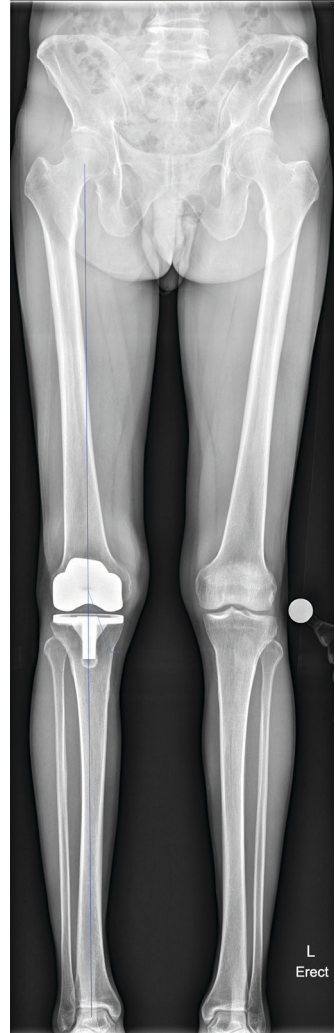
- Orthopaedic doctors
- Anaesthetic doctors
- Nurses
- Physiotherapists
- Occupational Therapists
- Theatre and Recovery staff
- Radiographers
- Pharmacists

What is a Knee Replacement?

A knee replacement is a surgery that is performed to replace the worn surfaces of a joint with an artificial one.

it consists of a femoral (thigh) component and a tibial (shin) component.

The metal thigh component fits over the prepared surface of the thigh bone and is usually secured with bone cement.



The shin component comprises of two parts: a metal base sitting on the shin bone - usually secured with bone cement, and a specialised plastic insert which sits between the shin metal base and thigh component.

The knee cap surface can be replaced at the same time if your surgeon finds it necessary.

Different types of knee implants will be discussed with you during consultations with your surgeon.

Benefits of a Knee Replacement

A knee replacement is normally performed when the joint has been severely worn out and severe pain restricts mobility.

Its main benefit is to relieve pain. The majority of patients experience significant pain reduction and an improvement in function after a knee replacement. Daily knee activities such as walking should become more comfortable and patients report an improvement in their quality of life.

We aim to improve joint stiffness with a knee replacement. The range of movement after the surgery will depend on each individual case.



Risks of a Knee Replacement

The majority of patients recover well after a knee replacement surgery with no significant problems. There are however risks and complications, some of which include:

Blood Clots

- Deep vein thrombosis (DVT) in the leg
- Pulmonary embolism (PE) in the lung

Blood clots can occur after any operation but are more likely to follow after a major orthopaedic lower limb operation.

They can occur in the veins of the legs and cause swelling, pain and increased warmth. If blood clots occur in the lungs, it can be life threatening (rare). Typical symptoms include shortness of breath, chest pain, and blood in the phlegm. If in doubt, please do not hesitate to seek the advice of your doctor.

To minimise the risk of blood clots, we encourage early mobilisation of patients after surgery, often on the same day of surgery or the day after. This helps to maintain blood circulation in the legs.

Patients may be given elasticated stockings, compression calf pumps or medications to reduce the risk of blood clots.

Please inform your doctor of any history of blood clots before the surgery.

Please inform your doctor of any past history of blood clots before surgery.

Joint Infection

To reduce the risk of joint infection, surgery is carried out under strict sterile conditions with antibiotics being administered intravenously. **Any allergy to known antibiotics or other medications should be brought to the attention of your surgeon and anaesthetist.**

Despite these measures, there is still be a small risk of joint infection. Superficial infections are treated with antibiotics and surgery if required. If the infection is deep and causes serious complications, further surgeries may be performed.

Nerve and Vascular Injury

It is normal to feel some numbness around the surgery site after surgery. This may persist but will not usually cause serious problems.

In rare cases, the larger nerves may be damaged during surgery and lead to weakness, altered sensation and pain in the lower limb. Major vascular injury is a rare risk.

