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HEMODIALYSIS
CHRONIC KIDNEY DISEASE

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When your kidney disease reaches Stage 5 (eGFR 15%), your kidneys are no longer working effectively, leading to fluid and waste products accumulating in your blood. Dialysis can help to remove the fluid and waste products from your body, which your failing kidneys can no longer perform.

There are two forms of dialysis treatment:

- Hemodialysis
- Peritoneal Dialysis.

Your doctor will discuss these options with you and your family to help you make the decision about which treatment option suits you best.

WHAT IS HEMODIALYSIS?

Hemodialysis (HD) uses a machine and a special filter to remove excess fluid and toxins (wastes) from your blood. These excess fluid and toxins are no longer able to be removed by your damaged kidneys.

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HOW DOES HD WORK?

Your blood is effectively cleaned through the dialysis machine and pumped back into your body. You must have vascular access to connect to the machine. This is explained below in more detail. Needles are placed into your vascular access and bood tubing attached which allows the blood to leave the body and be filtered through the machine. This filter is called a “dialyzer”. This blood is contained in fine tubes called “fibers” which are bathed in fluid called “dialysate”. These fibers are specifically designed to allow for the removal of certain sized elements or molecules, which are in excess in your blood such as extra potassium or phosphate. The large sized molecules such as your red blood cells remain within these fibers. The excess toxins and unwanted fluid in the blood then move into the dialysate and are removed as waste.

WHAT IS NEEDED BEFORE STARTING HD?

Ideally you should start dialysis with a permanent vascular access so to minimise infections and further complications and to provide a ‘good dialysis’.

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WHAT IS VASCULAR ACCESS?

This is the general term used to describe the way in which we can connect you to the dialysis machine. There are three main types of vascular access commonly used today:

- Arterio-venous fistula (AVF),
- Arterio-venous graft (AVG) or
- Central vein catheter (CVC).

WHAT IS AN ARTERIO-VENOUS FISTULA (AVF)?

- Creation of a fistula is usually undertaken as a planned operation performed by a surgeon. A fistula is a surgical join between the artery and the vein which causes the vessel to ‘dilate’ or become wider to enable insertion of needles (cannulation) to be done more easily.
- The fistula is usually created in the forearm of the arm less commonly used, meaning the surgeon will try and create a fistula in your left forearm if you are right-handed. However the surgeon will access the size of your vessels to determine the best location. If a fistula is being planned it is recommended not to allow any ‘drips’ or intravenous cannula or blood tests to be taken from your forearm blood vessel in order to reduce possible damage to these vessels.

HEMODIALYSIS

- Generally this operation is considered a ‘minor’ or ‘small operation’. Your surgeon will discuss your indivudual risks, operation specifics and time required.
- It is vitally important to take care of your fistula to ensure this lasts as long as possible. This will be discussed further in the document.
- A fistula takes at least 6 weeks to develop before it can be used for dialysis. When the fistula is working you will feel a vibration (sometimes know as a “thrill” or “buzz”) over the area. You will be taught how to check your fistula by feeling for the “thrill”/”buzz” to ensure that it is still working. If your blood pressure drops or the “thrill”/“buzz” becomes weaker you need to go to your hospital urgently as your fistula may stop working.

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WHAT IS AN ARTERIO-VENOUS GRAFT (AVG)?

- Some patients may have small vessels that may not dilate enough for a successful fistula. The surgeon then may decide to create a graft instead. This may be an 'artificial' or synthetic material or may involve the transfer of a vessel from another part of your body (for example from your leg to your arm).
- The graft is an artificial connection between the artery and vein. Your surgeon will discuss an individual plan for you based on your medical conditions.
- A graft can usually be used between 4 – 6 weeks after creation, dependent on the level of swelling post-operatively. You are unlikely to feel a vibration in a graft. But you will be taught how to check and care for your AVG.

WHAT IS A TUNNELLED CATHETER OR CENTRAL VENOUS CATHETER?

A central venous catheter (CVC) is a thin flexible tube, ideally tunnelled under the skin, and then inserted into a central vein at the base of the neck. The connection site of the catheter has two tubes and 'hangs' approximately 5cm out from the base of the next. The entry site is usually covered with a clear dressing to reduce risk of infection.

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Having a catheter is the least preferred option, due to the risk of infection. However, sometimes this is required if your fistula or graft is not ready to use.

You need to be aware of the risk of infection and ensure you care for your catheter as instructed in order to prevent complications. Your doctor and/or surgeon will discuss this access with you if they think this may be required.

NOTE:

The aim is to create a fistula (AVF) or graft (AVG), preferably, 4-6 months before the doctors think you need to start dialysis: This is to ensure:

- You begin dialysis when your doctor advises. This helps to avoid the need for an urgent insertion of central vein catheter.
- Your fistula or graft has sufficient time to mature and needles can be inserted (cannulation) more easily.

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WILL YOU EXPERIENCE PAIN FROM NEEDLE INSERTION?

