The Robert Jones and Agnes Hunt Orthopaedic Hospital
NHS Foundation Trust

Information for patients
Knee Replacement Surgery

Arthroplasty

Welcome to the Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust.

This booklet has been developed by the Consultant Orthopaedic Surgeons, Nurses, Physiotherapists and Occupational Therapists working in this hospital, as well as people who have had knee replacement surgery.

It will provide you with sufficient information to enable you to make informed decisions about

- Your operation
- The care that you receive during your stay with us
- Your recovery at home.

Please keep this booklet in a safe place and use it as a guide to help answer any questions or concerns that you may have regarding your operation and aftercare.

If you do not understand any part of this booklet or have any further questions or comments about your operation or recovery write them down.

Please bring them with you to your next appointment when they will be discussed.

Logbook

Hospital number .....

Your knee replacement is a .....

Inserted on ..... / ..... / .....

Consultant .....

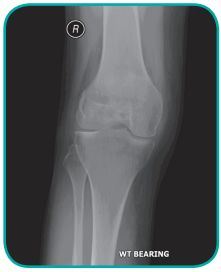
SECTION ONE - KNEE REPLACEMENT SURGERY

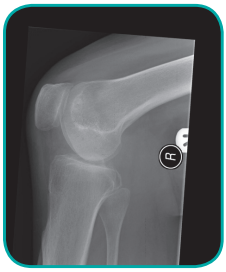
SECTION TWO - HOW TO PREPARE FOR YOUR KNEE REPLACEMENT

SECTION THREE - YOUR HOSPITAL STAY

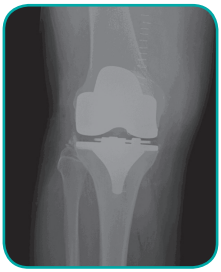
SECTION FOUR - YOUR REHABILITATION

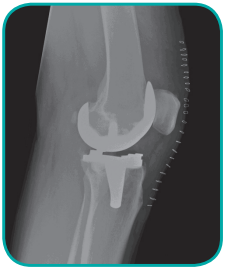
SECTION 1
KNEE REPLACEMENT SURGERY



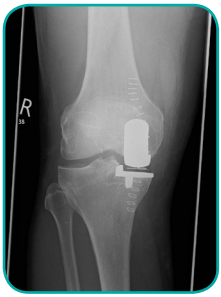


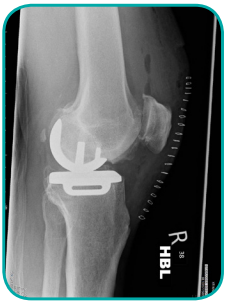
Osteoarthritis



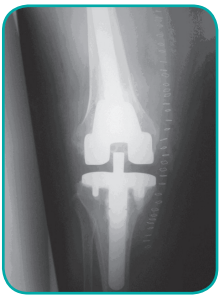


Primary Total Knee Replacement
Front And Side Views

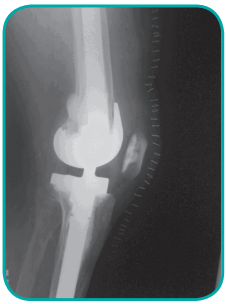




Unicompartmental Knee Replacement
Front And Side Views



Revision Total Knee
Replacement
Front View



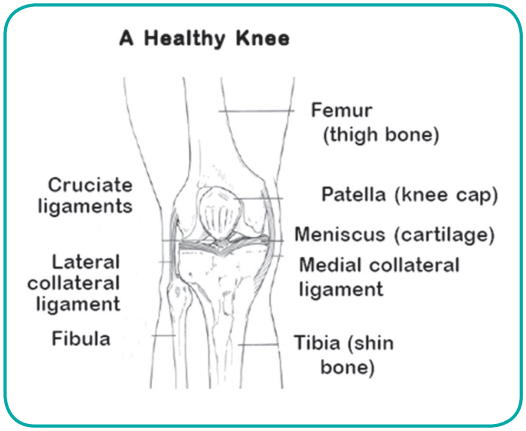
Revision Total Knee
Replacement
Side View

The Knee

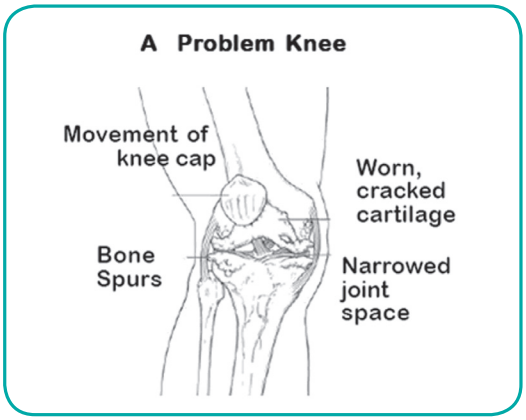
The knee is a hinge joint where the end of the thigh bone (femur) connects with your lower leg bone (tibia).

A healthy knee has smooth cartilage that covers the ends of both these bones (the femur and the tibia). This cartilage allows the bones to glide smoothly together when you bend your knee.

The knee joint is surrounded by muscles which provide movement and ligaments which provide both strength as well as support for your knee, allowing your knee to work smoothly.



You and Your Knee Replacement



When is a Knee Replacement Recommended?

You are considered for knee replacement if you have arthritis in your knee and

- You have significant persistent pain during the day
- Your activities of daily living are severely restricted
- Pain from your knee regularly disturbs your sleep
- Your symptoms are not relieved by conservative or alternative treatments.

Conservative / Alternative Treatments include (Ref 1)

- The use of analgesics (painkillers)
- Weight reduction (if appropriate)
- The use of walking aids e.g. Walking stick, crutches, walking frame
- Exercise
- TENS (Trans Cutaneous Electrical Nerve Stimulation)
- Food supplements such as Glucosamine and Chondroitin
- Cod liver oil.

Knee pain and stiffness (Ref 2) often occurs as a result of

Diseases or conditions that involve the knee joint, the soft tissues and bones surrounding the knee or nerves that supply sensation to the knee such as:

- Osteoarthritis (the breaking down of the cushion of cartilage in your joints, mostly due to wear and tear) resulting in your knee bones rubbing together causing pain
- Rheumatoid arthritis (RA) a painful progressive autoimmune disease
- Immune diseases
- Chondromalacia
- Tendon or ligament damage
- Bursitis
- Infection
- Following injury to your knee
- Gout.

Knee replacement

Knee replacement is the replacement of all or part of the weight bearing surfaces of the knee joint to relieve the pain and disability of arthritis / deformity in your knee. This can be either:

- A total knee replacement or
- A partial knee replacement (ref 3) known as a unicompartmental knee replacement.

This is only suitable if arthritis only affects one side of your knee. The advantages of partial knee replacement compared with total knee replacement include:

- A smaller scar
- Marginally quicker recovery
- Marginally reduced post-operative pain
- Reduced blood loss
- Possibly a shorter length of stay in hospital

The disadvantages of partial knee replacement include the potential need for more surgery in the future if osteoarthritis progresses to the other compartments of your knee.

