The Whipple’s procedure
Information for patients, families and carers
Your doctors have recommended that you have an operation called the Whipple’s procedure.

This is a complex operation to remove part of the pancreas, part of the small intestine and the gallbladder. The Whipple’s procedure is most often used to treat pancreatic cancer that’s confined to the head of the pancreas, but your surgeon will discuss the exact reasons for your operation with you.

We understand that you may have questions about your condition and your operation. We hope this booklet will be helpful for you and those supporting you.

For more information about anything in this booklet, please contact your specialist nurse or your consultant’s secretary.

About your operation

Why Southampton?
University Hospital Southampton (UHS) is a specialist centre for pancreatic surgery serving the whole of the South coast. If you don't live locally, Southampton may be a little further for you to travel, but you have been referred to us to ensure you receive the best care. At UHS you will be looked after by our team of specialists who carry out around 100 Whipple’s operations each year. Studies have shown that being treated at a specialist centre, such as UHS, results in better outcomes and lower rates of complications for patients.

What does the pancreas do?
The pancreas is a gland that lies at the back of the upper abdomen, behind the stomach. It has two very important functions:

1. making enzymes (or digestive juices)
   Enzymes are released into your gut to enable you to break down and absorb nutrients from the food you eat.

2. producing hormones such as insulin
   Insulin controls the level of sugar in your blood. A lack of insulin can cause diabetes.

Your pancreas is an important part of your complicated digestive system (see page 4). It’s linked to large blood vessels and several organs including the liver, kidneys and spleen. When you have surgery, these connected organs can be at risk.
What is the Whipple’s operation?
The Whipple’s operation was named after Dr Allen Whipple who first performed the operation during the 1930s, but you may occasionally hear it referred to as a pancreaticoduodenectomy.

During the operation, the head of the pancreas, a portion of the bile duct, the gallbladder and the duodenum are removed. Part of the stomach is usually removed too. The remaining pancreas, bile duct and stomach are then rejoined to the intestine, which allows pancreatic juice, bile and food to flow back into the gut so that digestion can continue normally.

A variation of this procedure is called a pylorus preserving pancreaticoduodenectomy (PPPD). In this variation the end of the stomach is preserved to try to maintain the stomach’s valve mechanism. Both procedures have been found to be equally good in taking away cancers from the head of the pancreas or from the end of the bile duct.

The diagrams on the left show the normal anatomy of the pancreas and its relationship to nearby organs. The areas marked by a dotted line highlight the parts of organs removed during the Whipple’s or PPPD procedure. Your consultant pancreatic surgeon will be happy to explain more about their surgical method for you at your clinic consultation or on the ward.

Why do I need to have the Whipple’s operation?
The Whipple’s operation is usually performed to treat:

- cancers in the head of the pancreas
- other tumours and benign lumps in the pancreas
- cancers of the bile duct, duodenum or ampulla
- non-cancerous (benign) disorders such as chronic pancreatitis
- jaundice, which is caused by a blockage in the bile duct (your skin and eyes will have a yellow tinge and your urine will be darker in colour).

If you are jaundiced before your operation, you may have a procedure called an endoscopy (ERCP) to place a plastic tube (stent) into the bile duct to unblock it, allowing bile to flow normally.
In the operation we will aim to remove all visible tumours to increase your life expectancy. Your surgeon will be able to give more specific survival rates based on the reason for your surgery.

It will take time for you to recover from the operation, but most people who have this surgery are gradually able to go back to their normal routine. You should be able to eat and drink normally (with enzyme supplements to help your digestion) and enjoy a better quality of life than you would have done without the operation.

**Possible risks and complications**

Most people recover well from the Whipple's operation but as with all major surgery there are some risks and complications associated with the procedure.

Most of these complications are minor and will only slow down your recovery a little. However, some complications are much more serious and can be life threatening. If you are reasonably healthy, under 75 years old and your operation is straightforward, then the risk to your life is about one in fifty. If you are older, have other serious health problems or have a very difficult tumour to operate on, then this risk may increase to one in ten.