Cannulation although performed by skilled staff can still be uncomfortable for some patients, but this is usually temporary. Once inserted, the needles usually do not cause any pain or discomfort. If you continue to experience this please notify your nurse immediately so that they may find out the cause and solve the problem.

CAN YOU HAVE LOCAL ANAESTHETIC TO MINIMISE THE PAIN FROM THE NEEDLE INSERTION?

After the nurse reviews your fistula they will discuss with you the options for local anaesthetic and if this is advisable. The use of local anaesthetic may make cannulation more difficult, and that this may cause scarring of the vessel long-term. The local anaesthetic solution may also ‘sting’ when it is inserted so use is very individualised.

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HOW TO TAKE CARE OF YOUR FISTULA?

- Never allow blood tests to be collected from your fistula arm.
- Never take your blood pressure readings on your fistula arm.
- Do not hang a bag over your fistula arm or carry heavy objects on it.
- Do not sleep on your arm or wear tight jewellery or a watch on this arm.
- Be aware of any signs of infection (soreness, redness, hotness or swelling around the fistula area). Report any of these signs immediately to your doctor or nurse.
- Maintain proper hygiene, particularly on your fistula arm. Cover your arm if it is likely to be soiled/injured, such as when gardening.
- Wash your fistula arm thoroughly before commencing dialysis.
- Ensure the dressing to your access is removed and applied as directed by your nurse.
- Learn to check your fistula at least once a day by placing your hand gently on it to feel the vibration. If the “thrill”/”buzz” is weak or absent, contact your hospital /dialysis centre immediately.

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WHAT ARE THE MOST COMMON COMPLICATIONS OF HEMODIALYSIS?

Common complications may include:

- Low blood pressure (hypotension) including dizziness and sweating
- Nausea and vomitting
- Cramps, commonly in the lower legs and hands.

Less common complications of haemodialysis are often related to another illness:

- Changes in blood sugar levels for diabetic patients
- Infection.

HOW CAN YOU HELP TO MINIMISE ANY HD RELATED SIDE EFFECTS?

- Understand your fluid restriction and how to maintain this.
- Understand the dietary requirements and select appropriate foods.
- Take your medications as ordered.
- Attend your dialysis treatment as scheduled.
- Educate your family and friends on the side effects so that they can support you and recognise the signs.

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WHAT CLOTHES SHOULD YOU WEAR TO HD?

You need to be comfortable whilst at HD because you will be limited to sitting in a chair or lying in a bed for 3 to 4 hours per session. Furthermore, the nurse will need to be able to reach your vascular access easily.

You may get some blood on your clothes occasionally so it is advisable not to wear your best clothes (some centres recommend you change into pyjamas).

You will need to wear safe footwear that will prevent you from tripping or slipping on the floor.

WHERE WILL YOU RECEIVE YOUR HD?

Your doctor will discuss if there is the possibility for you to perform home HD. If you are medically well and physically able to perform home dialysis, this is beneficial for your health and well-being. If not, your doctor and head nurse will also discuss the location of the dialysis clinic where you can have your dialysis.

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HOW OFTEN WILL YOU NEED HD?

Commonly HD occurs three times a week but your doctor will discuss your own health needs and create a plan to suit you. More dialysis is considered better for your health and hours may vary between patients.

In addition to time on dialysis, it may take up to 30 minutes to prepare for treatment. About 30 minutes is also required at the end of treatment to ensure you are well, there are no complications and it is safe to go home.

CAN YOU MISS A HD TREATMENT?

NO - it is important to attend all treatments in order to maintain your health as your kidneys are not functioning enough to keep you well.   A dialysis session is needed to do some of the funtions that your kidneys can no longer do.

If there is an emergency and you cannot attend HD, you need to phone the dialysis centre immediately and seek guidance as to what to do.

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Missing a dialysis session can result in complications; for example, the fluid levels in your body may rise too much. This can cause severe shortness of breath requiring immediate attention. Also if your diet is not well controlled and and you miss your scheduled dialysis sessions regularly, the toxins will increase (especially potassium) and you are at risk of heart palpitations, irregular heart beat and possible death.

WILL YOU BE COMFORTABLE DURING THE TREATMENT AND DOES IT HURT?

Although cannulation can be uncomfortable, for most patients this is only for a brief moment. Whilst the blood is travelling around the machine there is no pain or discomfort, unless minor side effects occur.

The staff in the dialysis unit will ensure you are comfortable in a bed or dialysis reclining chair, dependent on availability/your personal requirements.

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WHAT CAN YOU DO WHILST ON HD?

This is a personal choice and we would encourage you to bring in something along with you to prevent boredom during your dialysis. This could be books, portable DVD players, many patients bring their own computer with them, but of course the dialysis centre cannot take responsibility for any damage or loss. Some patients use this time productively for example; to study courses online; catch up with correspondence, etc.

The nurses will explain how much movement you will be capable of, due to the needles in your “access” arm. Your arm should be visible at all times and taped securely to minimise needle movement.