Fracture

After a knee replacement surgery, X-rays will be performed to check for any complications. Periprosthetic fractures are uncommon complications and may require further surgery.

Revision (Re-do) Surgery

There can be many reasons for a revision surgery. Your surgeon will discuss these with you in detail.



Persistent pain

Knee replacement surgery is very successful in treating painful knee arthritis. However, some patients still experience residual discomfort despite a successful surgery. Such discomfort will not affect day-to-day functions but in some cases pain, swelling, skin changes and stiffness (uncommon), may occur.

Stiffness

Most patients will gain motion in their new knee joint after surgery. Patients are encouraged to mobilise early and perform the exercises customised by their physiotherapist to maximise their chances of an excellent range of motion.

Medical problems

You will be assessed thoroughly by our doctors before surgery and any risks will be explained to you in detail by the anaesthetist and surgeon. Risks include heart attacks, strokes and lung problems such as pneumonia. Rarely are they life threatening.

Before Surgery

At the Orthopaedic Clinic

Your surgeon and you have decided that a knee replacement is suitable for you. The indications and risks of the surgery will be discussed with you. Your written consent will be taken.

You will be referred to a Pre-operative Assessment Clinic for pre-operative education and physiotherapy before surgery.

At the Pre-operative Assessment Clinic

Here, your fitness for the surgery is assessed by the Anaesthetic team. Blood tests, chest X-rays and electrocardiogram (ECG) heart tracings will be arranged here.

Occasionally, further tests will be required depending on the state of your health.

Pre-operative Education and Physiotherapy

Before the date of your surgery, you will meet with a physiotherapist who will demonstrate exercises that you can do to prepare yourself for recovery.

He/she will also share with you how physiotherapists can help you achieve your recovery goals.

For example, he/she may check if you have a caregiver at home to care for you after discharge, the hobbies you would like to return to, etc.

What Can I Expect From a Knee Replacement Surgery?

A knee replacement surgery is very successful in most patients. As with any surgery there are risks of complications that may affect a small group of patients.

To perform the surgery, a 15-20cm incision will be made down the front of the knee.

Most patients report significant improvement in their knee function and reduction in pain 3 to 6 months after surgery.

Your Health Matters

Eating healthily before and after surgery can aid in healing and recovery. Maintain a healthy body weight to lower your risk of complications and stress on the arthritic joint.

Stop smoking before surgery. People who smoke are at higher risk of developing complications during and after surgery.

Stay active. Do the exercises taught to you by your physiotherapist to maintain muscle strength and joint flexibility which will aid in your recovery.

If you develop a cold or experience changes in your health closer to the date of your surgery, please do not hesitate to contact the orthopaedic team to reschedule it.

Your Hospital Stay

Day of admission and duration of hospital stay

Please arrive on time for your surgery.

Your vital signs such as heart rate, blood pressure, body temperature and oxygen saturation will be measured. The anaesthetic team and a member of the orthopaedic team will discuss the proposed anaesthetic and surgery with you. You will have the opportunity to discuss with your anaesthesiologist on the type of anaesthesia best suited for you and clarify any concerns you have.

The anaesthetic

A spinal anaesthetic with light sedation or a general anaesthetic is used for a knee replacement surgery.

Spinal anaesthetic involves a small injection of local anaesthetic between the bones of the lower part of the back around the nerves of your spinal cord. This causes a temporary numbness and heaviness from the waist down and allows surgery to proceed without pain. Light sedation can be used in combination to reduce your awareness of theatre activity during surgery.

With general anaesthesia you are unconscious during surgery and your breathing is assisted or controlled. A breathing tube is placed in your airway (mouth/throat) and removed after surgery.

In some cases, a nerve block (an injection of local anaesthetic near the nerves around the knee) is used to provide further pain relief.

Surgery and recovery

A knee replacement surgery takes between 2 to 3 hours to perform. After surgery, you will be monitored in the recovery ward before being transferred to an inpatient ward.

Your hospital stay will last between 4 to 5 days, including the day of surgery.

Pain relief

You will be given regular pain relief by nurses in the form of tablets and/or injections.

