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NURSING

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MICTURITION

Urine production and excretion are vital for a normal healthy life. The urinary system regulates the concentrations of sodium, potassium, chloride and other ions in the blood as well as helping to maintain normal blood Ph, blood pressure and blood volume.

Formation of urine

There are two kidneys which are bean-shaped and are approximated 10cm long, 5.5cm wide and 3cm thick. Each kidney weighs about 150g and has a marked indentation medially the hilus – where the renal artery and renal nerves enter and the renal vein and ureter leaves. Normal urine production, therefore depends on normal blood flow to the kidneys. The nephron is the functional unit of the kidney. Nephron permit the passage of some substances out of body but restrict the passage of others.

Filtration

As blood flows through the glomerulus (a capillary network that forms part of the nephron), much of the fluid and waste products in the blood are forced out through the walls of the capillaries, filtered, and then flow into the bowman’s capsule. The bowman’s capsule is a double-walled endothelial cup that surrounds the glomerulus.

Absorption

Much of the glomerular filtrate, including most of the water, is reabsorbed into the capillaries surrounding the proximal and distal convoluted tubules, the loop of Henle and collecting tubules. All of the glucose will be reabsorbed unless blood glucose levels are high.

Secretion

This is the final stage of urine formation, and occurs at the distal and collecting tubules. Substances either diffuse or are actively transported out of the capillaries and into the collecting tubules to be excreted in the urine. Hydrogen ions, potassium ions, ammonia and some drugs are all secreted at this stage and the kidneys play an important role in acid-base in the body.

Final composition of urine

The final composition of urine is the result of filtration, absorption and secretion by the nephrons. The kidneys produce urea, uric acid, creatinine, sodium chloride and potassium ions are all normal constituents of urine. Blood, ketones and glucose are not, and their presence may indicate disease.

CONTROL OF MICTURITION

Children and adults have considerable control over when and where they pass urine. They can also increase or decrease the rate of flow and even stop and start again, so micturition is clearly more than just a simple reflex. This control is learnt in infancy and involves other sensory fibres in the bladder wall. These fibres convey information on the degree of bladder fullness via the spine to the higher centres of the brain. This causes us to become aware that we need to pass urine and of the urgency of the situation.

POTENTIAL PROBLEMS ASSOCIATED WITH MICTURITION

* Intact nerve pathways to the urinary tract.
* Normal muscle tone in the detrusors, sphincters and pelvic floor muscles.
* Absence of any obstruction to urine flow in any part of the urinary.
* Normal bladder capacity.
* Absence of environmental or psychological factors which may inhibit micturition.