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LIVER RESECTION
OR
REMOVAL OF A PIECE OF LIVER

THIS INFORMATION REFLECTS THE PERSONAL PRACTICE OF A/PROF KELLEE SLATER ONLY AND DOES NOT SUBSTITUTE FOR DISCUSSION WITH YOUR SURGEON.

YOUR ADMISSION DETAILS:

Your admission date is: _____

On your arrival to hospital, present to Admissions at the designated time. From the main entrance of the hospital, there is a pharmacy on the left. At the end of the pharmacy, there is a lift. Take this to Level 1. This is Admissions.

You will need to stop eating food from: _____

Drink the 2 DEX between: _____

You can drink CLEAR fluids until: _____ **then it is NIL BY MOUTH.**

Your operation date is: _____

The Rooms will call you a day prior to when you are due to enter the hospital to confirm your admission time and when to start fasting.

Register your admission to confirm your personal details and health history.

This must be done at least 48 hours prior to your admission. It can be done in two ways:

You can complete the admission form online at:

http://www.greenslopesprivate.com.au then click on the ONLINE ADMISSION button

OR

Call Greenslopes Private Hospital Admissions on phone 1800 777 101.

Monday to Friday 8am – 7:30pm or Saturday 8:15am – 12:45pm.

OPERATING ON THE LIVER

The removal of a section of liver is performed for a number of conditions, both cancerous and non-cancerous. These conditions are:

- Primary liver cancer: Hepatocellular cancer (HCC), Cholangiocarcinoma (bile duct cancer within the liver)
- Secondary liver cancer: bowel, breast, melanoma, skin, kidney, neuroendocrine
- Non-cancerous liver tumours: adenomas, symptomatic focal nodular hyperplasia (FNH) or haemangiomas that cause pain or fullness
- Cystic disease of the liver: mucinous cysts, parasites (Hydatid), simple cysts that cause pain
- Liver abscesses that do not respond to other treatments
- Diseases where stones form within the liver
- Abnormalities of the blood vessels supplying the liver
- Donation of a normal section of liver for transplant into a relative

Liver resection is a major operation and should only be performed by a surgeon who is experienced in liver and bile duct surgery.

The liver is divided into eight separate segments and different combinations of these segments can be removed in one or more operations depending on the particular condition.

In a patient with a normal liver, it may be possible to remove up to 70 – 75% of the liver with excellent results. Far less liver can be removed if the patient has cirrhosis or scarring of the liver. The liver does not grow back like a lizard's tail rather the remaining segments of liver grow larger in size to compensate for the missing piece. This growing process is usually completed within 6 weeks of surgery.

If there are multiple tumours in both sides of the liver, you may require two or more operations to remove them all. This is to allow the liver to grow in between operations and enable us to leave enough liver for you to survive.

It is very likely that your **gallbladder** will be removed at the time of a liver resection whether it has gallstones or not. This is because the gallbladder is attached to the part of the liver to be removed. Another reason for removing the gallbladder is to avoid a difficult re-operation, should you develop gallstones in the future. You will live a perfectly normal life without your gallbladder and will not require any alteration to your diet.

WHAT TESTS WILL I HAVE DONE BEFORE A LIVER RESECTION IS CONSIDERED?

Planning a liver resection is highly technical and can take some time. There are many tests, both invasive and non-invasive that must be performed before any decisions about surgery can be made. After each test, the situation is reassessed. The decision not to offer an operation can occur after any or all of these tests. The final decision about feasibility of surgery is made at the actual time of the operation. You can be sure that your case will be discussed in a multi-disciplinary conference with all the surgeons, oncologists and

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radiologists of our unit and the best course of action devised. You will be included in the decision making.

You must be medically and physically fit to undergo this type of operation. If you are older than 80 years of age your overall fitness will be looked at very closely, because even if you are healthy you may not have enough reserve to survive this operation. Of course, there are exceptions to this and we have performed successful liver resections for patients in their late 80s.

Some of the tests you can expect to have may include but are not limited to:

1. **CT scan of the chest and abdomen**

   This is done to look for cancer outside the liver area i.e. distant spread of cancer to the lungs or abdominal cavity. It also gives information about the anatomy of the liver and the relationship of the blood vessels to the tumour. The computer performing the scan can also help us assess whether you will have enough liver remaining to survive after the operation. It must be done with an injection of dye into the arm to be useful.

2. **Heart and lung tests**

   These tests help us assess your fitness for major surgery. What we order will depend on your age and other health problems. The tests may be an ultrasound of the heart (echocardiogram), lung function tests and exercise tests.

3. **Colonoscopy**

   If you have a suspicious mass in the liver and have not had a recent colonoscopy (telescope passed around the large bowel), we will arrange for you to have one to ensure you do not have a bowel cancer – the most common reason to have a cancerous mass in the liver.

4. **MRI**

   MRI with an IV contrast agent called Primovist is very useful to tell the difference between different types of non-cancerous tumours. It will not always be needed for cancer. It is very useful if you have cirrhosis of the liver to tell the difference between non-cancerous nodules and cancer.

   A MRI involves lying on a bed in a narrow, noisy tunnel. Some patients find this very claustrophobic. The Radiology Department takes great care to make this experience as pleasant as possible.

5. **Key hole surgery or diagnostic laparoscopy**

   This is done under general anaesthesia in the operating theatre. A small cut is made in the belly button and the tummy cavity is blown up with gas. A camera is inserted. There may be 1 or more additional cuts made to move things around. This test is done if we are worried your cancer may be more advanced than it appears on the scans. It looks for small lumps of cancer that may have spread around the

abdominal cavity. This type of advanced cancer is not seen well on scans and is not done very often for liver tumours.

6. PET Scan

This test relies on the idea that some tumours use glucose faster than the surrounding tissues. Radioactive glucose is injected into the blood and you will lie under a special camera. The glucose may concentrate in areas of cancer spread. It does not work for all cancers but is useful for bowel cancer and melanoma. It can detect cancer throughout the entire body.

7. ICG –Indocyanine Green Test

This test will be done if you have cirrhosis of the liver. It helps us decide whether your liver will have enough reserve to cope after a piece has been removed. Indocyanine is a green dye that will be injected into the blood via a small needle in the arm. A normal liver will rapidly break down this dye and it will be passed in the urine. A liver with cirrhosis is less efficient at breaking down the dye. A special device, similar to a soft peg will be placed over your finger. After 15 minutes the machine shines a light through the fingernail and can read how much of the dye is left in the bloodstream. If there is more than 15% of the dye still in the blood stream after 15 minutes, there is a high chance that you may develop liver failure if you undergo a liver resection.