The implants are made of either

- Metal femoral and tibial parts with a polyethylene (plastic) fillet that fits on the tibial plate (a metal on plastic bearing)

Or

- A metal femoral component and a polyethylene (plastic) tibial component (a metal on plastic bearing)

- Reduced blood loss
- Possible - shorter length of stay, in hospital
  The disadvantages of partial knee replacement is that you are more likely to need your knee revised.

If the patella (knee cap) is resurfaced a polyethelyne plastic button is used.
Please note it is not always necessary to resurface your patella (knee cap).

All bearing surfaces develop wear debris (particles).
This can lead to bone loss and the need for revision knee replacement (Pages 17-18)

In order to get the most benefit and best results from your surgery it is important that you:

- Take an active part in your rehabilitation
- Follow the advice of your health care team

Risks of Knee Replacement

Please remember that all operations, no matter how small, carry both risks and benefits. The serious or frequently occurring risks include:

Delayed wound healing (Ref 4)

Many factors can delay wound healing. Some of the main causes are

- Obesity
- Poor circulation
- Poor nutrition / malnutrition
- Drug therapy e.g. anti inflammatory drugs / steroids / blood thinning drugs
- Allergic reaction
- Age
- Stress
- Local or systemic infection
- Hydration
- Temperature
- Skin preparations / wound care
- Malignancy
- Smoking
- Duration of surgery / wound closure.

Bleeding

You are at increased risk of major bleeding if you have any of the following:

- Active bleeding
- Acquired bleeding disorders (such as liver failure)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as Warfarin with an INR more than 2)
- Have had a lumbar puncture / epidural / spinal anaesthesia within the last 4 hours or expected within the next 12 hours
- Acute stroke
- Thrombocytopenia (with a platelet count less than 75)
- Uncontrolled systolic hypertension (high blood pressure) with readings of 230/120 or more
- Untreated inherited bleeding disorders (such as haemophilia or Von Willebrand's disease).

Haematoma

A Haematoma is a collection of blood outside the blood vessel. In many cases this sac of blood will slowly dissolve. Occasionally however it may be necessary to surgically remove it.

In some cases this may leak (discharge) through a small hole in your wound. If this happens, the blood stained ooze should dry up after a couple of days.

This may lead to delayed healing of the wound which increases the risk of developing a wound infection.

If this discharge continues for longer than this please contact either the ward you were on while you were in hospital or Your GP.

Blood Clots: DVT/PE (Ref 5)

All patients having lower limb (leg) surgery have a high risk of developing venous thromboembolism (VTE, blood clots in either the legs or the lungs) commonly known as either

- A deep vein thrombosis (DVT), this can be either above or below the knee
- Pulmonary embolus (PE), a blockage of the main artery of the lung or one of its branches.

The risk varies according to your individual circumstances.

The National Institute for Health and Clinical Excellence (NICE) have established that there is an increased risk of developing a DVT or PE after knee replacement surgery, if no preventative measures are used.

According to the NICE guidance your risk of developing a DVT / PE is further increased if you:

- Have active cancer or are having treatment for cancer
- Are over 60 years of age
- Critical care admission
- Become dehydrated (a lack of water in your body)
- Have known thrombophilias, coagulation (blood clotting) problems.
- Are overweight (obese) with a body mass index higher than 30
- Have one or more significant medical comorbidities such as heart disease, metabolic (the build up and break down of substances within the body), endocrine (glands e.g. thyroid) or respiratory (lung) diseases; acute infectious diseases; inflammatory conditions e.g. Crohn's disease or ulcerative colitis
- Have either a personal or family history of VTE
- Use hormonal replacement therapy HRT
- Are taking oestrogen-containing contraceptive therapies
- Have varicose veins associated with phlebitis (inflammation of the wall of a vein)
- Are pregnant or have delivered your baby within the last 6 weeks
- Are immobile e.g. through paralysis or you have a limb in plaster

Prevention (prophylaxis)

These guidelines aim to minimise the risks of developing a VTE, they include the use of

Pharmacological (tablets / injections) for 10-14 days such as
- Warfarin
- Other tablets / injections

The NICE guidelines above recommend the combined use of a mechanical device and pharmacological tablets / injections as mentioned above.

Mechanical devices such as
- Anti-embolism stockings either above or below knee (Ref 6) or
- Intermittent Pneumatic Compression (IPC) Devices (around your legs or feet) to help maintain the circulation of blood in your legs.

At this hospital we usually use the foot compression devices.

No single method of prevention is perfect. Pharmacological methods of prevention carry risks including those of a Major bleeding event that can result in one or more of the following
- Anaemia (a decrease in haemoglobin concentration in your blood) which could result in the need for blood transfusion
- Bleeding into the retroperitoneal (abdominal), intracranial (inside your skull) or intraocular (inside your eye) spaces
- A serious or life-threatening event
- A surgical or medical intervention
- Renal failure
- Significantly reduced mobility e.g. bed bound, unable to walk unaided or likely to spend a substantial proportion of the day in bed or in a chair
- Death.

There are no guaranteed ways of preventing the development of a DVT / PE.

Our experience indicates that, at this hospital, there has been a significant drop in PE rates since the introduction of

- Early mobilisation
- Foot compression devices.

Please discuss with your Consultant which of the above preventative measures are most appropriate for you.

It is very important that you drink fluids regularly throughout the day, and for several weeks after your operation. This reduces the risk of dehydration.

Dehydration increases the risk of developing both a DVT / PE and /or constipation.

Remember it is important to continue with the preventative measures most appropriate for you on your return home and for at least 10 - 14 days after your operation or in accordance with your Consultant's wishes.

The risks of not continuing with these measures are as above for **DVT/PE**.

Signs of DVT (Ref 23)

If a clot (**DVT**) develops in the deep veins of your leg, your leg may become

- Swelling usually in one leg
- Leg pain or tenderness
- Red or blush skin discolouration, especially at the back of leg below the knee.

In some cases there may be no signs or symptoms of DVT.

If you develop a DVT you will be commenced on Warfarin tablets, usually for a period of three months.
It is safe to stop Warfarin completely when directed to do so by your GP / Haematologist / Consultant, and in accordance with the manufacturer's instructions.

Signs of PE include (Ref 24)

- Unexplained shortness of breath
- Breathing difficulties
- Chest pain
- Coughing up blood
- Irregular heart beat

If this occurs after your discharge from hospital please attend your local accident and emergency department.

If this occurs after your discharge from hospital please attend your local accident and emergency department.

If you become suddenly breathless, or have sharp pains when breathing Dial 999 if the breathlessness is severe.

A clot in your lung (PE) may have developed.This can be fatal and requires immediate attention. The risk of death caused by a PE, although small, is possible for several months following knee replacement surgery. This is a very rare complication.

Blood clots that develop in the superficial veins in the legs can cause inflammation in the affected veins, this is called phlebitis. Clots in superficial veins are much less serious.

Infection (Ref 8 and 4)

Is a possibility with any type of surgery.
There is a chance of infection occurring in either:

- The superficial skin or tissues around the incision (known as a superficial wound infection) or
- The deep soft tissues surrounding your knee replacement (known as a deep wound infection).