We will discuss your individual risks with you before your surgery. If we think the risks are too great then we will advise against surgery.

Possible complications associated with the Whipple's operation include:

- **Chest infection and problems with breathing**
- **Bleeding** during the operation, which may result in the need for a blood transfusion (replacing the lost blood with donated blood)
- **Wound infection**
- **Blood clots**
- **Delayed emptying of the stomach**: After surgery, some patients experience slower recovery of digestion, which means it can take longer to get back to normal eating and drinking. This is called delayed gastric emptying. If this happens, you may require a drip going into your vein to keep you hydrated with fluids. You will also be fed with liquid food, which will pass into your body through a tube until your stomach has recovered enough to take in food through your mouth (this can sometimes take several weeks).
- **Anastomotic leak**: Occasionally one of the joins between the pancreas, stomach, small bowel and bile duct can leak after the operation. This is most likely to occur between the pancreas and stomach or bowel because the pancreatic juice that passes through the join contains digestive enzymes that can break down the proteins trying to heal the join. If you experience this leak we may drain the fluid through plastic tubes in your stomach until the leak has stopped. Although rare, a leak can damage blood vessels close to the pancreas and cause serious bleeding several days after your operation. This is the most serious complication after this type of surgery and often requires an operation to repair the blood vessel.

**Diabetes**

The pancreas produces insulin which is required to control your blood sugar levels. As a large amount of the pancreas is removed during the Whipple's operation, there is a risk you will develop diabetes. If you find that you have increased thirst, increased urination and/or unexplained weight loss in the weeks after your surgery, you should seek immediate advice from your GP.

If you are not diagnosed with diabetes after your operation, you will be monitored on a yearly basis by your GP for raised blood sugar levels.

If you have diabetes before your operation, your medication will be reviewed by the hospital diabetes team as changes may be necessary. After surgery, you may need to go onto insulin injections which the diabetes team can help you manage before you leave hospital. You may also be taught how to check your sugar levels at home with a finger-prick blood glucose meter.
A typical suggested range of sugar levels to aim for is between seven to nine before meals, but this can vary between patients. When your appetite returns and your food intake improves, you may find that your blood glucose levels begin to rise, particularly if your pancreatic enzyme supplement medication has been adjusted. If your blood glucose level is regularly outside the range suggested to you or if you are concerned, you should seek advice from your GP.

**The Whipple’s operation for people being treated for cancer**

If you are having the Whipple’s operation to treat cancer, we may suggest you have some radiotherapy or chemotherapy first to try to shrink the tumour so that it is possible to remove it. You may also need to have chemotherapy after you recover from the operation.

Before your operation you will have undergone certain tests or scans to check the extent of the cancer. These tests are a good guide but they cannot always give us a completely clear picture and further problems may be discovered during the operation. If we find that the cancer has spread to other organs or is fixed to important structures, the cancer cannot be removed. Your surgeon may perform a bypass operation to prevent a blockage of the bile duct or stomach occurring in the future.

For cancer patients chemotherapy is the main alternative treatment to surgery. Chemotherapy may shrink the cancer or delay its growth but it does not act as a cure.

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**Before your operation**

**Multidisciplinary team meeting (MDT)**

The group of healthcare professionals managing your treatment will work together in what’s known as a multidisciplinary team (MDT). Experts including surgeons, medical doctors, oncologists (cancer specialists), radiologists (x-ray and scan specialists), pathologists (disease specialists) and specialist nurses will hold an MDT meeting. Together they will discuss the most appropriate treatment options for you. This will be discussed with you at your clinic appointment and you will be involved in making the final decision for your care. The MDT approach to care for certain conditions, including cancer, is recommended by the National Institute of Clinical Excellence (NICE).