8. Portal Vein Embolisation

This procedure is done when the tumours are in such a position that there may not be enough liver left at the end of the operation. It is also useful if you have cancer in both sides of the liver. It is done in x-ray and involves a needle being passed through the skin and into the portal vein, the large blood vessel from the liver. On the side of the liver that will eventually be removed, the portal vein is blocked off with small metal coils. When this is done an incredible thing happens – the other side of the liver will begin to grow. After six weeks, the size of the liver is reassessed and if the growth has been significant, then a date for surgery is planned.

FATTY LIVER DISEASE

- Fat accumulating in the liver is a very common problem in Australia. It occurs in about 1 in 10 people. This fat collects in and around the liver cells and can cause progressive damage. It can lead to cirrhosis of the liver. Fatty liver disease is more common if you are overweight, diabetic, have high cholesterol or drink alcohol. There also seem to be genetic factors involved.
- When the liver is very fatty, it makes liver resection more difficult and increases the risks of bleeding and liver failure.
- The causes of this disease are not completely understood but there are some steps that can be taken to lower the fat content of the liver.
- If your Body Mass Index is >35, you may be asked to undergo pre-operative weight loss. There are supervised rapid weight loss programs like INTENSIV (http://www.intensivweightloss.com/) available to reduce the fat in the liver prior to

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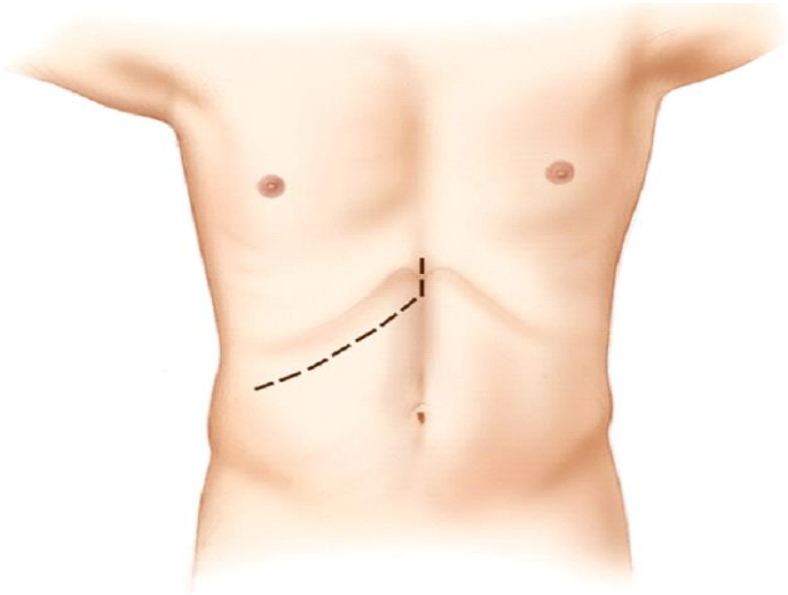
surgery. Weight loss of even 10 kg makes a big difference in lowering the risks of liver surgery.

THE OPERATION TO REMOVE A PIECE OF LIVER

The operation for removing a section of liver varies a great deal depending on the segments that are to be removed. The most common operations are to remove the whole right side or whole left side. The type of operation will be discussed with you. The surgery is carried out by tying and stapling hundreds of bile ducts and blood vessels in the liver and dividing the liver with a clean cut. Hundreds of tiny titanium clips will be used to secure the blood vessels and they will remain in your body. They are completely harmless and do not prevent you from having an MRI and they do not set the metal detector off at the airport. It is very likely your gallbladder will be removed during the operation as it is attached to the liver. Life carries on as normal without your gallbladder.

The incision will be in the upper part of your abdomen and either looks like a hockey stick or occasionally like a Mercedes Benz sign.



WHAT TO EXPECT IMMEDIATELY AFTER SURGERY

Pain Relief

In the first few days after surgery there may be a moderate amount of discomfort. All efforts will be made to ensure you are not in terrible pain. You will have a number of tubes you are attached to that will make things reasonably uncomfortable.

You will have some form of pain relief. There will usually be a choice of:

- Patient Controlled Analgesia (PCA) and a “Pain buster” - a button you will press that results in strong pain killers (like morphine) running straight into your IV line. This is combined with a tiny catheter placed in the wound that dispenses local

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anaesthetic. These devices are very safe and have locking mechanisms to prevent overdose.

IT IS VERY IMPORTANT THAT YOUR RELATIVES DO NOT PUSH THE PAIN BUTTON FOR YOU. THIS WILL RESULT IN AN OVERDOSE OF MEDICATION THAT MAY STOP YOUR BREATHING.

- Epidural (if medically suitable) – this is a fine tube placed in the back that delivers local anaesthetic to the nerves around the spinal cord. It is a highly effective pain reliever. There are small risks associated with its use and your anaesthetist will discuss this with you at length. The epidural will be in place for three to four days after surgery and you will be able to stand up and walk while it is in.

Your anaesthetist will discuss the pros and cons of each with you prior to surgery and it is your choice in conjunction with what your anaesthetist feels is in your best interest. Either option may not be suitable for every person.

Every effort will be made to minimize the discomfort and make it bearable. Your nurses will be monitoring your level of pain frequently. When you are eating, you will be converted to oral pain relief.

Drain tubes

You will have a number of plastic tubes coming out of your body following surgery. They will vary a little depending on your particular medical need. They will be removed at variable times following your surgery under our direct supervision.

1. **IV line:** In your arm and in your neck (placed under anaesthesia) to give you fluids and pain relief.
2. **Urinary catheter:** tube placed in your bladder so you do not have to get up to pass urine.
3. **Arterial line:** a fine catheter inserted into the artery of the wrist to monitor your blood pressure.
4. **Abdominal drain tubes:** two or three soft plastic drains coming out of your abdomen that are placed along the cut surface of your liver to drain blood or bile so it does not collect in your abdomen.
5. **Stomach tube**: occasionally you will wake up with a tube in your nose that goes into your stomach to stop vomiting. This will usually be removed a day or two after surgery.

