Highlighted words used throughout this workbook can be found in the Glossary section with more information.

Module 1 – How Does Hemodialysis Work?

Did you KNOW?

Hemodialysis means *'cleaning the blood'.*

The ***hemodialysis*** process is a medical procedure where blood is artificially cleaned. This involves your blood passing through a dialyzer (an artificial kidney) to remove waste and excess water. The ***dialyzer*** uses tiny hollow fibers that look like microscopic straws called a semi-permeable membrane. As blood moves through these tubes it comes into contact with a solution called dialysate, a liquid made from water, an acid solution and a bicarbonate or lactate solution. The dialysate liquid is circulated around the outside of the hollow fibers providing a pathway to remove toxins.

Making tea offers an everyday example of diffusion. Putting a tea bag into hot water causes the bag to act like a semi-permeable membrane. The tea leaves are too big to leave the bag, but the flavour and colour of the tea can still pass through the membrane into the water, and vice versa, the water is able to pass into the bag.

During ***hemodialysis***, large molecules such as blood cells and protein are kept inside the membrane but smaller molecules such as urea and creatinine (and other biological wastes) pass through the small holes of the dialyzer's filters into the dialysate solution.

Did you KNOW?

Two normally functioning kidneys filter about 180 litres of blood a day, removing about two litres of waste and extra water. Your body produces hundreds of different waste molecules every second. Some of these molecules become waste products such as creatinine and urea, which are the result of the normal breakdown of muscle and food (known as metabolism).

Dialysis replaces many of the functions that your kidneys are no longer able to do:

- Removes salt and water (helps to regulate your blood pressure)
- Cleans the blood by removing wastes (e.g. urea, creatinine)
- Correct high or imbalanced levels of ***potassium***, chloride, sodium etc. in the blood
- Regulates electrolytes and minerals (e.g. calcium)

However, dialysis is unable to:

- Produce hormones such as Erythropoietin (which helps regulate red blood cells) and Renin (which helps regulates blood pressure)

How do you know if you are getting enough dialysis?

You have now read how dialysis works to get rid of waste products and extra fluid from your system. You should also understand that the more dialysis treatment you get, the better you will feel, as you will have a reduced amount of waste products and excess fluid in your body. A few signs (symptoms) of not getting enough dialysis are:

- Weakness and tiredness
- Poor appetite
- Feeling sick to your stomach
- Trouble getting a good sleep
- Itchy skin
- Metallic taste in your mouth
- Difficulty concentrating
- Reduced interest in sex
- Difficulty breathing, especially when exercising or laying down flat
- Swelling in your hands and feet
- Poor blood pressure control

Not getting enough dialysis can be extremely serious. It is important to pay attention to these symptoms and act on them quickly. Talk to your nurse or doctor as soon as possible before your symptoms get worse. If you have any of the above symptoms please notify your health care team.

To feel your best, remember to:

- Dialyze all the days you're supposed to
- Dialyze for your full treatment time
- Follow your diet and fluid restrictions
- Take your medications regularly
- Take care of your vascular access and monitor your arterial and venous pressures during treatment

Notes- How Does Hemodialysis Work?