**Pre-assessment**

Before your operation and anaesthetic we will need to know about your general health. You will have an appointment at our pre-assessment clinic where several members of the team will assess your health:

- **Healthcare assistant**
  
  A healthcare assistant will measure your height, weight and blood pressure and will carry out an ECG (electronic tracing of your heart).

- **Nurse**
  
  The nurse will ask you a number of questions and examine you to help us assess your fitness for a general anaesthetic and the operation.

The nurse may ask about any medicines you are taking, including herbal remedies and supplements you may have been prescribed or may have bought. Please bring a current list of your medications with you. Some medications (including aspirin, warfarin or clopidogrel) make your blood thin and may result in you experiencing excessive bleeding during the operation. We might ask you to stop taking these medications a few days before your operation to allow their effects to wear off.
The nurse will also give you information about your hospital admission, which includes the ‘enhanced recovery pathway’ after surgery. This is a series of steps to get you recovering from surgery, going home and returning to normal activity as soon as possible.

**Anaesthetist**
You will usually see the anaesthetist in the clinic on the same day. The anaesthetist will review the information gathered by your healthcare assistant and nurse and will discuss the anaesthetic with you. The anaesthetist will also discuss pain relief options with you.

**Other specialists**
During your visit to the pre-assessment clinic you may also meet the dietitian and one of the HPB specialist nurses (HPB is short for hepato-pancreato-billary which means related to the liver, pancreas or bile-duct).

**Tests and scans**
You will need to have blood tests and possibly some additional tests such as X-rays, heart scans, or a cardiopulmonary exercise test (CPET). This is performed on a special exercise bike and shows us how well your heart, lungs and muscles work. For some tests you may need to come back on another day.

Your visit to the pre-assessment clinic is a good time for you to talk about any questions or worries you may have.

You may be at the clinic for up to four hours so you may wish to bring a book or magazine.

**Weight loss**
Patients with pancreatic disease are particularly at risk of malnutrition. You may lose weight because of a decreased appetite, an inability to eat and digestion problems resulting in unpleasant stools.

If you have experienced weight loss, please speak to your consultant or specialist nurse who can refer you to a dietitian before your surgery. The dietitian will be able to advise you about suitable foods and the best eating pattern for your symptoms. They may also recommend nutritional supplement drinks to help you to build up your strength and weight prior to surgery. Your appointments at the pre-assessment or consultant clinics are good times to highlight any concerns you have about your weight and to ask for a referral.

**Preparing for your return home**
Before your operation, it’s a good idea to start thinking about how you will manage at home after your surgery. We encourage patients to arrange to stay with family or friends or to have a relative staying with them if possible.

If you live alone or require additional support then we may need to help you make plans for a short period of convalescence before you go home. The sooner we know this, the sooner we can start arranging something for you. Talk to your close family, friends and GP to see what options you have.
On the day of your operation

Arriving and checking in
You will probably be asked to come into hospital at 3pm on the day before your surgery. The nursing staff will fill out your admission paperwork and a doctor will check that your blood tests are up to date and ensure everything is in place for your operation the next day. After this you may be able to go home or stay in a local hotel in Southampton and return on the day of surgery (unless we decide you need to remain in hospital overnight).

Consent
Your surgeon or a member of their team will discuss your operation with you including all the potential risks involved, the alternatives to surgical treatment and the expected benefits of the operation. It’s important that you understand the benefits and risks involved in the operation before you sign your consent. If you have any questions or concerns, please ask the surgeon or nurse before your operation.

The operation
The operation usually takes between four to seven hours. After the operation, you will be taken to a recovery room for about an hour while you wake up. Patients typically stay in hospital for around seven to ten days, but it will depend on how your recovery goes.

After your operation

What happens after the operation?
After your time in the recovery room, you will be transferred to the surgical high dependency unit (HDU), or to the intensive care unit (ICU) if necessary. You will stay there for specialist care and monitoring for a few days. Your stomach may hurt, so please ask the nursing staff for pain relief if you are unable to breathe deeply or cough easily. It is important that you can breathe properly in order to prevent a chest infection developing. You will be encouraged to cough to clear your chest.