Intensive Care

After the operation is finished, you will be transferred to Intensive Care. You may be kept asleep (induced coma) for a short time after the operation. Alternately, you may be woken up straight away. There are many factors that go into making this decision and your family will be told whether you will be awake or left asleep. You will spend at least one night in Intensive Care.

Eating

You will not have anything to eat or drink for the 1 – 2 days after surgery. An intravenous infusion will provide you with the necessary fluids. You will be able to have sips of water and ice.

I will let you know when you will be able to eat.

You may lose your taste for food as your taste buds will go on strike after a big operation. They will recover within a few months.

It is normal to have a sore throat for a few days after the surgery because of the anaesthetic tube. It is also common to get thrush (a thick white coating) on your tongue when you have been sick. This can affect your swallowing and is easily treated with anti-fungal drops.

People who drink more than two cups of coffee a day may notice a caffeine withdrawal headache and irritability a few days after surgery.

Urinating/Bowel Movements

In the first few days after the surgery, a tube placed in your bladder will drain your urine. As your bowels start to wake up, you will pass increasing amounts of urine. This is a good sign. You will probably not have a bowel movement until 5 - 7 days after the surgery. Many patients worry about this, but it is normal. You will pass wind a few days before your bowels work. I will ask you about this. Your bowels will work even though you have not eaten much. Many people worry about being caught short with their bowel and messing their pants or bed. This doesn't happen as often as you may think, but if it does, there is nothing to be embarrassed about. The nurses are there to help you.

Activity

You can expect your nurse and physiotherapist to help you to get out of your bed on the first day after surgery. You will be able to walk short distances even with all of the tubes and intravenous lines.

Being out of bed is extremely important to prevent pneumonia, clots in the legs and loss of general condition. You will probably only feel comfortable lying on your back when you are in bed but make frequent changes to your position in bed to prevent pressure areas on your skin.

As each day passes your tolerance for walking and sitting in a chair out of bed will increase. This is extremely important to prevent pneumonia, clots in the legs and loss of general condition.

Your Incision

You can expect to have a dressing over your incision for the first 5 days. I will remove the dressing before you go home. The dressing is like a second skin and is completely waterproof. The beauty of this is that you can shower with it on. It is normal for a small amount of fluid to collect under the dressing.

There will be no stitches to remove. They are all under the skin and they will dissolve in 6 - 8 weeks.

Other Medications and Preventative Measures

You will be given a blood thinner once or twice a day as a small injection under the skin. This helps to prevent clots in the legs or deep venous thrombosis (DVT) that may travel to the lungs and be life threatening. If you are in a high risk group for DVT, you may be sent home with this injection for several weeks after surgery. You or a family member will be taught how to give the injections.

You will be asked to wear TED stockings throughout your hospital stay. These help prevent clots in the legs. You may stop using these when you are able to get up and walk easily by yourself.

In many instances you will be given a medication to decrease the acid secretions in the stomach. This prevents stomach ulcers that may occur after major surgery.

You may be given laxatives to help your bowels work. Strong pain medication can cause constipation.

A physiotherapist will see you daily whilst in the hospital. You will be shown breathing exercises and be given a breathing device (Triflow) to help to expand your lungs and prevent pneumonia.

You must not smoke at all.

After surgery, alcohol should be avoided for at least two months to give your liver the best possible chance to be healthy. If you can avoid it for good, that's even better.

Other Important Information

You can expect to see me every week day. On weekends or at times when I am operating elsewhere, you will see one of the practice partners. All are very experienced in this type of surgery and commonly assist each other in the operating theatre.

We will make every effort to keep you informed of your progress. We will always be honest and open with you and your family. Feel free to ask questions.

Length of Stay in Hospital

On average most patients will expect a 1 – 2 week hospital stay after a straight forward liver resection. This time can differ greatly for individual patients and individual operations. Some people go home faster than other and others stay much, much longer. You will not be discharged before you can walk unaided and care for yourself.

WHAT ARE THE COMPLICATIONS THAT MAY HAPPEN IMMEDIATELY AFTER SURGERY FOR LIVER RESECTION?

Liver surgery is a complex procedure with many potential complications. In the hands of surgeons who are experienced, the complication rate is usually very low.

The most serious and specific complications that may be seen after this operation include:

Bleeding

This usually occurs during the course of your surgery and occasionally in the 48 hours after. You may require a blood transfusion. It is uncommon to have to return to theatre post-operatively for bleeding but this certainly may occur. Approximately 15 – 20% of patients having a liver resection will need a blood transfusion. The chances of acquiring a viral disease such as Hepatitis B, C or HIV via blood transfusion are exceptionally low.

Bile leak

When the liver is divided in two, hundreds of tiny bile ducts and blood vessels must be tied and clipped. Occasionally one of these bile ducts will open up in the post-operative period and a leakage of bile will occur. This is usually obvious in the soft drain that is left in your abdomen after the operation.

In many cases this bile leak will heal itself. If the bile leak is large in volume or becomes infected, you may require further surgery or a procedure called an ERCP. During this procedure a telescope is placed via your mouth into the bowel and a piece of plastic stent is put in the bile duct to dry up the leak. The stent will need to be removed again after the bile leak has healed.

Insufficient Liver

In cases of patients with cirrhosis or patients having a large amount of liver removed, the remnant piece of liver may not be enough to allow the body to function. This may be a fatal condition and is fortunately very rare. This is why all liver surgery must be carried out by an experienced surgeon. Patients with a small liver remnant after liver surgery may become jaundiced and may remain so for many months. A small remnant may result in weeks and months spent in the hospital.

Other immediate complications of liver surgery

Like all major surgery there are a number of serious complications that may occur. These must be dealt with on a case-by-case basis. Some of these complications are:

- Death: approximately 0.5 – 1% of all patients having this type of operation.
- Infections: wound, pneumonia, urine, intra-abdominal, epidural related, IV line related.
- Epidural related complications: bleeding around the spinal cord that may result in permanent paralysis (this is extremely rare).

