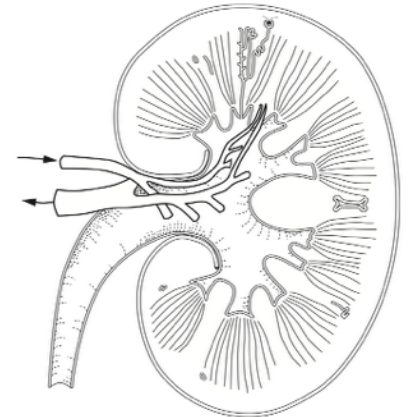
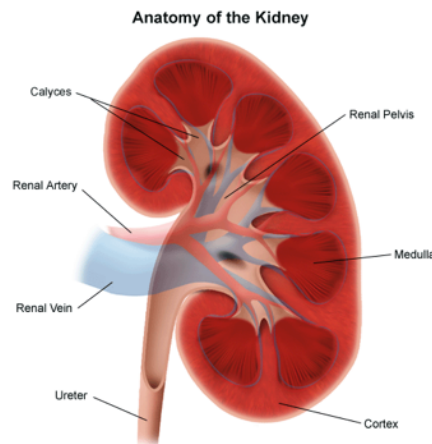
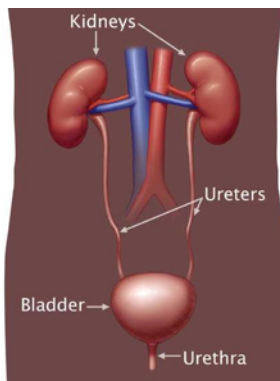


Excretion in humans

Excretion is the removal from organisms of toxic materials, the waste products of metabolism and substances in excess of requirements. Substances include carbon dioxide, urea and salts.

In the liver, excess amino acids are deaminated into carbohydrates and ammonia. The carbohydrates are used or stored in the liver. The ammonia is converted into urea. Urea is dissolved in blood plasma, then carried to the kidneys. Alcohol, drugs and hormones are also broken down in the liver.

The **kidneys** function to remove urea and excess water and reabsorb glucose and some salts.

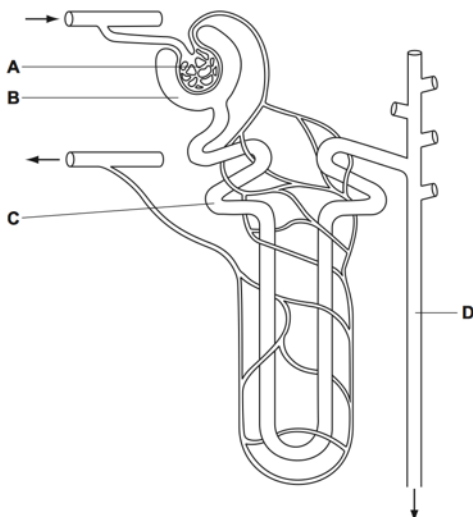


A is the glomerulus (knot of capillaries) which filters the blood by increasing blood pressure and forcing substances out.

B is a capsule which collects filtrate including water, glucose, salts and urea.

C is a tubule which reabsorbs glucose, most of the water and some salts back into the blood, leading to concentration of urea in urine as well as loss of excess water and salts.

D is a collecting duct which passes urine to ureter.



After kidney failure there are two possible treatments: dialysis or a kidney transplant. Dialysis is the maintenance of glucose and protein concentration in blood and the diffusion of urea from blood to dialysis fluid.

In a dialysis machine, urea concentration decreases, water content increases/decreases, and salt concentration decreases.

Transplants VS Dialysis

- | | |
|--|-----------------------------------|
| + long term solution | - have to have sessions regularly |
| + better quality of life | - painful / tiring |
| + more efficient control of composition of blood | + always possible |
| - hard to find a donor kidney which will match | |
| - transplant can be rejected | |

Even with a transplant, the immune system can reject it as it recognises the organ as 'foreign' and attack it. Thus the recipient is given immunosuppressants which stop white blood cells working efficiently, to decrease chances of rejection. However, the person is hence more likely to suffer from all sorts of infectious diseases. The drugs have to be taken for the rest of the recipient's life.

Changes of rejection are reduced if the donor is a close relative of the recipient.