Surgical Site Infection data for The Robert Jones and Agnes Hunt Hospital shows the rate of all surgical site infections following total knee replacement for the twelve month period from January to December 2015 to be 0.7% compared with the national average of 1.1% (Ref 9).

This could happen at the time of surgery, or later in life following spread through the blood stream from another source of infection.

It is a wise precaution to inform your doctor, dentist, or hospital that you have had a knee replacement when you visit them for treatment.

In some circumstances, you may be required to take a short course of antibiotics to prevent an infection.

Your risks of such an infection occurring are increased if you suffer with:

- Diabetes
- Rheumatoid arthritis
- Psoriasis or other skin conditions
- Leg ulcers
- Decayed teeth
- You are overweight
- You are having revision knee replacement surgery
- You have other inflammatory conditions.

If the artificial joint becomes infected it will probably need to be removed and replaced again at a later operation, after the infection has cleared. This may mean that you are in hospital for at least two weeks for treatment with intravenous (IV) antibiotics.

Fracture (break) in the bone

There is a chance of a fracture occurring in your bone during knee replacement surgery. If this occurs it may lengthen your recovery period.

Dislocation (Ref 10 & 11)

Instability of the knee is the main reason for dislocation following knee replacement surgery.

This is a rare complication.

You should follow the instructions given to you by your Consultant surgeon and the rest of the team to minimise the risk of dislocation.

Nerve, Artery, Tendon or Ligament Damage (Ref 12)

There is a chance of damage occurring to nerves, blood vessels, tendons (the tough tissue that attaches muscles to bone) or ligaments on and around the bone and soft tissues surrounding the knee during the operation.

This is rare, however should it occur this can include

Damage to the nerves of the knee (Ref 13)

Damage to nerves can occur following knee replacement surgery. Nerves carry signals from the brain to the muscles to move the knee as well as signals back from the muscles to the brain about pain, pressure and temperature.

Should nerve damage occur this can

- Result in a foot drop, this means that your big toe would be pointing forwards (like a ballet dancer) and you would be unable to pull your toe to an upright position. This would not stop you from walking; you may however need to wear a splint to support your foot
- Pain and altered sensation can be an associated with a foot drop
- A foot drop may take several months to get better
- Sometimes the damage to the nerve is permanent
- This is a rare complication, but if you have a foot drop of those affected approximately 5 % (5 in100) will never recover from this.

Most patients have some numbness around their wound, this may be permanent.

Damage to an artery depending on which artery has been affected and how much the blood supply is reduced can lead to

- A reduction in the blood supply to the affected limb which can cause cramping pain in the calf of your leg (claudication)
- Numbness or tingling in your in the foot or toes
- Changes in the colour of the skin e.g. paleness, bluish tinge or redness
- Changes in the temperature of the skin e.g. coolness
- Breakdown of the skin, this makes it more difficult for infection and sores to heal.

Damage to Tendon or Ligament

- Which may cause tendon / ligament inflammation.

Compartment syndrome (Ref 14)

Layers of tissue separate the groups of muscles in your legs forming compartments. This tissue, known as fascia, does not expand.

These compartments include the muscle tissue, nerves and blood vessels in your legs.

Compartment syndrome is the swelling and increased pressure within a muscle compartment. The signs of compartment syndrome are:

- Swelling of the leg
- Decreased sensation (feeling)
- Pale and shiny skin
- Severe pain that gets worse especially when moving your leg
- Weakness.

If the pressure within a compartment becomes high enough the blood flow to that compartment will be blocked. This can lead to

- Permanent injury to the muscles and nerves - if diagnosis and treatment are delayed
- In more severe cases death of the muscles of the affected leg
- Amputation of the leg.

The treatment for compartment syndrome is to release the pressure by surgically opening the affected compartments.

The wounds will be closed after a few days when the pressure in the affected compartments has reduced. Skin grafts may be required when closing the wounds.

This is a rare but serious risk

Early diagnosis and treatment are essential for the recovery of the muscles, nerves and long term function

If this occurs after your discharge from hospital inform this hospital urgently. Please contact the ward you were on when you were in hospital

Early Loosening (Ref 15)

This is defined as loosening that occurs less than 10 years after your operation.

This is when the solid fixation of the knee implants to your bones begins to fail

The commonest cause of knee replacement failure is aseptic loosening (loosening where there is no infection).

Other causes of early loosening are:

- Infection
- Inflammatory conditions e.g. Rheumatoid arthritis / psoriasis
- Lack of stability or recurrent dislocation
- Fracture (break) of the bones around your knee replacement
- High impact activities / level of activity
- Obesity - his increases pressure on your knee replacement
- Mechanical failure of the implants e.g. breakage
- Wear debris e.g metal ions (particles)

In approximately 10% (10 in 100) of cases the artificial knee becomes loose or wears for various reasons.

If this happens, the operation may need to be redone, this is called a revision total knee replacement (see pages 17 - 18)

Pain syndrome (Ref 16)

Complex regional pain syndrome causes burning, pain and abnormal sensation in the skin or mucous membranes.

The cause is not fully understood however it is thought that a variety of immune processes may contribute to its development.

It affects both men and women with women being three times more likely to become affected.

Stiffness (Ref 12)

Following knee replacement surgery tough scar tissue can form around a knee replacement. Scar tissue is not as flexible as normal healthy tissue and can cause joint stiffness.

Amputation (Ref 17 & 18)

Complications such as:

- Severely impaired blood supply
- Arterial damage
- Overwhelming infection.

Rarely may lead to amputation of the leg above the knee.

Death

Can occur as a result of a pulmonary embolism (PE) or other pre-existing medical complications not related to the knee.

It is important to take all these risks into consideration before agreeing to undergo surgery. If you are worried about your own level of risk please discuss your concerns with your Consultant or a member of his team.

Reducing the Risks

We are constantly striving to minimise the risks of knee surgery while you are in hospital by taking the following precautions:

- Your attendance at pre-operative assessment clinic before admission, to establish your fitness for both having an anaesthetic and surgery
- Investigating and treating problems identified at preoperative assessment clinic before your admission
- Careful insertion of the artificial knee
- Giving antibiotics to prevent infection at the time of surgery
- The use of mechanical foot pumps
- Getting you up and walking early (mobilisation)
- Occasionally using medication to thin the blood to prevent blood clots (where appropriate)
- Minimising dehydration
- Avoid sitting with your legs crossed for six weeks after your operation
- When lying in bed do not put a pillow underneath your knee, this can result in a permanently bent knee.

Benefits of Knee Replacement

Pain Relief

- The pain you experience from the arthritic joint will disappear
- Initially you will experience a different type of pain as a result of the surgery, this will get better as your recovery progresses.

Improved Movement

- You should be able to walk without pain, at least the same distances and probably even further than before your surgery.
- Provided you have achieved a good range of movement in your knee replacement, you should find stairs and every day activities easier.

Quality of Life

Your overall quality of life should improve. Remember it takes time to recover from your operation and build up your muscle strength.