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- A twisting of the liver, that cuts off its blood supply. If this is not recognised early it can be fatal.
- A buildup of fluid in the abdomen called “ascites”. This may need to be drained. This is especially common if you have cirrhosis and it is treated with medications.
- A hole in the diaphragm (muscle between lungs and abdomen) that may require a tube in your chest. This is sometimes done intentionally to fully remove a tumour.
- Damage to one of the major bile ducts in the remaining liver – requiring further surgery.
- Damage to the hand from the arterial line in the wrist.
- Punctured lung or damage to blood vessels or the heart secondary to the IV line in your neck.
- Damage to your teeth from the anaesthetic.
- Severe life-threatening allergy to medications.
- Clots in the legs that may travel to the lungs.
- Stomach ulcer that may bleed: this may present as a vomit of blood or black bowel motions.
- Urinary catheter complications: unable to pass urine after catheter removed especially in men
- Weight loss: it is common to loose about 5 – 10% of starting body weight after this surgery (approximately 5 – 10 kgs).
- Wound pain and prolonged numbness under the wound.
- Hernia of the wound.
- Permanent or temporary damage to nerves in the arms, legs and neck due to prolonged immobilisation on the operating table. This may result in loss of feeling or movement.
- Bowel obstruction due to hernia or adhesions. This risk is life long.

AFTER DISCHARGE

What are the long-term complications after Liver Resection?

Once the recovery process is complete, there are very few long-term complications. Most complaints relate to pain around the wound, numbness and occasionally hernias.

After any abdominal surgery there is a life long risk of bowel obstruction due to scar tissue forming in the abdomen.

Loss of weight

It is common for patients to lose up to 5 to 10% of their body weight compared to their weight prior to their illness. Most people can expect to regain the weight within 3 – 6 months after the surgery.

How you may feel

You may feel weak or "washed out" when you go home. You might want to nap often. Even simple tasks may exhaust you.

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You might have trouble concentrating or difficulty sleeping. You might feel depressed or worried about the future.

These feelings are normal and usually transient. They can be expected to resolve in about 4 – 8 weeks.

Going home

You will not be sent home until you are walking unaided and able to care for yourself. You may need to have some help at home preparing meals and cleaning because you will be tired for several weeks. This is a time to rely heavily on family and friends. It is a good idea to have someone at home with you for the first week or two.

Your medications

I will discuss with you which medications you should take at home. If needed, you will go home with a prescription for pain medicine to take by mouth. It is also common to leave with a medication to prevent stomach ulcers. You can stop these after a month if you are well.

Your incision

Your dressing will be removed before you leave the hospital and if it is not leaking it will be left open to the air. You may wear loose clothing over the top of it.

Your incision may be slightly red along the cut. This is normal. If there is spreading redness or a new painful or uneven bulge appears, this is not normal and you should contact the rooms as soon as possible.

You may see a small amount of clear or light red fluid staining your dressing or clothes. If it is minor cover that part of the incision with a pad. If leaking is severe or if it is pus, you should contact the rooms.

You may gently wash dried material off from around your incision. Pat your wound dry with a towel. Do not rub soap, talc or moisturiser into your incision for at least 4 weeks or until it is fully healed. You may rub Vitamin E cream onto the incision after it is fully healed.

It is normal to feel a ridge along the incision. This will go away.

It is normal to not be able to lie on your right side for several weeks after the operation.

It is normal to have a patch of numbness under the wound. This will not go away, but you will stop noticing it over time.

Over the next few months your incision will fade and become less prominent.

Your deep muscle layers may be sewn together with nylon stitches that do not dissolve. If you are thin, you may feel the knotted end of one of these stitches under your wound. This is harmless. If it annoys you, it can be easily removed at some time after your surgery. It is very common to have a prickly end of a stitch poking out of the end of the wound. This

happens as the stitches dissolve. If it bothers you, you may snip it off with a pair of scissors. Otherwise, it will disappear about 8 weeks after the surgery.

Activity

Listen to your body, if it hurts, do not continue with the activity. You may start some light exercise when you feel comfortable. Your wound is built to withstand the pressure of coughing and moving your bowels. Do not lift heavier objects that put undue pressure on your abdomen for at least six weeks. This also applies to lifting children.

Do not drive until you have stopped taking narcotic pain medication and feel you can respond in an emergency. There is no specific time for this, but you must feel safe to drive.

You may climb stairs and go outside. Sitting in the sun for a short time or having an outing can improve your mood.

You cannot fly home for 10 days after a liver resection and I would prefer if you stayed in Brisbane for a couple of weeks after the surgery in case there are problems. If you need to fly home after the surgery, you may need a travel clearance.

You may swim when your wound is fully sealed – usually about four weeks. Strenuous exercise can be undertaken after this, but you will have to build up to this as your energy returns. Use common sense and go slowly.

You may resume sexual activity when you feel ready.

WHAT CAN I DO WHILE I AM AT HOME WAITING FOR MY OPERATION?

You may be at home for the few weeks before your operation date.

We recommend the following to get yourself in the best condition possible:

- It is best to try and eat healthy, fresh food. A high protein diet is especially good. This means lots of meat, fish, eggs along with fruit and vegetables. If you feel unwell, you may not feel like eating much, so it is important to pay attention and eat as though you were training for a marathon.
- Take a simple multivitamin daily (purchased from the chemist or supermarket).
- Try and do some light activity each day like a short walk in the cool of the day.
- Do not smoke.
- Avoid all alcohol as soon as the diagnosis is made.
- Do not take any herbal preparations or products claiming to be liver cleansers. These occasionally result in liver failure and there is no proof that they are of benefit.

WHAT SHOULD I BE AWARE OF IN THE DAYS BEFORE MY OPERATION?

Hospital admission process

The hospital will contact you before your operation to confirm your personal details and medical history. This is usually done on-line. They will also let you know about any hospital excess you may have to pay. You may be admitted the day before or the day of the operation. My anaesthetist will call you the night before or see you on the morning of surgery to discuss the anaesthetic and post-operative pain relief.

Fasting

You must have nothing to eat or drink for six hours prior to surgery. I may give you two carbohydrate drinks to have two hours before the operation. You must take your usual medications with a sip of water. You must not smoke on the day of the operation.

Shaving and showering

You do not need to shave any body hair from your abdomen before the surgery. If needed, I will do this with sterile clippers after you are asleep, just before the surgery commences. This gives the lowest chance of infection.

There is no evidence to suggest that having a shower in antiseptic prior to surgery decreases infection rates, so just shower normally on the morning of surgery. Do not use any perfume.