You may be given patient controlled analgesia (PCA) and taught to administer pain relief to yourself based on your pain level.

In PCA, the dosage of pain relief can be adjusted and it is administered with the push of a button. Do let your nurses and doctors know how well your pain is being controlled.



Physiotherapy

Undergoing physiotherapy after a total knee replacement is very important. It can help to:

- Reduce pain and swelling.
- Improve your range of motion (i.e. how much you can bend and straighten your knee).
- Improve the strength of important muscles around your knee joint.
- Maximise your function (e.g. getting out of a chair, walking, taking the stairs).
- Improve your balance to reduce risks of falls.



What to Expect After Surgery

A physiotherapist will attend to you after surgery to:

- Teach/help you to move around your bed/chair.
- Check on your chest and teach you deep breathing exercises.
- Advise you on the type of exercises that are suitable for your knee.
- Ensure that you walk safely with an appropriate walking aid as needed.
- Provide you with an ice pack to reduce any pain and swelling (optional).

Continuous Passive Motion

In addition to your exercises, you may require a Continuous Passive Motion machine under your knee (see image below) to prevent your knee from becoming stiff, tight or uncomfortable. The machine passively moves your leg within a range that is comfortable for you. Once fitted, a nursing staff may also help you to use it while you are resting in bed.



Transferring In and Out of Bed

If possible, sit on the side of the bed that allows you to move your unaffected leg up first.

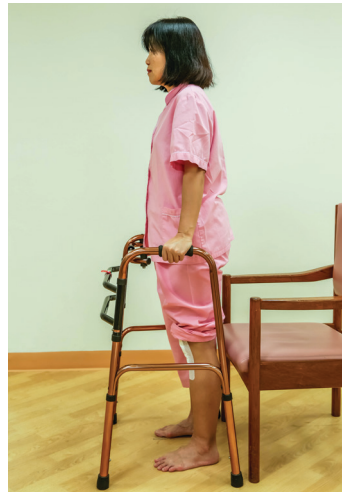


Transferring On and Off a Chair



To Sit

- Feel for the chair at the back of your knees.
- Put your affected leg out in front of you.
- Use your hands to feel for the chair.
- Sit down slowly.



To Stand

- While sitting, place your affected leg out in front of you with your foot resting on the floor.
- Push off the chair with your hands.
- You may use a walking aid to help you initially.

Things to note:

- Never pull/push on your walking aid when you stand or sit down.
- In the first 6 weeks, **DO NOT** sit for long periods of time.
- You may use a pillow under your heel to reduce any swelling and straighten out your leg. Do not sleep with a pillow under a bent knee.
- Always sit on a firm chair with good back support.
- Do not sit on a low chair.
- Sit with feet and arms supported.

Physiotherapy Exercises

- It is important to start moving early to facilitate recovery.
- Do the exercises slowly and rest when you need to. It is normal for your muscles to feel weak and tired after surgery but they should become stronger with regular practice of the exercise prescribed to you. Please comply with your physiotherapist's instructions.
- Gradually, your physiotherapist will modify your exercises when your strength, knee movement and mobility improves.
- Try to change your position as frequently as possible when sitting out of bed.
- Wear your calf pumps and elevate your leg to reduce swelling.
- Ensure that there is somebody to assist you when you need to complete the standing exercises.
- If you are unsure about anything please check with your physiotherapist.

Your physiotherapist will demonstrate exercises which you can do in the hospital. Try to do these at least 3 times a day.

Throughout Your Hospital Stay

(To prevent chest and circulation complications)

Deep Breathing Exercise

Breathe in through your nose and out through your mouth slowly.

You may be advised to purchase an Incentive Spirometer to help with your breathing.

How to Use the Incentive Spirometer:

1. Place the mouthpiece in your mouth like a straw.
2. Inhale slowly through the mouthpiece as deeply as possible, allowing the air to fill the bottom of your lungs and hold for 3 seconds.
3. Exhale through your nose.

 Repeat x10/ hour



Ankle Pumps

Move your ankle joint up and down.