It will take at least one year for your knee replacement to be at its best, longer for complex and revision knee replacements.

All artificial joint replacements will eventually wear out. How long this process takes depends on a number of factors, however your knee should give you many years of service before further surgery may be necessary.

Revision knee replacement

A revision total knee replacement may become necessary for the following reasons (Ref 19)

- Due to infection. Infection will also damage the bone surrounding your knee
- If your knee has become loose (aseptic loosening)
  This is the most common cause
- Due to a lack of stability
- Due to fractures (breaks) in the bone
- Due to bone loss
- Because of implant wear / failure

Revision knee replacement surgery is more complex and technically more difficult than your original surgery.

Part or all of your existing knee will have to be removed before your new knee can be put in place. If your knee is being revised due to infection this will normally be done in two stages

- Stage one - your knee is removed and a temporary spacer is inserted. You will receive at least 2 weeks of intravenous (IV) antibiotics.
Please note: you will not be able to go home until the intravenous course of antibiotics prescribed for you has been completed.

- Stage two - provided your Consultant is satisfied with your progress and that the results of all tests and investigations are satisfactory, your new revision knee will be put in.

All the Risks of Knee Replacement (pages 6-16) are present but the chances of complications of are all increased.

In general, the Benefits of revision knee replacement are reduced compared with those of primary total knee replacement (pages 16-17)

Relief from pain is the main benefit of revision knee replacement surgery.

If your knee was unstable before your revision operation, this should be improved.

The recovery period for revision knee replacement surgery is longer. It will be at least 18 months before your revision knee is at its best.

Follow-up (Ref 18)

After your discharge from hospital your progress will be carefully monitored possibly for many years.

Please note: Some Primary Care Trusts will only fund a single follow up visit.

You may be required to attend follow up clinics at approximately

- 6 - 12 weeks after the date of your operation
- 1 year after the date of your operation
- 5 years after the date of your operation
- Periodically after this as required.

These times may vary according to your Consultant's wishes.

You may be seen by either a Nurse or Physiotherapy Practitioner

If you have any worries, problems or unanswered questions please contact either the ward you were on when you were an inpatient or the main switchboard and ask for your Consultant's secretary.

SECTION 2 - How to prepare for your knee replacement

Getting fit for your operation (Ref 7)

While waiting for your operation the time can be used to help you prepare yourself for your operation through the use of Gentle exercises to strengthen the muscles that you rely on for:

- Walking
- Swimming
- Gardening
- Housework.

Pain control

Other methods of pain control can be discussed with our Pain Nurse Specialist or Your GP.

Stop Smoking Or at least cut down, this will decrease the risk of developing any of the following after your operation:

- A chest or wound infection
- A delay in bone or wound healing
- A blood clot (DVT / PE) *see page 10*

For advice on stopping smoking please speak to the health care assistant at your preoperative assessment appointment regarding this.

Please see The Hospital: Stopping Smoking Before Your Operation leaflet

Diet

Eating a healthy balanced diet

- Helps weight loss, should you need to lose weight
- Helps wound healing
- Helps you recover after your operation .

Advice on healthy eating is available from our Dietician or your GP.

Please note: in accordance with Fitness for Anaeasthesia guidelines patients with a body mass index (BMI) of 50 or above are not usually operated on at this hospital (Ref 20).

Other Dietary Concerns may include:

- Anaemia (lack of iron). Good sources of Iron are red meat and dark green leafy vegetables
- Being over or underweight
- Osteoporosis
- Constipation - eat more fruit and fibre, drink plenty of non alcoholic drinks. Exercise regularly, add fibre supplements or laxatives if necessary. It is recommended that you speak to your GP if you think you need laxatives (Ref 1).

Information about all the above can be found in the Hip & Knee Diet Booklet available from the dietician.

If you become constipated while an inpatient, please let the ward staff know as soon as you become aware that you have a problem with this.

General Health

Please ensure that problems with any of the following are treated and cleared before your preoperative assessment appointment where possible

- Tooth decay / broken teeth / gum disease or other infections must be treated , cleared and where appropriate gums healed before you come into hospital for your operation
- High blood pressure
- Leg ulcers
- Skin problems
- Chest complaints
- Urinary infections : signs of infection include burning when passing urine / smelly urine / pain on passing urine / passing urine more frequently than is normal for you
- Other infections

Please contact your GP / Dentist to eliminate any of these problems. Bring details of any investigations / treatments / operations you are having or have had in the past.

Your operation may be cancelled if these problems remain untreated.

Oral Contraceptives / Hormone Replacement Therapy (HRT)

Please notify your Consultant Surgeon if you are taking the contraceptive pill.

If your pill contains Oestrogen you will be required to stop taking this four weeks before your operation in order to prevent an increased risk of blood clots.

Please use alternative methods of contraception while off the pill.

Hormone Replacement Therapy (HRT) may need to be discontinued four weeks prior to surgery as above, please check with your Consultant.

Warfarin / Clopidogrel / Aspirin

If you are taking Warfarin, Clopidogrel or other blood thinning or antiplatelet medication such as Aspirin, please mention it to your Consultant. The effect this may have on your admission and treatment will be discussed with you.

If you are prescribed Aspirin 75mg daily for either your heart (cardiovascular) or you head (cerebrovascular) reasons, this should be continued throughout the period of surgery and beyond.

Unless during your preoperative assessment you are told otherwise.

A decision will be made about when to stop Aspirin (if appropriate) at your preoperative assessment appointment.

Personal Circumstances

If possible plan ahead and arrange for relatives, friends, or a community hospital to help you on your discharge from hospital.

It is important to inform the Healthcare Assistant at your pre-operative assessment visit if you need help with this aspect of your care. This will reduce unnecessary delays in discharging you from hospital.

If you think you will need to see a Social Worker before you are discharged from hospital please mention this to the clinic staff when you attend for preoperative assessment.

It is important that you are as medically and physically fit for surgery as possible. This will enable you to make a quicker, stronger and healthier recovery.

Pre-Operative Assessment

You will be required to come to pre-operative assessment clinic before the date of your surgery

- This is to ensure that you are fit for your operation
- It is an ideal opportunity for you to meet some of the members of the healthcare team that will be responsible for your care while you are in hospital.
- It also provides us with an opportunity to answer any questions that either you or your family may have regarding your surgery or aftercare.

Make a note of any questions you wish to ask, and bring them to this appointment.

You will be asked to provide a sample of urine while you are in clinic.

Please bring with you:

- All drugs that you are taking in their original boxes, or a list of all prescribed tablets (available from your GP practice) together with any alternative and non-prescription treatments that you are using
- A recording of your Blood Pressure (the practice nurse at your GP's can take this for you)
- Details of any specialists you have seen in the past or are currently seeing for any other health reasons
- Any forms that you have been sent - please fill these in (if possible) before you come to clinic.

The following measurements / investigations will be carried out at this assessment

- Blood Pressure
- Weight / Height / Body Mass Index (BMI)
- Pulse rate
- Oxygen saturation rate (the amount of oxygen in your blood)
- Blood tests
- Urine test + analysis (where appropriate)
- Physical examination
- X rays if required
- An electrocardiogram (ECG) recording if appropriate
- Nasal swabs will be taken to check that you are not a carrier of MRSA.