Belly buttons

You need to remove any belly button piercings. You can put the ring back in a few weeks after the operation.

For people with very deep belly buttons, it is normal to have a buildup of lint and old skin hiding in there. This can be very smelly. Try and clean your belly button with a cotton bud and water a few days before the surgery to decrease the risk of a wound infection.

Make up, nail polish and jewellery

I understand that some people feel quite anxious about going without their makeup. Because most of your body will be covered during the operation, it is important that the anaesthetist can see your face clearly. Your colour is a good indicator of how much oxygen you are receiving. For this reason, it is best to come to theatre with a clean, make up free face.

Nail polish is OK with me but try and use a clear varnish on your fingernails. Coloured nail polish can interfere with the device we use to measure the oxygen in your blood. For many people, having a pedicure the day before the surgery can be a good way to relieve anxiety and feel better after surgery.

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Any jewellery you are comfortable with removing should be left at home, so it does not get lost. If you would like to leave your wedding ring on, you may, but this will be covered with tape for the duration of the surgery.

Glasses and contact lenses

You should remove your contact lenses prior to coming to the hospital. You do not need to bring your glasses to the operating theatre. Just put them with your belongings and they will be given back to you in the ward.

False teeth, caps, crowns

Do not take your teeth out before you come to the operating theatre. They will usually be removed by the anaesthetist after you go to sleep. Keeping your teeth in will help the anaesthetic doctor get a good seal on your mouth with the oxygen mask. Your teeth will be well taken care of during your operation and returned to you in recovery before anyone can see you.

Preparations at home

Ensure that you have someone available to care for small children, partners or elderly parents for a little while to take the pressure off your recovery. If you are handy in the kitchen, try to cook and freeze some easy meals to have on hand for when you do not feel like cooking. If you aren't a good cook, you might want to give this a miss. Another option for those who are challenged in the culinary department is to consider ordering precooked meals or ingredients from companies like Lite'n Easy, Marley Spoon or Hello Fresh.

Consider hiring some help around the house for a few weeks after the surgery or enlist willing (or unwilling) relatives to help out. Make sure all your bills are paid ahead or on automated payments to reduce the things you have to think about in the recovery period.

Medications

- If you are on blood thinners such as Aspirin, Warfarin, Plavix, Iscover, Clopidogrel, Pradaxa, Dabigatran or anti-inflammatory drugs (Brufen, Mobic, Voltaren, etc), they can cause bleeding during surgery. We will advise you about what to do with these drugs prior to surgery. You must let us know about these drugs as the decision to stop them is based on each individual patient's needs.
- Diabetic medications: We will give you advice on whether to take your diabetic medications on the morning of surgery or not. Some diabetics will be admitted the night before the operation for an insulin drip.
- If you are taking any alternative medications e.g. St John's Wort, fish oil or garlic, you should stop these tablets one week before surgery as they may cause bleeding.
- You may continue to take a multivitamin.
- Continue to take all other medications and take them even on the morning of surgery with a small sip of water.

Other things to know

- You must bring all relevant scans to the hospital with you.
- If you smoke, it is time to stop. See your GP for alternatives or call Quitline (13 18 48) if you wish to seek advice.
- You should also abstain from drinking alcohol as soon as this problem is diagnosed.
- Bring all your current medications with you to the hospital.
- Bring comfortable pyjamas, personal toiletries, small change for newspapers etc.
- Bring something to do - DVDs, books, laptops. Alternately, you can use the hospitalisation as an opportunity to rest completely without distractions from the outside world.
- Do not bring large amounts of cash or valuables.

Income Protection Insurance and Centrelink

If you have income protection insurance, start doing the paperwork required to claim before the operation. Centrelink claims take many weeks to process. It is difficult to recover well when you are worried about finances. Before any major surgery it is wise to get your affairs in order including an Advance Health Directive, Will and Power of Attorney.

Queensland Cancer Council

Call the Queensland Cancer Council 13 11 20 as they have a number of general support financial assistance programs in place if needed.

Family

This is the time to rely on family and friends for support. If you receive offers of home cooked meals and household help, accept them happily. That way you can concentrate on getting better. It is a good idea to bring your family to any consultations you attend as it is often difficult for patients to remember things at this emotional time.

WHAT WILL THIS SURGERY COST ME?

I largely work as a 'no-gap' doctor. This means that the surgeon fee for your operation will be sent to your health fund and there will be no 'gap' or extra amount of money to pay. There are always exceptions and decisions regarding this are made on a case-by-case basis.

If you do not have private health insurance or if you have overseas insurance, you will be given a quotation for surgery, anaesthetic and hospital fees which **must be paid in full *prior* to the operation.**

This surgery is technically demanding. We will have another consultant surgeon assisting at your operation. The remuneration for the assistant is very low for the work required and as a consequence there may be an out-of-pocket charge for the assistant.

If your Body Mass Index is >35 i.e. you are morbidly obese, the surgery is far more difficult and the risk of complications including liver failure is higher. If it is medically suitable, we may recommend a period of weight loss in a medically supervised program called

INTENSIV before the liver resection, so it can be performed more safely. This will incur an extra out of pocket expense.

Outpatient consultations are not covered by the health funds and there will be a charge for these meetings. You will get a proportion of this money back from Medicare. There is no fee to be paid for normal care after the operation.

There may be other out-of-pocket fees from your anaesthetist and any other specialists who are asked to look after you. You should ask them ahead of time about any out-of-pocket costs. Ask us who will be performing your anaesthetic and you can make enquiries with them.

There may be extra costs for x-rays, pharmacy and pathology. Intensive Care is usually billed straight to your health fund with no more to pay.

You have a right to gain 'Informed Financial Consent'. Fees from other practitioners are beyond our control and you should ask for the costs from each person who is asked to look after you. Patients have a choice when it comes to paying for their health care and you are fully within your rights to negotiate and shop around.

If you do not live in Brisbane, you will be responsible for all out of hospital accommodation, hotel, meal and transport costs for you and your family. There is some monetary assistance available for private patients through the Patient Travel Subsidy Scheme (PTSS) providing assistance to patients and in some cases their carers, to enable them to access specialist medical services that are not available locally. Please see Queensland Health's Patient Travel Subsidy Scheme site for details. http://www.health.qld.gov.au/iptu/html/ptss.asp. We can provide a list of accommodation close to Greenslopes Private Hospital if required.

