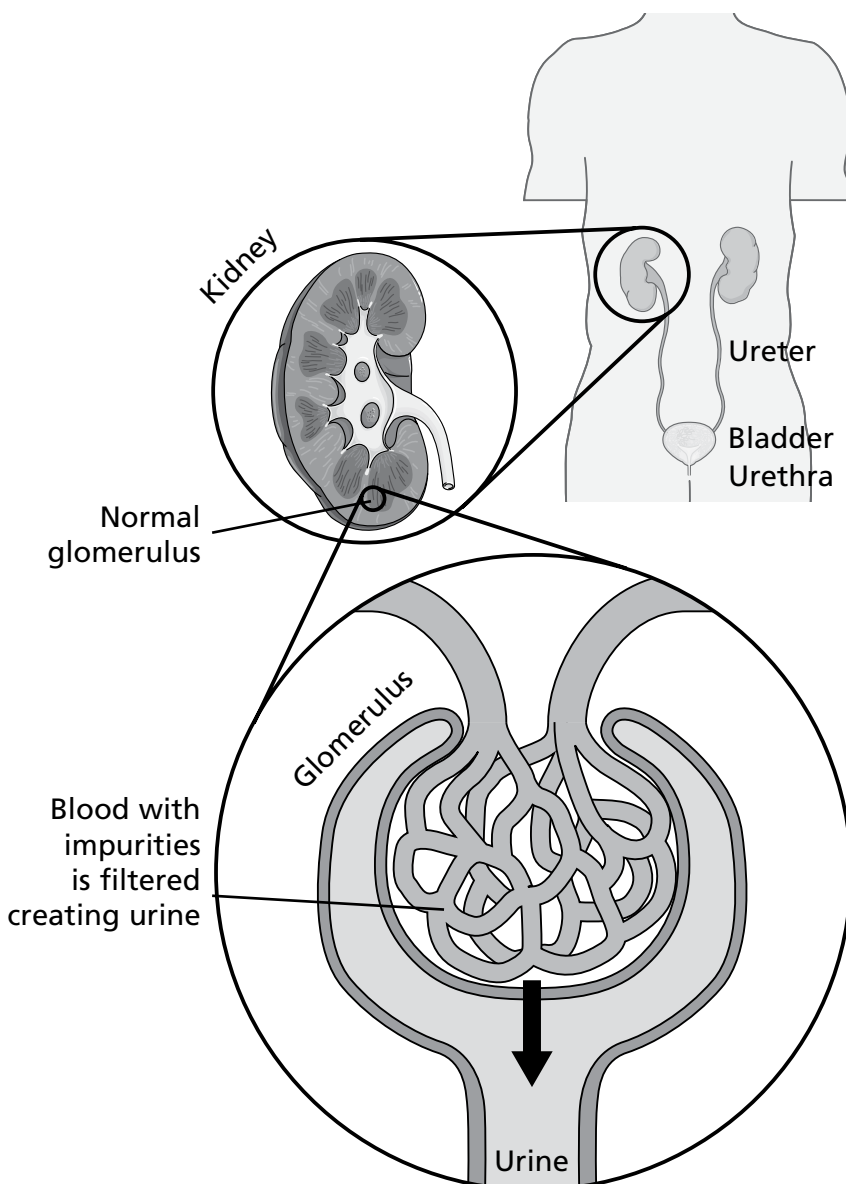




Great Ormond Street Hospital for Children NHS Trust: Information for Families

Acute renal failure

This information sheet explains acute renal failure, what causes it and how it can be treated. It also explains what to expect when your child comes to Great Ormond Street Children's Hospital for assessment and treatment.



How does the urinary system work?

The urinary system consists of the kidneys, ureters, the bladder and urethra. The kidneys filter the blood to remove waste products and produce urine. The urine flows from the kidneys down through the ureters to the bladder, where it is stored until we go to the toilet. It passes through another tube called the urethra to the outside when urinating (peeing).

The kidneys contain around a million tiny filtering units called glomeruli. As blood flows through the tubes in the glomerulus at pressure, waste products pass through the walls of the tubes to form urine. Blood cells and other things such as protein cannot pass through the walls because they are too big. The urine then passes through small tubes (tubules) where fluids, salts and minerals are removed for recycling around the body before flowing to the ureters.

What is acute renal failure?