Please see the MRSA patient information booklet (2008).

Please note: if your test results show that you are carrying MRSA, you will be contacted and the treatment regime will be explained to you.

The date for your operation may need to be postponed. A period of 6 weeks is required to complete the treatment regime and for us to received all 3 MRSA not isolated results from your GP.

Your date for surgery will be confirmed when you have completed the treatment.

Please let the clinic staff know if you have ongoing medical or weight problems when you arrive in the pre-operative assessment clinic.

You may need a separate appointment to see a Consultant Anaesthetist for an anaesthetic assessment to make sure you are fit to have your operation if

- You have had a stroke (CVA), mini-stroke (TIA), heart attack (MI) or other significant health problem within the last 6 months. Your operation may need to be postponed.

- You have a pacemaker in situ - Please bring details about your pacemaker and which hospital you attend for pacemaker checks with you.

- You have had a virus / illness that has made you feel generally unwell within the last 6 weeks.

You will be asked to sign a consent to operation form as well as well as signing / completing the following forms (where appropriate)

- National Joint Registry
- Questionnaires about your knee.

Please make sure that you understand the planned procedure, the risks associated with this, as well as the options available to you before signing these forms.

Any problems that we find from the investigations carried out at this assessment can usually be sorted prior to your admission.

If there are any problems, your GP will be notified accordingly.

If you develop any illness or infection after this assessment but before your admission to this hospital please phone either:

- The preoperative assessment unit 01691 404864 for advice whether to go ahead with your operation.

OR

- Admissions on 01691 404000 and ask for the admissions department, if you wish to alter the date or cancel your operation.

Taking tissues at operation

Pieces of bone or joint and closely surrounding tissue may be removed as a necessary part of your knee replacement operation. Some of this tissue may be removed because:

- It needs to be sent to the laboratory for examination to discover the cause of your knee problem. Small pieces of tissue will be preserved and looked at under the microscope. In addition this tissue may be cultured or chemically analysed to try and detect why a joint has failed or whether it is infected.

- These small pieces of tissue will be kept and will form part of your medical records. Large amounts of tissue will be disposed of by incineration. The retained tissue may be used anonymously for teaching, quality control and ethically approved research into causes, diagnosis and treatment of disease.

- If you do not wish this surplus tissue to be treated in this way please ask the ward staff to let the laboratory know and document your wishes in your notes. Your wishes will be respected and any samples disposed of. This will not affect your current medical treatment and legal rights. It will not be possible to review your samples after they are disposed of, this may affect your future medical treatment.

We need your permission to take and keep your tissues for use as above.

SECTION 3 - Your Hospital stay

On Admission

From the time of your pre-operative assessment we will be planning your rehabilitation and discharge home.

With your help we will assess your individual physical and social needs, involving your family and / or carers if you so wish.

When you come in to hospital you will be introduced to your named nurse whose prime responsibility is planning your nursing care and rehabilitation.

You will be encouraged to take an active role in this process. We believe in involving you in all the decisions that will lead to your full rehabilitation.

You are advised to bring comfortable everyday clothes into hospital with you to wear after your operation.

The Operation

The operation is usually performed under either:

- A general anaesthetic and a nerve block
- A Spinal / Epidural. It may be necessary for a urinary catheter to be inserted into your bladder which sometimes needs to be retained until you have been reviewed by a urologist.This only happens rarely.
- Sedation
- Regional blocks.

See You and your anaesthetic information booklet for more information or you can find out more from Anaesthesia explained at: www.youranaesthetic.info
These may be used individually or in combination to provide the most appropriate anaesthetic for you.

The anaesthetist will visit you, assess your needs and discuss these with you. Any previous anaesthetic experiences and your past medical history will be taken into account.

The operation involves

- Making an incision (cut) over the front of your knee the size of this depends on both the complexity of your operation, as well as your physical size
- The worn out parts of your knee are removed and replaced with an artificial joint

- For revision knee replacement (depending on the reason why your knee is being revised), either part or all of your existing knee replacement will be removed. Where possible, this will be replaced with a new one
- The artificial joint may be fixed in place with bone cement, depending on the type and style of implants used
- It may be necessary for you to have a blood transfusion either during or after your operation (this is more probable with complex or revision surgery), depending on your blood count before and blood loss during your operation
- The need for blood transfusion after your operation can be reduced by the insertion of re-infusion drain(s), where necessary, at the end of your operation. Blood is collected into a bag via a tube inserted near your knee. This collected blood is filtered and, if a sufficient quantity is collected, given back to you via an intravenous (IV) line.

Please note in some circumstances re-infusing blood is not recommended e.g. if infection is suspected, you have a history of malignancy (cancer) or if you have a known blood disorder (Ref 21).

The Post-Operative Period

Immediately after your operation you will be taken to either:

- The Recovery Unit, where you will spend approximately one hour after your operation or until the recovery staff are satisfied with your progress.
  or
- The High Dependency Unit where you will spend approximately 24 hours, depending on the complexity of your operation and your personal needs.

Your progress will be carefully monitored by the Recovery / High Dependency Unit staff during your stay with them.

It is usual for the knee to feel sore after this type of surgery, you are therefore advised to accept pain relief to minimise your discomfort.

It is important to keep yourself as pain free as possible to aid early use of your knee. This will help you achieve the best range of movement in your knee.

Please ask a Nurse at any time if you need help with pain relief.

For the first 24 hours

You will have an intravenous (IV) infusion (drip). The drip will be removed from your arm once you are drinking normally and no longer need an infusion of antibiotics

- You may have drainage tubes at the side of the knee wound
- Foot pumps will be attached to your feet and ankles to help circulate your blood adequately while you are in bed
- You may have a Patient Controlled Analgesia (PCA) device> When this is removed oral pain relieving tablets will be offered to you.

It is important to follow your Consultant's instructions.

A Physiotherapist will visit you on the ward to ensure that you do routine post-operative exercises. These include

- Deep breathing exercises to improve lung function after your anaesthetic
- Leg exercises including moving your toes and feet to maintain muscle strength and stimulate your circulation - thus reducing the risk of blood clots (DVT / PE) developing.

If you experience any hot, reddened, hard or painful areas in your legs, OR you become suddenly breathless please notify the Nurses or Doctors immediately

A blood clot may have developed in your leg (DVT) or chest (PE), if so medication will be given to you to get rid of the clot.

If this occurs after your discharge from hospital please attend your local accident and emergency department. If you become suddenly breathless, or have sharp pains when breathing Dial 999 if the breathlessness is severe.
These symptoms must not be ignored.

Please note: Leg swelling is very common after knee replacement surgery.
It is therefore very important that you:

- Do not sit for long periods of time - more than 3 hours
- When sitting do not sit with your feet on the floor for long periods of time
- Do elevate your legs for periods of time when sitting
- Do lie on your bed to rest periodically
- Do not rest in reclining chairs - the reclining position does not aid circulation or help reduce swelling. The reclining position does not allow you to straighten your knee fully.