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YOUR JOURNEY THROUGH THE OPERATING THEATRE

HOW YOU MAY FEEL BEFORE SURGERY

Having a general anaesthetic (being fully put to sleep) can very scary for some people. It brings up issues about loss of control. People worry about what may happen when they are asleep.

Having an anaesthetic involves a lot of trust and in the end, you will have to take a leap of faith and believe that you have chosen a team that will look after every part of your body. You should read this section if you would like to know exactly what goes on just before, during and after an anaesthetic for major surgery. For some people, understanding precisely what happens in the operating room alleviates a lot of anxiety.

CHECKING INTO THE OPERATING THEATRES

You will be greeted at the front desk by one of our friendly executive staff who will do the administrative paperwork. They will also collect any hospital excess you may have to pay. Please bring your health fund and Medicare cards. They will also want to know about your next of kin. With your permission I will call a nominated family member at the end of the surgery and the recovery nurse will also let them know when you are ready to go to the ward.

For major surgery, it is best that you remove ***all*** your normal clothes including your underpants and bra. This is so we don't lose them or mess them up with blood or antiseptic fluid during your surgery. You will meet one of the pre-op nurses who will help you change into your glamourous theatre gown and paper underpants. For abdominal operations, it is very common that you will wake up completely naked i.e. without your paper underpants. We often remove them in the operating theatre keep them away from the area we are operating on. Your modesty will be protected as much as possible. Contrary to what you see in the movies, your bottom will not be on view out the back of your gown. Hospital robes wrap around your rear. You will be measured and fitted with white, knee high stockings to prevent clots in the legs. For some operations, you may have a pair of pneumatic leg warmers placed on your calves to gently massage your legs while you are asleep. This prevents clots in the legs. The look is complete with a puffy paper hat. Any jewelry you would like to keep wearing, like a wedding band will be covered with tape.

You will be weighed and your temperature, blood pressure and pulse will be checked. You will be asked about your allergies and will be given an ID band that will stay on for your entire stay. The nurse will ask you if there are any implants or metal in your body. We ask this because we need to place an earthing plate on your body during the surgery and need to place it away from any internal metal.

You will then go through many repetitive identification processes to make sure we have the right patient and that everyone agrees on the operation you are having done. You will be put on a bed and you will wait and wait and wait until it is your turn to be called into theatre. This waiting can be quite stressful and you can get hungry. You may want to bring something to do during this time. There is also a TV to watch and magazines to read.

Rest assured we are moving as fast as we can and because unexpected events happen all the time, delays in hospitals are inevitable. It is possible to develop a headache due to caffeine withdrawal. This is not harmful and you may have two Panadol with a sip of water to help.

Your clothes, glasses, valuables will be put into a bag and your belongings will be put into a locker whilst you are in theatre. You will be reunited with them when you return to your room in a ward or intensive care. If you have come to theatre from the ward, your belongings will stay in your room and await your return. If you are going to ICU after the surgery, your belonging will travel with you.

Why do I have to fast before surgery?

For an arranged operation, you must have nothing to eat or drink for six hours before. When you have an anaesthetic, all the muscles in your body relax. If you have food in your stomach, it can reflux back up into your mouth and even worse, your lungs. This can produce a life-threatening pneumonia. You must also not chew gum prior to surgery as this increases the fluid in your stomach. We may ask you to have a sugary drink two hours prior to surgery to help your recovery. It is OK to take your normal medications with a sip of water any time before surgery. It is also fine to brush your teeth.

Special circumstances

There are a few instances where certain precautions take place.

Latex allergy:
Please let the admission nurses know if you have a latex allergy. We need to remove all the latex products from the operating theatre to protect you.

If you take certain medications:
If you have recently had chemotherapy or take immune suppressing drugs like azathioprine or methotrexate special, measures will be taken to protect staff members against coming into contact with these drugs.

If you have certain bacteria on your skin:
Many people have bacteria living on their skin that have been given special names by hospitals. It is likely you will know this from a previous hospital admission. This does not mean you have an infection. We all have bacteria living in and on our bodies, some just have special names and some have a higher chance of being resistant to some antibiotics. It is best if these bacteria are not passed onto other patients as it promotes antibiotic resistance. If you are MRSA “golden staph”, VRE, CRE or MRAB positive, then isolation precautions will be taken throughout your stay in the hospital.

If you have false teeth or plates:
Please leave these in. It makes it easier for the anaesthetist to help you breathe as you go off to sleep. If needed, the anaesthetist will remove them after you are asleep and they will be returned to you in recovery.

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TAKING YOU INTO THE OPERATING THEATRE

You will be wheeled around to the operating room by one of the theatre orderlies or a nurse. This is where you will say goodbye to your relatives. They will be next able to see you when you return to the ward. Because there are other patients in the recovery unit, relatives are not permitted in.

The next stop is the anaesthetic room. This is a small cubicle adjoining the main operating theatre. The orderly will hand you over to the nurse assisting the anaesthetist. You will then have another identification check (you will be very good at reciting your name by this point). The nurse will check that your consent form is completed and if you are having a surgery where the side is important, I will mark the area with permanent marker.

Then the anaesthetist will arrive. They are the person with the good drugs that will make you relaxed, so be nice to them! If they have not met you earlier, they will go through your medical history again and what to expect. They may also explain some risks of anaesthesia, but because you have read this book, you will be aware of them already. This is not meant to scare you. It is our job to tell you about the good and bad aspects of surgery.

The only thing that will go into your body while you are awake is a small plastic tube in your hand called a cannula, drip or IV. This is a small needle and will hurt for a second or two. When it is in the vein, the needle is taken out and a soft plastic tube is all that is left. Once in, you should not be able to feel it. This tube is used to give the medication that will put you off to sleep. In addition, if you are having an epidural for post-operative pain relief then this will be done prior to going off to sleep.

Occasionally, some patients have a severe needle phobia. This one small needle can create terrible anxiety. If this is the case, we can sometimes give the anaesthetic without a needle at the beginning. This is done by asking you to breathe on gas for a few minutes. You will drift off to sleep. The IV is placed once you are fully out and you will know nothing about it. This is a slower way to go off to sleep, but for some people avoiding a needle while awake makes a big difference.