Acute renal failure or acute kidney injury is the term used when the kidneys suddenly (acute) become unable to do the work expected of them. This means that they are unable to remove salt, water and waste products from the bloodstream.



What are the symptoms of acute renal failure?

The symptoms of acute renal failure vary from person to person and depend on what is causing it and the degree of kidney failure. Common symptoms of acute kidney failure include:

- Passing only a small amount of urine (oliguria) or no urine at all (anuria) because the kidneys are not filtering the blood as normal
- The urine may become discoloured, like the colour of tea or cola drinks
- Puffiness (oedema), particularly in the feet and legs, swelling of the abdomen and often weight gain, caused by the kidneys not removing excess fluid from the body
- Tiredness (fatigue) or lack of energy (lethargy) or nausea and vomiting and symptoms of being generally unwell

In very severe acute renal failure, other symptoms may develop, such as seizures or a coma.

How is acute renal failure diagnosed?

Your doctor will ask you lots of questions about how your child became ill and examine your child. Blood to look for waste products in the blood and urine tests to look for blood and/or protein in the urine are the main method of diagnosing acute renal failure. Further tests may be needed to find out what is causing the acute renal failure. These will include ultrasound scans to check for any structural abnormalities. Occasionally a kidney biopsy to look at the structure of the glomeruli may be necessary.

What causes acute renal failure?

There are many causes of acute renal failure and often these problems are divided into three groups depending on whether they affect the flow of blood to the kidneys, the kidneys themselves or the flow of urine from the kidneys:

Problems affecting the flow of blood into the kidneys

This is the most common cause of acute renal failure. The kidneys cannot function properly if they are not receiving enough blood to filter. The commonest reason for this would be dehydration due to vomiting and diarrhoea. Heart failure can also lead to acute renal failure, because the heart is unable to pump enough blood around the body. The amount of fluid in the body can also drop suddenly as a result of other conditions, such as nephrotic syndrome.

Problems affecting the kidneys themselves

The most common cause of acute renal failure in children due to damage to the kidneys themselves is haemolytic uraemic syndrome. For more information about this please see our information sheet. There are many other causes, which include inflammation of the kidneys or certain medicines. Sometimes, it may be necessary to do a kidney biopsy if we do not know the reason for the acute renal failure so that we can decide if additional treatment may improve the kidney function.



Problems affecting the flow of urine from the kidneys

These problems are usually caused by something structural rather than an illness. Some of these structural problems can be present at birth, such as posterior urethral valves, which block bladder emptying. Rarely, kidney stones may be the cause. For more information about these, please see our information sheets.

What treatments are available?

The aim of treatment is to remove the cause of acute renal failure if possible and to keep the amount of salts and minerals at the correct levels in the body while the kidneys recover. Acute renal failure always requires a stay in hospital for close monitoring and treatment. Depending on the cause of the acute renal failure, dialysis may be needed.

Problems affecting the flow of blood into the kidneys

Often treating the cause of reduced blood flow is enough to treat this type of acute renal failure, unless blood flow to the kidney has been restricted for long enough to cause damage. Fluids are given by an intravenous infusion (drip).

Problems affecting the kidneys themselves

Diuretics, which make the child pass more urine, may be tried. If they do not work, dialysis may be necessary until the kidneys recover. Steroids may be needed to damp down the immune system. Sometimes

plasma exchange is used. Please see our leaflet for more information.

Problems affecting the flow of urine from the kidneys

Treating the structural problem by allowing drainage of the urine by a tube or by surgery is successful in removing the cause of the acute renal failure. The kidneys usually recover well a few weeks afterwards, as long as no infection develops, which could delay recovery.

What is the outlook for children with acute renal failure?

This depends on the original cause of the renal failure. In most cases, if the problem was caused by reduced blood flow to the kidneys or reduced urine flow from the kidneys, kidney function usually recovers once this has been treated. The outlook if the kidneys themselves were damaged varies from person to person. In many cases, kidney function will recover but this may not be complete and may take some time.

Is there a support group for children with acute renal failure?

There is no specific support group, but the following organisation may be able to offer advice and support:

British Kidney Patient Association

Bordon GU35 9JZ

Tel: 01420 47021 or 47022

Website: www.britishkidney-pa.co.uk



Notes

If you have any questions, please call Victoria Ward on 020 7829 8815

Compiled by the Nephrology department in collaboration with the Child and Family Information Group

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