 Repeat x10/ hour



Day One: You will be assisted to start mobilising and sitting out of bed. Early mobilisation can help to prevent blood clots in your legs, prevent muscle weakness and deconditioning to facilitate your early return to a normal function. You will need to use a walking aid when you stand or walk.

Heel Slides

Lie with your knees straight. Slide your heel slowly towards your buttock and slowly straighten out again. You may use a towel to help you.

 Repeat x10, 3 times a day



Straight Leg Raise

Lie with your knees straight. Raise one leg while maintaining the straight knee. Hold for 5 -10 seconds before lowering them down slowly.

 Repeat x10, 3 times a day



Hip Abduction

Lie with your knees straight. Gently bring your leg out to the side and back.

 Repeat x10, 3 times a day



Static Gluteals

Lie with your knees straight. Squeeze your buttock muscles together. Hold for 5-10 secs and relax.

 Repeat x10, 3 times a day



Static Quadriceps

Lie with your knees straight. Squeeze the muscles in the front of your thigh to press the knee down on the bed. Hold for 5-10 secs and relax. Place a towel under your heel to progress the straightening movement.

 Repeat x10, 3 times a day



Inner Range Quadriceps Exercise

Place a rolled towel/pillow under your knee. Gently try to lift your heel off the bed. Hold for 5-10 secs and gently lower.

 Repeat x10, 3 times a day



Your physiotherapist will gradually progress your exercises as your strength, knee joint range and mobility improves. When you are able to stand safely and comfortably either by yourself or with the support prescribed, your physiotherapist will teach you more exercises that can be done standing up.

Ensure that you always have someone to assist you to complete this set of exercises

Day 2 onwards: You will be assisted and taught how to increase your ambulation distance and progress in your exercises.

Self-Assisted Knee Flexion in Sitting

Sit in a chair and use your good leg to push the affected leg backwards into a bent position. Push as far as you can tolerate. Hold for 5-10 secs.

 Repeat x10, 3 times a day



Hip Flexion in Sitting

Sit in a chair. Bend your knee as high as possible towards the chest. Hold for 5-10 secs and gently lower down.

 Repeat x10, 3 times a day



Knee Extension in Sitting

Sit in a chair. Straighten your knee. Hold for 5-10 secs and gently lower.

 Repeat x10, 3 times a day



Sit to stand

Ensure that your walking aid is in front of you. Sit at the front of the chair. Use your arms and unaffected leg to push yourself up into a standing position.

Put your operated leg out in front of you as you sit down if it gets painful. Press your arms on the chair arms for control.

 Repeat x5, 3 times a day



Marching on the spot

Hold on to a railing/chair for stability and stand with your feet apart. Keep your back straight and lift your leg up. Hold for 5-10 secs and alternate legs.

 Repeat x10, 3 times a day



Hip Abduction in Standing

Hold on to a railing/chair for stability. Move your leg to the side and keep the knee straight and toes facing forward. Hold for 5-10 seconds and lower.

 Repeat x10, do 2 sets



Hip Extension

Hold on to a railing/chair for stability. Move your leg backwards and keep your body straight and toes facing forward. Hold for 5-10 seconds and lower.

 Repeat x10, do 2 sets



Occupational Therapy

After a knee replacement surgery, an Occupational Therapist will work with you to develop your capacity for day-to-day tasks that are essential for self-care, daily living, leisure and work. Through carefully designed activities and appropriate lifestyle modifications, you will be taught how to cope with activities of daily living confidently.

Dos and Don'ts of Daily Activities

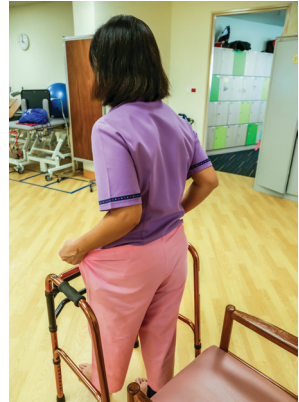
Dressing yourself



- 1 Take a seat.
Insert your operated leg in first.