Once the IV is in, you will be taken into the main operating theatre. This can be a confronting place too. There are usually 5 - 10 people in the room, all wearing masks and talking. We are all there to look after you. Most operating theatres are set up in a predictable way. There will be an anaesthetic machine with all the monitors to ensure you are safe. There will be several tables filled with surgical instruments ready to perform your surgery. There will also be nurses preparing this equipment and counting each and every instrument to ensure that nothing is missing at the end of your operation. There may also be junior medical staff and orderlies. The operating table is in the middle of the room under big lights. They will not be turned on until you are asleep. The table is narrow and cold. It is narrow because we need to stand close to you to operate and it won't be cold for long because during the surgery you will covered with a heating blanket.

The trolley you are on will be placed beside the operating table and if you are mobile, you will be asked to move yourself across onto it. The nurses will make sure you are not lying on your gown as it will usually need to be moved aside to expose the area we need to operate on. If you are in pain or not mobile, we will slide you across to the operating table

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on a special board or float you over on a noisy hover mattress. A lot of activity will then happen around you. We will place padded boards on the side of the bed for you to rest your arms on. Your leg massagers will be hooked up and switched on and you will feel a gentle compression on your calves.

You will have three stickers placed on your forehead. This helps the anaesthetist monitor how deeply asleep you are. Sticky dots to monitor your heart beat will be placed on your chest. Fluid will be hooked up to your IV line and a clip that reads your pulse placed on your finger. A blood pressure cuff will be wrapped around your arm and the first time it takes your blood pressure, it will inflate very tightly. It will only do that once.

You may already be feeling happy, drowsy or talkative as the anaesthetist may have given you a relaxing medication via the IV. You will not go to sleep yet, but it is unlikely you will remember anything after this until you wake up in recovery even though you will continue to talk to us.

WHAT HAPPENS DURING AN ANAESTHETIC

Sometimes knowing what happens during an anaesthetic really helps you relax and realize that you are well taken care of while you are asleep. Many people's greatest fear is the anaesthetic. They worry about vomiting afterward, being aware during surgery and not waking up. Whilst these things very, very rarely occur, having an anaesthetic is actually far safer than anything you have already done that day, like driving into the hospital.

General anaesthetic consists of three phases

1. Going to sleep – like taking off in a plane

Just before you go to sleep, the anaesthetic nurse will ask you to breathe into a mask and fill your lungs with oxygen. This makes sure that you have the maximal amount of oxygen in your blood. This does not put you to sleep. A white medication called Propofol is then given through your IV. The anaesthetist will ask you to keep your eyes open. As this medication goes into your veins, it can cause a stinging sensation in your arm. This is normal and does not damage your arm. After this injection you will be asleep in about ten seconds. Your breathing will temporarily stop and the anaesthetist will take over your breathing for you by blowing oxygen into your lungs. As soon as you are asleep, the anaesthetist will give a medication that stops your muscles moving. This has many functions. It allows your throat to relax so the anaesthetist can safely place the breathing tube into the windpipe. It also relaxes your abdominal muscles and makes surgery on the abdomen easier. If you have false teeth, they will be removed at this point and returned to you in recovery.

As soon as the muscle relaxer has worked, the anaesthetist will use a special tool called a laryngoscope. This is a smooth spatula with a light that is inserted over your tongue and deep into your throat. The anaesthetist will be able to see your vocal cords and beyond this is your trachea or windpipe. A specially designed hollow tube is placed down the spatula and into the wind pipe. A balloon on the end of the tube is inflated by the nurse to fully occlude your airway and stop any vomit or secretions from entering your wind pipe.

This is often the trickiest part of the anaesthetic and your life can depend on it. There are many signs the anaesthetist will look for before you go to sleep to predict whether getting this tube down will be difficult or not. If you have a small jaw, previous difficulties with intubation, neck problems, difficulty opening your mouth, the anaesthetist will be ready with a different strategy to get the tube down your throat safely. Because your breathing is our number one priority, occasionally putting the breathing tube down can result in damage to your teeth or cuts to your lips. All care is taken and this is uncommon. Having a tube in your throat can leave it sore and dry for a day or too. This is transient. You may also have a swollen uvula (the dangly bit at the back of your throat) for a few days.

Before the surgery starts, if appropriate, you will be given a dose of antibiotics via your drip to help lessen the risk of wound infection. Soft tape will be placed over your eyes to keep them closed and protected. There are other devices we use to monitor your wellbeing during surgery. Tubes like urinary catheters and IV lines will now be placed. Your arms and legs will be padded to protect your bony bits and pressure areas and you will be positioned for surgery.

2. Staying asleep during the surgery – cruise control

You will be kept asleep by anaesthetic gas piped in via the tube in your windpipe or by a continuous infusion of Propofol in your drip. The anaesthetic machine will steadily and precisely breathe for you. Your anaesthetist will never leave your side and constantly monitors your vital signs. They will give you small doses of medications and fluids to keep everything steady.

3. Waking up – landing the plane

As the surgery comes to an end, the anaesthetist will give you strong dose of pain reliever so you will wake up in comfort. They will turn the gas off and give a medication to reverse the paralysis. While you are still asleep, you will be transferred onto your bed. When you are breathing by yourself, the anaesthetist will remove the breathing tube and suction your throat. Patients rarely remember this. An oxygen mask will be placed on your face and you will be wheeled out to recovery.

APART FROM THE SURGERY, WHAT ELSE HAPPENS WHEN I AM ASLEEP

If you have body hair on the area having surgery, it will be clipped off. Often a larger area that is needed will be shaved. An earthing plate will be placed somewhere on your body so the electrocautery device can be used to stop bleeding as required. This will be removed before you wake up.

Just before surgery, everyone in the theatre will stop what they are doing and check once again your identity and the operation we are performing.

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WHAT SOME PEOPLE WORRY ABOUT BUT WERE TOO AFRAID TO ASK

What if I have my period on the day of surgery?

This makes no difference to you or us. Having a period is a normal part of life. I would suggest that you use a pad and not a tampon as it may be some time before you can change it. If you have any questions about this, ask the nurse who checks you in.

My bladder feels full – will I wet myself?

Just before you go into the operating theatre, many people feel like they need to pass urine. This is usually anxiety. If you have gone to the toilet in the waiting area, it is very unlikely that you will need to go again.

For big operations, we will put a tube in you bladder that will catch all your urine. If you are having a smaller operation and still need to go once you reach the theatre, the nurse will take you to the bathroom.