A rolled up towel / bolster inserted under the foot end of your mattress will help raise your leg higher than your heart (the tip of your nose when lying), this helps the drainage of excessive fluid from your leg(s).

SECTION 4 - Your Rehabilitation

Rehabilitation

It is vital that you actively participate in your rehabilitation.

The physiotherapist will encourage and support you with your first walk as soon as possible after your surgery.This may be either on the day of your surgery or the day after.

You will be getting up to

- Wash
- Dress
- Go to the toilet
- Walk by yourself, with a walking frame / crutches when you feel confident and safe.

It is important to continue using walking aids after your operation, as directed by your Consultant or a member of his team.

A stumble or fall may be enough to cause both soft tissue and bony injury.

Everyday Activities

Physiotherapy

Following your operation, the Physiotherapist will encourage you to strengthen your muscles and improve the mobility of your joint, helping you to be independent and return to normal movement as soon as possible.

This can help to make daily activities such as walking easier and reduce the risk of post-operative problems.

You will be advised on the safest and best ways to

- Manage your pain and swelling
- Re-establish the movement of your knee
- Move in and out of bed
- Move from standing to sitting and from sitting to standing

- Get your knee moving
- Walk using the most appropriate walking aids.

Although walking is a recommended form of exercise, periods of rest with your leg elevated are essential.

Before your discharge from hospital the Physiotherapist will advise you on the safest method of climbing stairs.
The correct technique is as follows:

Going up the stairs

- Using the banister, hold the crutches in your free hand
- Put your un-operated leg on the first step
- Put the operated leg and the crutch onto the same step
- Bring the crutches onto the stair.

Going down stairs

- Using the banister, hold the crutches in your free hand
- Put the crutch down the stair
- Put the operated leg down the stair
- Put the unoperated leg down the stair.

Remember - Good leg up to heaven, Bad leg down to hell.

PHYSIOTHERAPY EXERCISES

- The aim of the exercises is to regain normal movement of the knee and prevent muscle wasting
- The following exercises should be commenced the day after your operation unless you are advised otherwise
- The exercises should be repeated three times a day e.g., morning, afternoon, evening, and be performed within your own pain limits
- If any particular exercise aggravates your knee, stop, and tell your physiotherapist
- Your knee may ache following the exercises but if this becomes severe then reduce the number of repetitions and tell your physiotherapist.

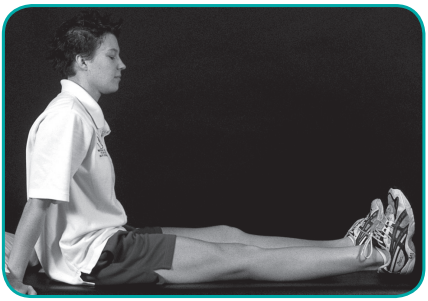
People recover at varying rates therefore if a particular exercise or stretch is too difficult initially, progress as you feel able.

1. Sitting with operated leg out straight and the other leg bent, slowly bend forwards from the hips until you feel the muscles at the back of the thigh/knee (the hamstring muscles) stretch.

HOLD 20 seconds REPEAT x 3

2. Sitting with operated leg out straight and the other leg bent, lean back on arms for support. Pull your foot up towards you, push the back of your knee into the floor, tighten your front thigh muscles then lift your leg straight approximately 6" off the floor.

HOLD 5 seconds REPEAT x10



3. Sitting with the operated leg slightly bent over a ball / rolled towel. Straighten the leg and then slowly lower.

HOLD LEG STRAIGHT 5 seconds REPEAT x10

4. Sitting with operated leg out straight and the other leg bent, lean back on arms for support. Pull your foot up towards you, push the back of your knee into the floor, tighten your front thigh muscles then lift your leg straight approximately 6" off the floor.

   HOLD 5 seconds REPEAT x10

5. Sitting with your operated leg out straight and the other leg bent, slowly slide your heel towards your body, bending your knee. Slide your heel away from your body to straighten your knee.

   HOLD BEND 5 seconds REPEAT x10

The Physiotherapy department at your local hospital will contact you with an appointment regarding your ongoing rehabilitation.

It would be beneficial to practice them prior to your admission to hospital.

To maintain and improve the movement and control of your new knee, we recommend that you continue your exercises at home.

Post-operative Precautions

Following your knee operation, the muscles and tissues surrounding your new knee joint need time to heal.

This takes approximately six to eight weeks, during which time you must take care to protect your knee and reduce the risk of bony or soft tissue damage.

IT IS IMPORTANT THAT YOU DO NOT

- Twist your knee as you turn around. Do take small steps instead
- Sit or Lie with a pillow underneath your knee (except when exercising). This may encourage a permanently bent knee
- Walk unaided until told to do so by your Consultant or a member of his team
- Stand for prolonged periods
- When standing ensure that your weight is evenly distributed through your feet and your knees are straight.

Occupational Therapy

The Occupational Therapist (O.T.) may see you after your operation to assess your ability to manage your activities when you go home.

This will involve:

- Asking questions specifically about your home situation
- Teaching you methods of carrying out everyday tasks like getting in and out of bed
- Arranging for you to have any equipment that you may require to help you perform these tasks.
- Providing treatment to help improve your ability to carry out your everyday activities

Self Care

It is important that you practice the following techniques before you come into hospital to allow you to have more confidence in the techniques after your operation.

You should not need to use any dressing equipment to help get yourself dressed.

It will be uncomfortable at first but with practice will become easier

- Sit on a suitable chair
- Bend forward and hook your clothes over your operated leg first
- By 'fishing' you should be able to reach your operated foot with your clothes
- Bring them up to your knee and then place the unoperated leg in the other side of your clothes
- Once over your knees you can stand up and pull your clothes up.

Repeat as necessary.

We recommend a strip wash on discharge unless you have a cubicle shower which you are able to step into.

Do not attempt to get into the bath until you are able to do so safely and without causing additional pain or discomfort.

Transfers

Bed

To get on and off the bed following your operation you will need to learn a new technique to make this activity as easy as possible

- Walk right up to the bed, turn yourself around taking small steps and make sure you can feel the side of the bed on your legs
- Take both arms out of your crutches and place them next to you
- Slide your operated leg out in front of you
- Sit half way down the bed
- Slide your bottom back as far as you can onto the bed using your arms letting your legs come up in front of you. Try and relax your legs, this will make the transfer easier
- Once you are on the bed (as above) slide your bottom around towards the pillows. When sliding your legs will automatically follow you. At first this will be more comfortable than lifting your legs onto the bed. When you feel able, you can start lifting your legs when getting onto your bed.
- Your unoperated leg does not have the same restrictions and you can use this to help with sliding back
- Reverse the procedure to get off the bed.

We would encourage you to lift your legs if you are able, however often for the first few days following your surgery this may be uncomfortable for you.

Chair

When sitting down place your crutches to one side and place both hands on the arms of the chair. Slide your operated leg out in front of you and sit down.