When your consultant surgeon and the HDU or ITU consultant are satisfied that you no longer need intensive nursing care you will return to the surgical ward.

Tubes, drains and dressings
During surgery we will attach a number of tubes into your body. These may be uncomfortable but they are essential and we will remove them as soon as we can.

You may have some or all of the following:
- tubes resting on your nostrils or a plastic mask to give you oxygen
- a tube in your nose going down into your stomach to collect excess acid and bile from your stomach
- a thin tube in your neck for drips, medication, and monitoring blood flow and sometimes to give you special liquid food
- drips in your arms/hands to keep you hydrated
- drains to collect excess fluid from the operation site
- dressings over the wound site (for the first 48 hours) which will either have been closed with stitches, surgical clips, or invisible absorbable stitches
- a catheter (a tube into your bladder to collect urine)
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The tubes and drains are usually removed by the end of your first week in hospital. Some patients will still have a tube coming out of their stomach when they first go home. If this is necessary for you, we will make sure that you understand why it is there and know how to look after it until we remove it in the clinic.

Getting up and about
You will be encouraged to get up and about as much as you feel able to, as this helps to prevent complications after your operation, like pneumonia and blood clots. A physiotherapist will help you with this.

Biopsy and further treatments
A biopsy (or sample) of the tumour will be taken during the operation to assess what type of tumour you have. If the sample shows cancerous cells, then you may be referred to see an oncologist (a doctor who specialises in treating cancer with chemotherapy). They may give you chemotherapy as an injection, drip, or tablets. If this applies to you, you will have the chance to discuss this in more detail with the specialist doctor and nurses. Occasionally, chemotherapy is prescribed before starting surgery. It is important that you understand your choices and you have the treatment which is most effective for you and your circumstances.

Post-surgery complications
Once you are home, you should follow the enhanced recovery information and the advice from the ward. You should contact the enhanced recovery or surgical ward immediately if you experience any of the following symptoms:

- increased pain
- raised temperature
- diarrhoea or vomiting
- bleeding
- dizziness

Rest, mobility and activity
It is normal to feel tired and anxious when you first go home. You may feel frustrated if you are not able to do all the things you could do before you went into hospital. It is important to reintroduce activities into your daily routine gradually. Initially, you should avoid tasks which involve lifting, stretching or pulling (such as pushing a shopping trolley, lifting and carrying children or carrying laundry). You should also avoid anything which may cause strain on your abdominal muscles as they have been weakened by surgery.

It is often helpful to plan a rest period during the day at a time when you will not be disturbed. You may need to accept some help from family, friends and neighbours until you have regained your strength.

Rest is a vital part of the recovery process, but activity is also important to help you to regain your previous level of independence. Immobility after surgery can often be harmful and is associated with complications such as blood clots.

Try to walk regularly as this is a good form of exercise to help you recover after surgery. Start with a short distance, and go a little further each day, without exhausting yourself.

Food and fluids
Food and fluids will be reintroduced to you gradually but it may take several weeks or even months before your dietary intake and general digestion of food returns to normal. Unless you have diabetes or have become diabetic as a result of your surgery, there are no specific restrictions on what you can eat. You might find that you get fuller quicker so try to have smaller meals with snacks in between to help minimise the symptoms of bloating or discomfort. The dietitian will support and guide you throughout your recovery.

The pancreas produces enzymes which help digest food so that it’s ready to be absorbed. Any disruption to the pancreas can affect the production of these enzymes. This can result in poor food digestion and absorption and lead to loose, pale, greasy stools as well as bloating and excess wind.
It’s likely that we’ll give you pancreatic enzyme capsules either before or after surgery. Before you go home we will discuss diet and pancreatic enzyme replacement therapy with you and your family, as well as give you information that you can take home for future reference. You may find that your taste of food may be affected for a while. The dietitian will provide advice on how and when you should take these capsules and you will be given their contact details for ongoing support.