It is a fact of life that some people occasionally wet themselves during the operation. It does not bother us and you will be cleaned up before you go to the recovery room.

What if I think I am pregnant?

You must let us know at check in, even if you are only suspicious. If you are pregnant it is likely we will delay the surgery. If you are not sure, there are quick pregnancy tests available to check. It is essential that we know because the surgery and anaesthetic drugs can harm your unborn child and even lead to miscarriage.

I always vomit after an anaesthetic

Nausea and even vomiting can happen after an anaesthetic. It is such an unpleasant feeling that it may be an enduring memory of previous surgery. Post anaesthetic nausea is more common if you suffer with motion sickness. Your anaesthetist will discuss this with you and there are many strategies to avoid this troubling side effect.

What if I am breastfeeding?

Breast feeding should not stop you from having a surgery you need. Very small amounts of anaesthetic and pain relieving drugs will pass into your breast milk. Theoretically, this is low risk for your baby. Anaesthetic guidelines suggest you pump and discard breast milk for 24 hours after an anaesthetic. Your baby will need to be fed with previously pumped milk or formula. It is almost certainly perfectly safe however to feed your baby less than 24 hours later. Whether you are up to it of course is another matter. Occasionally, surgery may cause a decrease or even cessation of your milk supply.

Who will be in the operating theatre with me?

It is necessary for your safety for a number of staff, both male and female to be in the operating theatre both before and during your surgery. In addition to your surgeon and

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anesthetist, there may be junior doctors, a number of nursing staff, theatre orderlies and x-ray technicians. As this is a teaching facility there may be medical students present.

All of these staff are highly professional. There are definitely moments where you will be exposed whilst preparing you for surgery, but extreme efforts are made to preserve your modesty.

Do you play music while I am asleep?

No. We are concentrating on your care. Music tends to be a distraction. There are many sounds of machines and monitors in the operating theatre and we are listening to those. We also need quiet to enable communication between staff.

What if my bowels work while I am asleep?

This is quite uncommon. If it does occur however, you will be cleaned up prior to moving to recovery.

I am worried about waking up during the operation

Awareness during anesthesia is exceptionally rare. Making sure you are fully asleep is the anaesthetists' main objective. There are a number of monitors and alarms that you will be hooked up to absolutely ensure that this doesn't occur.

I am on the oral contraceptive pill

There is a medication given as the end of some anaesthetics that can interfere with the effectiveness of the pill. Please tell your anaesthetist if you are on the pill. If the medication is used, then you will need to use an alternate contraception for two weeks to avoid pregnancy.

I am worried about my memory after the anaesthetic

There is no doubt that a condition called post anaesthetic cognitive disorder is a real thing. It is more common on patients over 60 and it can result in memory loss that may be permanent. It is not fully understood. If you have concerns your anaesthetist would be happy to discuss it with you.

RECOVERY – THE WAKE-UP ROOM

When you wake up, is likely that you will be wearing a gown but be completely naked underneath. You will be covered with a blanket.

The recovery room is the first thing most patients will remember after going to sleep. It will almost be like no time has passed.

You will have a nurse by your side who will be monitoring your vital signs. You will stay in recovery until you are fully awake and your observations are within normal limits. The nurse will monitor your pain and keep you comfortable.

If you have a catheter in your bladder, you may feel a need to pass urine. This feeling will go away.

As you wake up you may have a tube in your throat that the nurse will remove. It is unlikely you will remember this.

If you snore you may have a small tube in your nose or mouth to help you breathe until you are fully awake.

If you have false teeth, they will be returned to you in recovery.

Your family is not allowed in recovery so we can respect the privacy of other patients.

INTENSIVE CARE

Once you are stable in recovery, you will be transferred to intensive care. Being in Intensive Care for any period of time can be stressful. By its very nature, ICU is a 24 hour a day affair. There is little differentiation between night and day. This means that patients get very little sleep and their natural body rhythms are interrupted. This interferes with mood and can result in confusion, anger, anxiety and depression.

As soon as you are stable, you will be transferred to the ward.

RETURN TO THE WARD

When you return to the ward you may be drowsy, nauseated or in pain. Your nurse will be monitoring these things closely.

They will be checking you pulse, blood pressure, temperature and dressings regularly for abnormalities.

There is a very strict criteria of observations that the nurses must follow. If you fall outside these criteria for any reason the nurses must notify the medical team. Very often this is just a false alarm. It may sometimes seem dramatic, but it is done for your safety.

If you are on strong pain killers like morphine or Fentanyl you will be required to wear an oxygen mask.

HOW DO I HANDLE MY ANXIETY?

Every person suffers from some level of anxiety. You are not human if you do not. Having an operation is up there in the top ten of major life events. A little bit of anxiety can be good thing. It can make you hesitate before taking a misstep. When anxiety gets out of control however, it becomes a medical problem and stops you doing things that you should or want to do. Some people suffer anxiety about many things and for some it can be an issue only in certain situations.

Common symptoms of anxiety are:

- Overwhelming negative thoughts.
- Sleepless with worry.
- A constant stream of bad thoughts “the chatter”.
- Physical symptoms such as chest pain, nausea, headache.

There are many techniques to address your anxiety. There are mindfulness, meditation and distraction techniques. Sometimes anxiety is so bad that medication is needed.

It is normal to be anxious before surgery but if the feeling of anxiety is overwhelming please talk to me or your GP about it. Help and suggestions are also available at Beyond Blue: www.beyondblue.com.au

ABOUT YOUR SURGEON

A/Prof Kellee Slater MBBS (Hons) FRACS FACS

2018	Associate Professor University of Queensland
2015	Fellow of the American College of Surgeons
2017-2019	National Chair of the Australian Board in General Surgery
2006 – Present	Staff Surgeon Hepatopancreatic-Biliary-Liver Transplant Princess Alexandra Hospital and Greenslopes Private Hospital Brisbane, Queensland
2004 – 2006	Hepatobiliary and Liver Transplant Fellowship Princess Alexandra Hospital Brisbane, Queensland
2002 – 2004	Liver and Kidney Transplant Fellowship University of Colorado Hospital Denver, Colorado, United States of America
2002	Fellow of the Royal Australian College of Surgeons (FRACS) General Surgery
1989 – 1994	MBBS (Honours) University of Queensland