When standing

- Gently slide forwards to the front edge of your chair
- Place your operated leg out in front of you
- Push up on the arms of the chair, taking some of the weight through your unoperated leg

Toilet

- Walk up to the toilet with your crutches
- Turn around taking small steps until the back of your legs touch the toilet
- Place your operated leg out in front of you
- Place both crutches down to the side
- Place one hand at the front of the toilet (between your legs) and the other hand at the side of the toilet under the top of your leg
- Bend in the middle and slowly lower yourself down onto the toilet seat

At first this will feel strange, with practice this is a safe way of getting on and off the toilet not relying on equipment.

Domestic tasks

Kitchen

You may need to reorganise your kitchen so that the most frequently used items are between head and waist level when standing.

A stool may be useful at the worktop, sink and / or cooker.
You may sit at a table to prepare meals.

Eat your meals at the worktop or table where possible.

Do not attempt to carry anything when using two crutches. The O.T. will asses your need for any equipment to help you become independent

Laundry, Cleaning and Shopping

For the first 6 -8 weeks you should avoid heavy chores such as

- Shopping
- Using the vacuum cleaner
- Changing beds.

You will need help with these chores. Light tasks, for example

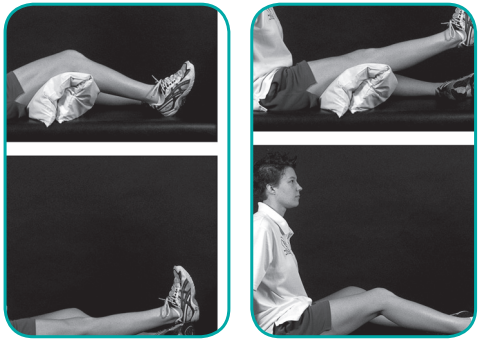
- Dusting
- Washing dishes are acceptable.

If possible sit to iron.
We encourage a balance between activity and rest.

Getting in and out of a Car

We recommend you sit in the front of the car

- Get the driver to open the door and put the seat as far back as possible. Also recline the back of the seat (just while you are getting in and out of the car)
- Walk up to the car with your crutches
- Turn so that your back is to the car
- Give your crutches to the driver
- Make sure your legs are touching the sill of the car
- Place your hands where you feel you have support (dashboard and side of the car)
- Slide your operated leg out in front of you
- Sit down on the car seat
- Do not use a plastic bag or an extra cushion



- Once sat on the car seat, using your unoperated leg on the sill slide as far back as you are able ideally over to the drivers seat
- Once you are in this position you can start to move your legs into the foot well in the car
- Move the back of the seat into a more comfortable position.

To get out reverse the process.

Driving

Do not attempt to drive until advised that you may do so by either your Consultant or a member of his team.

This is normally between 4-8 weeks for non complex knee replacements.

For more complex / revision knee replacements more time may be required before you are ready or able to drive safely.

You must be able to:

- Sit in the car comfortably and
- Be confident and able to perform an emergency stop without it causing you pain or strain before you drive.

Start with short distances at first and gradually increase as able.

If you had a left knee replacement and you drive an automatic car, you can start driving when you feel well enough to do so, can get in and out of the car without difficulty and sitting in the car is comfortable.

Check with your insurance company that you are covered before you start driving again.

Do not use a plastic bag or an extra cushion - you do not have the same control this may be dangerous

Work

Returning to work will depend on the type of work that you do.

It is advised that you discuss this with your Consultant or a member of his team.

You should plan to have at least six weeks off.

Leisure

We encourage you to go out and do things that are part of normal daily life, as long as you feel comfortable and are not in too much pain.

You should avoid activities such as gardening and sport for 6–8 weeks, and discuss the activity with your Consultant or a member of his team at your first outpatient appointment.

After this return to light exercise such as gardening, walking, swimming including breast stroke and golf.

If you have a specific sport or leisure activity that you wish to pursue, please discuss this with your Consultant or a member of his team at your first outpatient appointment.

Avoid any high impact activities such as jumping, pulling, twisting, running or rowing these all put excessive strain on your knee.

Please bring all loan equipment back as requested by the O.T.

Travel (Ref 22 & 24)

Immobility (sitting immobile and cramped for long periods of more than 4 hours) when travelling by plane, train, car, coach, etc, are thought to slightly increase your risk of DVT. Research studies suggest the rate of travel related DVT is 1 for every 6,000 long journeys.

The Department of health recommend that you should postpone long haul flights for 3 months after knee replacement surgery.

During the flight

- Recline your seat as much as possible
- Wear loose fitting comfortable clothing
- Leave room under the seat in front of you to stretch your feet
- Move your legs, feet and toes regularly during the flight
- Press the balls of your feet against the floor or foot rest to increase the blood flow in your legs
- Do upper body and breathing exercises to improve circulation
- Take occasional short walks around the cabin
- Drink plenty of water
- Do not drink too much alcohol (Alcohol can cause dehydration and immobility)
- Do not take sleeping pills which cause immobility.

Please note: Your knee is partially made out of metal, and may therefore set off security alarms as you pass through them.

Airport security staff may need to carry out further checks.

Discharge home

Generally speaking you will not be discharged from hospital until your healthcare team are satisfied that you will be safe and able to manage at home.

The average length of stay for this type of operation is between 2 to 5 days. This depends on the complexity of your operation as well as individual circumstances.

For revision knee surgery your length of stay may be longer and at least 14 days after your operation if you require intravenous (IV) antibiotics.

You may have stitches that dissolve and therefore do not need removing.

If your clips / skin stitches have not been removed (where necessary) before your discharge from the ward, the Practice Nurse at your GP practice will remove them. This will be arranged for you.

It is advisable after leaving hospital to have someone either living with you or very near who can and is willing to help you with everyday tasks.

After your discharge home please contact the ward you were on when you were in hospital or your GP

- If you develop a fever
- Notice any redness, either around your knee or lower down your leg
- Swelling which does not settle with elevation and rest
- Discharge from your wound.

It is important to resolve any problems, no matter how trivial, as quickly as possible.

It is normal for your leg to swell after your operation. This may take many months to settle in some people the swelling may never completely settle.
It will be at least 12 - 18 months before the knee joint has completely healed.

First Follow up

If all is going well at your first check-up and you can usually expect to

- Resume driving if you have not already done so (see pages 50-52)
- Wean off your crutches onto a stick, if you have not already done so and there are no other reasons why you need to continue using these
- If you have not already been advised that you can sleep on your operated side, you can now do so
- Return to your normal activities of daily living, within reason. Avoid prolonged standing in the beginning
- Return to light exercise (see page 38).