Some units offer exercise for patients whilst on dialysis which may include arm or leg movement. Regardless, you should move your other limbs during treatment in order to minimise any “stiffness” due to limited movement.

WHAT HAPPENS IF YOU FALL ASLEEP DURING THE TREATMENT?

Many patients sleep whilst on dialysis, and the nurse will need to wake you during your session to undertake your observations (blood pressure) and ensure you are well.

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HOW WILL YOU FEEL AFTER ‘COMING OFF’ THE MACHINE?

This is depends on you as a person and how much fluid is removed, everyone responds differently. But it is not uncommon to feel tired after dialysis so it is often advised to rest afterwards.

WHAT HAPPENS WITH THE MACHINE AT THE END OF THE TREATMENT?

The nurses will explain what will happen with the dialyser and lines at the end of treatment. The machine will be cleaned externally, disinfected internally and prepared for the next patient.

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WILL YOU STILL NEED TO ATTEND OTHER MEDICAL APPOINTMENTS?

You will still need to see your specialist and general doctor as well as attending dialysis. This will ensure other aspects of your health are attended (e.g. health promotion activities and immunisations; diet and physical activity advice).

Your nurse and doctor will regularly discuss with you how your treatment is progressing overall; for instance, the results of your blood tests and your general condition.

HOW CAN YOU BE INVOLVED IN YOUR OWN HEMODIALYSIS CARE?

Being actively involved in your care will help you feel you have some control over your kidney disease. You can do this by, for example:

- Asking questions, never be afraid to ask about anything you don't understand
- Preparing your dialysis set-up as shown by the nurse
- Assist in completing your paperwork
- Take your blood pressure, pulse, temperature and weight

- Holding your needle sites after the needles have been removed
- Some patients feel capable of learning to set-up the machine or to cannulate (insert needles) themselves. If you feel this is something you would like to do, please discuss this with your nurse.

CAN YOU EAT/DRINK DURING HD?

The nurse will guide you if it is safe to eat during dialysis. Some patients drop their blood pressure if they eat on dialysis, and so you will be advised if you can eat dependent on your blood pressure and risk factors.

For diabetic patients it is important to maintain ‘normal’ blood sugar levels while on HD. You need to discuss with the nurse how many drinks you plan to have (usually 1-2 drinks) and this will be used to work out how much fluid you need to ‘take off’ during dialysis.

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CAN YOU HAVE A BREAK (‘COME OFF’) DURING THE DIALYSIS SESSION?

You will be encouraged to attend the toilet prior to commencing your treatment. Disconnection during treatment puts you at risk of complications and increases your risk of getting an infection as the blood pathway is being opened.

IF YOU HAVE FURTHER QUESTIONS REGARDING YOUR CARE, WHO DO YOU TALK TO?

When you start dialysis all of this information will be explained in more detail. You will have a tour of your dialysis area and day to day aspects of your care will be discussed. This will include explaining all the health professionals you will meet, if it is appropriate to have visitors whilst having HD, and how to maintain your health. Family and/or signficiant persons are encouraged to attend your appointments and health care visits. This will enable them to understand the information and support you in your healthcare. You healthcare professionals will guide you as to the size of the rooms/facilities and how many family members can be accomadated.

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SOMETHING YOU SHOULD KNOW ABOUT CERTAIN REACTIONS AND EMOTIONS THAT YOU MAY HAVE.

Starting dialysis (haemodialysis or peritoneal dialysis) has a great impact and can cause different reactions and feelings. Do talk to your nurse or family members about your feelings (See “Reactions after diagnosis”).

Many people on dialysis are able to enjoy activities they previously did, discovering ways to adapt themselves to a different lifestyle.

WHERE CAN YOU FIND MORE INFORMATION ABOUT HD?

Always discuss your healthcare with your nurse/doctor and ask questions. They will be able to provide information specific to your needs. If possible, you should try to read the resources from your local health service/hospital, the national kidney foundation or genuine patient resource groups.

HEMODIALYSIS

Information on the Internet:

Be careful with the information published on the internet, not all websites provide good quality health information:

- Check the information found on the Internet with your nurse (be cautious not to follow all you read unless you have checked the information with your healthcare professional).

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KEY POINTS TO REMEMBER

- Hemodialysis (HD) is the use of a machine to remove fluid and toxins (solutes) in your blood.
- You will need to have a vascular (blood) access before starting HD.
- A fistula is the preferred vascular access.
- Cannulation (needle insertion) although performed by skilled staff can be uncomfortable for some patients but this is usually temporary.
- HD is commonly attended three times a week but your doctor will discuss your individual health requirements and create a plan to suit your medical needs.
- The most common side effects is low blood pressure (hypotension) including dizziness and sweating. The nurse will assist in preventing and managing this complication if it occurs.
- Side effects can be minimised by you taking an active role in your health care.
- Ask questions if you are unsure.
- You will be given further information as you progress through the treatment.
- As your condition and health care changes the doctors and nurses will make changes to your care and will discuss this with you.

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