- 2 Pull your pants up your thigh.
Stand up with your operated leg slightly forward.



- 3 Steady yourself before pulling your pants up.

Toileting



Clean yourself in sitting position

Use the grab bars by the side or aids prescribed to you as you lower or push yourself up slowly

Use a seated toilet

Place the operated leg slightly forward

Showering



Keep items within reach

Dress yourself outside the toilet if it is too wet

Place the shower chair against the wall, or alternatively sit on the toilet bowl to shower

Wrap your wound dressing with a clean plastic sheet as shown

Car transfer



- 1 Take the front seat.
Stand close to the car seat.
Rest your backside against the car seat.



- 2 Reach for stable areas.
Place your operated leg slightly forward.
Sit down or get up slowly.



- 3 Turn yourself into the car.
Hold the operated leg and gently lift the leg into the car if not possible.

Discharge

Before discharge, we will assess if:

- You are able to lift your leg up in the air.
- You can straighten your knee fully and bend it at $\geq 90^\circ$. This will help you return to normal daily activities and functions.
- You are able to mobilise with the help of a walking aid.

Preparing Your Home and Identifying a Caregiver

A safe home environment is necessary for recovery after surgery.

- Rearrange/remove furniture to ensure a clear and wide enough path (about 80cm) to accommodate a walking frame.
- Keep floor surfaces dry and use non-slip mats where necessary.
- Tie loose electrical cables and cords to avoid tripping over them.
- Ensure your home is well-lit and use night lights between your bedroom and bathroom.
- Check that you can get up easily from the toilet seat (do not use a squatting toilet) and your chair/bed has an arm rest.
- Inform the physiotherapy and occupational therapy teams if you need to use any stairs at home.
- We strongly encourage you to identify a caregiver to assist you with activities, household chores or showering, for the first 2 weeks after surgery.



Chair



Bedroom



Toilet



Stairs

At Home

Follow-up and wound care

A follow-up appointment will be arranged for you at the Orthopaedic clinic 2 weeks after surgery. The stitches or staples used at surgery will be removed. If absorbable stitches were used, they will not need to be removed.

Do not allow water to come in direct contact with your wound until 2 weeks after surgery and after your doctor's review. Do not scratch or pick at your wound. If there is a large amount of fluid draining from the wound and your dressing soaks through despite repeated changes, please inform the Orthopaedic team to request for an earlier review.

Post discharge rehabilitation

You will be advised for further physiotherapy rehabilitation services depending on your needs. It is important to attend all follow-up sessions to maximise recovery and prevent further pain and stiffness in your knee.

Frequently Asked Questions

How long will I be in hospital?

You should be discharged 4 to 5 days after surgery. This will include the day of your surgery.

How long will surgery take?

Surgery takes about 2 to 3 hours from the time you enter the operating room to the time you are moved to the Post Anaesthetic Care Unit (PACU) recovery ward. Depending on your recovery, it may be a couple more hours before you are moved to an inpatient ward.

What should I do if I am not feeling well before surgery?

Please inform our hospital.

Will I experience pain after surgery?

Analgesia (painkillers) will be prescribed to help you cope with normal post-operative pain and swelling. This will subside as you progress with rehabilitation exercises taught to you by your physiotherapist and occupational therapist. On the day of discharge, you will be given oral analgesics to take as required at home.

Most patients experience less pain and swelling between 6 weeks to 3 months after their surgery. Function and pain relief from their knee replacement continues to improve for up to 1-2 years following the surgery.

How much weight can I put on the operated leg after surgery?

For routine knee replacements, you are allowed to bear your full weight on the operated knee after surgery.

When can I bathe and shower?

You may bathe and shower once the stitches/staples are removed, usually 2 weeks after surgery and if your doctor is satisfied with the healing of your wound.

In the meantime, avoid getting the wound wet and take a sponge bath instead. You may find a bath chair useful. Be careful of wet and slippery surfaces. Take special care when you get in and out of the shower as your knee muscle strength and coordination may not have fully recovered.

Will I be able to kneel after a knee replacement surgery?