Advice to remember once you are home and for the first few weeks after your operation

- Take regular short walks on even ground. As you become stronger, you may gradually increase this distance
- Wear sensible appropriate shoes
- Sit in a chair of the correct height with a firm seat and arm rests
- Elevate your leg on a foot stool periodically when sitting unless advised not to do so

- Use walking aids as directed by your Consultant, or a member of his team
- Climb stairs unoperated leg first and Go down stairs operated leg first
- Lie on your back until advised otherwise by your Consultant or a member of his team
- Avoid crossing your legs at the knees whilst sitting, lying or standing
- Avoid twisting or over reaching
- Easy does it! - *Do things in moderation with no excessive effort.*

Telephone contact numbers

Admissions	01691 404181
Clwyd Ward	01691 404204
HDU	01691 404275
Hip and Knee Helpline	01691 404223
Kenyon Ward	01691 404425
Ludlow Ward	01691 404011
Medical secretaries	01691 404000
Ask for your consultant's secretary	
Menzies Unit	01691 404337
Occupational Therapy	01691 404327
Outpatient Clinic	01691 404000
Ask for appointments	
Physiotherapy	01691 404240
Powys Ward	01691 404206
Preoperative assessment	01691 404864

Notes Section

Please use this section to make a note of any questions or concerns that you may have or consider important. Please feel free to bring this booklet to your outpatient appointments.

Notes Section

References

15) AAOS (2007) Joint Revision Surgery – When Do I Need It?
http://orthoinfo.aaos.org/tpoic.cfm?topic=A00510 Retrieved 12.01.2012

14) A.D.A.M Medical Encyclopedia (2010) Compartment syndrome.
http://www.nhm.nih.gov/medlineplus/ency/article/001224.htm Retrieved 12.01.2012

3) Arthritis Research UK (2015) - Unicompartmental (Partial) Knee Replacement:
www.arthritisreseachuk.org/arthritis-information/surgery/knee-replacement/different=types/partial
Retrieved 01.09.2015

17) The British Association for Surgery of the Knee and the British Orthopaedic Association Patient Liaison Group (2007) TOTAL KNEE REPLACEMENT: A GUIDE FOR PATIENTS
http://www.boa.ac.uk/LIB/LIBPUB/Pages?PLG-Knee_info.aspx Retrieved 14.02.2012

18) The British Orthopaedic Association (2011) KNEE REPLACEMENT: A GUIDE TO GOOD PRACTICE
http://www.boa.ac.uk/Publications/Documents?tkr_good_practice.pdf Retrieved 14.02.2012

21) Cluett, J. (2007). About .com Orthopedics
http://orthopedics.about.com/odhipkneereplacement/a/revisionhip.htm

7) Department of Health (2010) Enhanced Recovery: Information for patients.
http://www.dh.gov.uk/en/Healthcare/Electivecare/Enhancedrecovery/DH_119307 Retrieved 14.02.2012.

22) Department of Health (2007). Advice on travel-related DVT.
http://www.dh.gov.uk/en/Publichealth/Healthprotection/Bloodssafety/DVT/DH-41234

20) Fitness for Anaesthesia 2011) (A Guide to Pre-op Assessment).
The department of Anaesthesia. Compiled by Dr S Golding and Dr S.Conry 5th Edition, RJAH.

19) Frey, R. (2004). Healthline: Knee Revision Surgery Health Article.
http://www.healthline.com/galecontent/knee-revision-surgery

4) Gottrup F, Melling A and Holander D (2005) An overview of surgical site infections: aeiotology, incidence and risk factors http://www.worldwidewounds.com/2005/september/gottrup/Surgical-Site-Infections-Overview.html Retrieved 05.01.2012

12) Huddleston, H.D. (2005) ARTHRITIS OF THE KNEE JOINT – COMPLICATIONS OF KNEE REPLACEMENT SURGERY. The Hip and Knee Institute. Tazara USA.
http://hipsandknees.com/knee/kneesurgerycomplications.htm Retrieved 12.012012

6) Hui, A.C/W., Heras-Palou, c., Dunn, I., Triffitt, P.D., Crozier, A., Imeson, J.
and Gregg, P.J. (1996) GRADED COMPRESSION STOCKINGS FOR PREVENTION OF DEEP-VEIN THROMBOSIS AFTER HIP AND KNEE REPLACEEMENT. Journal of Bone & Joint Surgery, British Volume
http://web.jbjs.org.uk/content/78-B/4/550.abstract Retrieved 14.02.2012

2) NHS Choices ((2011) Knee pain
http://www.nhs.uk/conditions/knee-pain/pages/introduction.aspx Retrieved 16.01.2011

13) NHS Choices (2010) Knee replacement - Risks
http://www.nhs.uk/conditions/Knee-replacement/Pages/Risks.aspx

5) National Institute for Health and Clinical Excellence (2010). NICE clinical guideline 92: Venous thromboembolism: reducing the risk of venous thrombolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital). www.nice.org.uk/(CG)46

24) National heart, lung and blood institute (2011) - What are the signs and symptoms of pulmonary embolism? http://www.nhlbi.nih.gov/health/health-topics/topics/pe/signs Retrieved 02.09.2015

8) National Institute for Health and Clinical Excellence (2008). NICE clinical guideline 74: Surgical site infection. Prevention and treatment of surgical site infection. London. National Institute for Health and clinical excellence.

23) Patient - Trusted medical information and support (2015) Deep Vein Thrombosis
http://patient-info/health/deep-vein-thrombosis-leaflet Retrieved 02.09.2015

1) Prodigy (2005). Osteoarthritis and Rheumatoid Arthritis. In PRODIGY Knowledge. 2nd edn. London: The Stationary Office and Department of Health.

9) Public Health England (2015): Surgical site Infection surveillance service. Trend in rate of SSI.
www.gov.uk/organisations/public-health-england Retrieved 29.06.2015

16) Quisel A, Gill JM,and Witherell P. (2005) "Complex regional pain syndrome underdiagnosed"
http://www.jfponline.com/Pages.asp?AID=1947.J Fam Pract 54(6):52432.PMID15939004(http://www.ncbi.nlmnih.gov/pubmed/15939004). (http://www.ncbi.nlm.nih.gov/pubmed/15939004).
http://www.jfponline.com/Pages.asp?AID=1947 Retrieved 11.01.2012

10) Villanueva, M., Rios-Luna, A., Pereiro, J., Fahandez-Saddi, H. and Perez-Caballer, A. (2010) Dislocation following total knee arthroplasty: A report of six cases. Indian J Orthop [serial online] 2010 [cited 2012 Jan 14];44:438-43. Available from:
http://www.ijoonline.com/text.asp?2010/44/4/438/69318 Retrieved 14.01.2012

11) Wazir, N.N., Shan, Y. Mukundala, v.v. and Gunalan, R. (2007) Dislocation after total knee arthroplasty. Singapore Med J; 48(5) : e138 – 140.

The Robert Jones and Agnes Hunt Orthopaedic Hospital
NHS Foundation Trust

If you require a special edition of this leaflet

This leaflet is available in large print. Arrangements can also be made on request for it to be explained in your preferred language. Please contact the Patient Advice and Liaison Service (PALS) email: pals.office@rjah.nhs.uk

There are many benefits in stopping smoking before your surgery.
These include:

- The risk of anaesthetic complications, such as breathing problems and chest infections are reduced.
- Wounds may heal more quickly
- Smoker's bones, muscles and tendons can be slower to grow and repair.
- Risk of blood clots (DVT) is reduced
- Your hospital stay may be shorter

The sooner you give up smoking before your operation the greater the benefits.

Research shows that you are four times more likely to succeed in quitting completely with help and support.

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