After you leave hospital

**Driving**
You should not resume driving until your levels of concentration, strength and mobility have improved enough for you to drive safely. It is important to ensure you are able to perform an emergency stop; this should be practised on a quiet road when you feel ready. If you cannot do an emergency stop confidently then you cannot drive a car. It is always advisable to check with your insurance company and consultant before starting driving again.

**Financial concerns**
Your diagnosis may have an impact on your financial circumstances, particularly if you are still working. Your specialist nurse can advise you or refer you to a social worker at the Macmillan Centre who specialises in financial assistance. If you have an NHS payment exemption certificate, you may be entitled to a reduction in travel costs. From April 2009, all patients diagnosed with cancer are exempt from paying prescription charges.

**Sexual relations**
Your medication, hormones, chemotherapy and general condition may alter your desire and response to sex. There is no correct time to return to sexual activity but if you experience problems or have questions, ask your specialist nurse or doctor.

**Returning to work**
How quickly you can return to work will depend on the nature of your surgery and the type of work you do. It can take anywhere between three to six months. If you need to have chemotherapy after your surgery then you may find it difficult to return to work full-time until you have completed the course of treatment.

It’s normal to get tired very quickly in the first few months after surgery, and concentration and decision making may be difficult to start with. It’s best not to rush back to full-time work too soon as it may slow down your recovery. We advise to ask if you can work part-time or on light duties for a few weeks when you first go back to work.

Your clinical team will be able to give you advice, but it will also depend on how well you recover when you are back at home. The nursing staff can provide you with a sickness certificate which will cover your time in hospital and your first two weeks at home. After that you will need to visit your GP to review this further.

**Further information**
University Hospital Southampton NHS Foundation Trust
www.uhs.nhs.uk

The Macmillan Cancer Information and Support Centre, B Level, Southampton General Hospital
Tel: 023 8120 6037 Email: macmillancentre@uhs.nhs.uk

Pancreatic Cancer UK
Support Line: 020 3535 7099 Email: support@pancreaticcancer.org.uk

Pancreatitis Supporters Network
Tel: 012 1449 0667 Email: info@pancreatitis.org.uk

PLANETS Cancer Charity
www.planetscharity.org
We have a wide range of information booklets available. Please ask a nurse if you would like to see one.

You may find it helpful to talk to a patient who has had the Whipple’s operation themselves. Please ask your specialist nurse if you would like to do this.

Our contact details
If you would like to contact your consultant, please telephone their secretary on the number provided:

• Professor Primrose, Mr Armstrong and Mr Hamady: 023 8120 6796
• Mr Takhar and Mr Abu Hilal: 023 8120 6977.

For urgent queries at weekends or in the evening, you can call the surgical ward E8 on 023 8120 6510.

If you have started the enhanced recovery programme you will be given a 24-hour contact number for two weeks after you leave hospital.

If you were already seeing our hospital dietitian while you were an inpatient, you can phone the dietetic department on 023 8120 3456 or 023 8120 6072.

NHS 111 and emergency departments or walk-in centres will not be familiar with your case and the surgery you have had done. Keep the copy of your discharge summary in a safe place so that you can show them your recent history. You can call the ward for telephone advice but you may need to be admitted to Southampton General Hospital for assessment.

If you are admitted to a hospital other than Southampton General Hospital, please ask them to inform us of your admission.

Specialist nurse contact details
You may have been given contact details for a HPB specialist nurse who will provide continual support and advice throughout your whole care pathway.

If you have been referred to Southampton General Hospital from another hospital, you will be given details of your local clinical nurse specialist (CNS). They will be told about your surgery and discharge from hospital by the Southampton specialist nurses.

We provide a liaison service and inpatient support throughout your care at Southampton General Hospital.

Individual notes