Do not kneel on the operated knee until 6 weeks after your surgery. This is to ensure your wound has healed fully.

You may feel some discomfort when you kneel after a knee replacement. This could be due to the pressure on the scar. Your new knee joint will not be harmed by kneeling.

Always check the ground before kneeling as you may still experience some numbness around the skin and could kneel on sharp objects without realising.

When can I go back to work?

Most patients can resume light deskbound work 6 weeks after a successful surgery. For work that require heavier duties, you may need 3 to 6 months more to fully recover.

When can I return to driving?

You are allowed to drive after a minimum of 6 weeks after surgery. You must demonstrate the ability to manage full control of the car including the ability to emergency brake before returning to the roads.

When should I call my doctor after discharge?

- You develop a fever (over 38°C)
- Your knee is suddenly very painful
- You experience pain in your calf or chest
- Your operation cut gets red, swollen or is draining



Notes:

Notes:

For more information

Ng Teng Fong General Hospital and Jurong Community Hospital

1 Jurong East St 21, Singapore 609606

www.ntfgh.com.sg | www.jch.com.sg

Clinic opening hours

Monday – Friday: 8.30am – 5.30pm

Saturday: 8.30am – 12.30pm (Selected clinics only*)

Dental Clinic: Monday – Thursday: 8.00am – 5.30pm, Friday: 8.00am – 5.00pm

*Please refer to our websites for more details.

General enquiries & appointments

General enquiries line: 6908 2222 (24-hr)

Fax: 6716 5500 | Email: contactus@nuhs.edu.sg

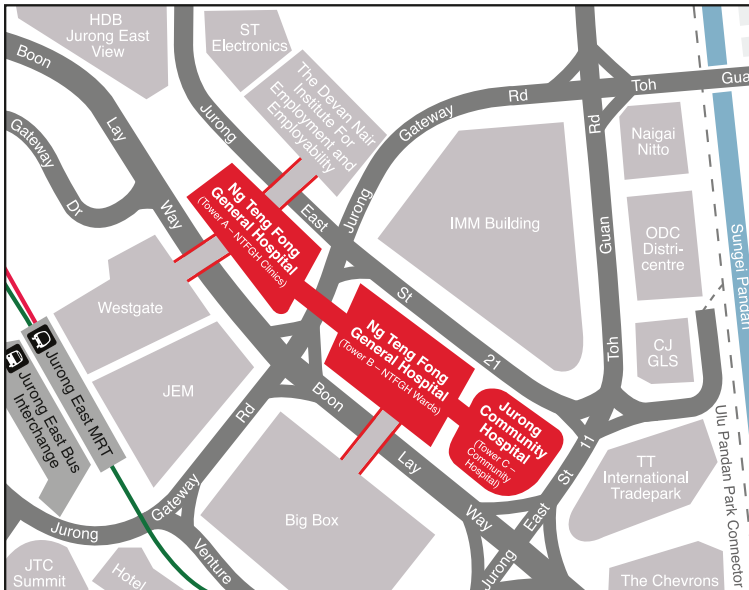
Appointment line: 6908 2222 (Monday – Friday: 8.00am – 5.30pm, Saturday: 8.00am – 12.30pm)

Fax: 6716 2200 | Email: appointment@nuhs.edu.sg

Dental appointment line: 6716 2233 (Monday – Friday: 8.00am – 5.30pm)

Fax: 6716 2200 | Email: JHCampus_Dental@nuhs.edu.sg

Getting there



By train

Alight at Jurong East MRT Station

By bus

Jurong East Bus Interchange

41, 49, 51, 52, 66, 66B, 78, 78A, 79, 79A, 97, 97E, 98, 98M, 105, 143, 143M, 160, 160A, 160M, 183, 183B, 197, 333, 334, 335, 506

Along Boon Lay Way

49, 99, 333, Private bus service 625, 990

Disclaimer:

The information in this brochure is meant for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please seek your doctor's advice before starting any treatment or if you have any questions related to your health, physical fitness or medical condition. Information is accurate at the time of printing.