

Renal Services

Acute kidney injury (AKI) (Acute renal failure)

What is acute kidney injury?

Acute kidney injury (AKI) is where there is a deterioration in renal (kidney) function, occurring over hours or days. A deterioration of more than 50% (half) of kidney function is the medical definition of AKI.

How does acute kidney injury develop?

- the kidneys may not be the main cause of the illness, but are the 'victims' of stress on the circulation and the whole body - for example, when the blood pressure is low, or when blood is diverted away from the kidneys during a severe infection
- there may be a problem with the kidneys themselves, either inflammation or infection in the tissue of the kidneys, or an obstruction to the flow of urine from the kidneys - for example, in older men this may occur at the outlet of the bladder (prostate gland)
- anyone with some pre-existing kidney disease is more likely to get AKI, even if the kidney disease they already have is minor - many older people have some chronic kidney disease - people with diabetes are more likely to get AKI, as they have a higher chance of getting infections and may also have diabetic kidney disease

Causes of acute kidney injury

- **severe infection** - for example bugs in the bloodstream (sepsis), low blood pressure, or infection in the tissue of the kidneys ('pyelonephritis')
- **stress to the whole body during surgical procedures** - AKI may be seen sometimes after heart surgery, major bowel surgery, or other major



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operations, particularly if there is also an infection

- **severe dehydration** may lead to AKI, especially if there is low blood pressure or an infection at the same time
- **diseases in the tissue of the kidney** - an important group of conditions in this area is called 'vasculitis' - as well as AKI there may be a blotchy red rash, nosebleeds or coughing up blood
- **drugs** can occasionally cause reactions in the kidneys leading to AKI.
- **blockage to the flow of urine out of the kidneys** - this is most commonly caused by enlargement of the prostate gland in older men, but can also be caused by kidney stones, or cancers pressing on the tubes that drain the urine from the kidneys to the bladder.

What are the symptoms of acute kidney injury?

The symptoms will depend on the underlying cause and severity of AKI.

As AKI is usually secondary to another illness that puts 'stress' on the kidneys, the person feels very ill but the symptoms are not related to the kidneys. It is rare for someone to notice that they are passing less urine if they have AKI.

Often, AKI is diagnosed because routine blood tests to monitor kidney function become abnormal. As AKI develops, some of the following symptoms may develop:

- nausea or vomiting
- shortness of breath
- confusion
- tiredness
- itchy skin
- reduction in urine output
- water retention

What tests will be performed?

- Blood tests (often daily) will be taken to monitor the severity and development of AKI.

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- Urine output will be monitored - this will often involve passing a tube (catheter) into the bladder and draining the urine into a bag for exact measurement
- Scans - pictures of the kidneys will be taken to see if there is any blockage to the flow of urine. The initial test is usually an ultrasound scan using sound waves. Many people also have a CT scan or MRI scan to get more detailed images
- Kidney biopsy - if there may be disease in the tissue of the kidneys, a biopsy will be taken - this is the removal of a small piece of a kidney by a needle which can then be examined under the microscope
- If someone has a blockage to the flow of urine out of the kidneys, this may be bypassed by placing tubes through the back directly into the kidneys (nephrostomies)

How is AKI treated?

This will depend on the underlying cause of the AKI. Treatment will often include:

- dehydration will be treated with fluids
- drugs which affect kidney function will be stopped
- infection will be treated with antibiotics
- if there is inflammation of the kidneys, drugs to suppress the immune system may be used (for example steroids)
- any obstruction will be relieved (for example, a catheter may be inserted into the bladder)
- severe kidney failure may need to be treated temporarily with dialysis; a process to remove waste products if they have reached a dangerously high level

Often the kidneys will recover quickly. However, in other cases the AKI is so severe that the person is at risk of kidney failure. If this is the case, artificial kidney treatment, called dialysis, may be considered. Blood is washed through a machine to remove the water and chemicals that are building up in the body.

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Will I recover from AKI?

Because AKI is often the consequence of a very severe illness affecting the whole body, there is a risk of dying during the illness. The chance of dying may be less than 1 in 10 if someone is healthy and the problem is limited to their kidneys, or as high as 8 out of 10 if they are elderly with severe problems with their heart and lungs as well as their kidneys. Information on the outlook in each individual case will be given by the staff on the Kidney Unit.

For most people who survive AKI, the kidneys recover their function, and if dialysis treatment was required, it can be stopped. However, in some people the kidneys remain damaged and dialysis may be required in the future, or they may require careful monitoring for kidney function in a specialist kidney clinic.

Help and advice

For help or advice contact your Renal Unit or Consultant.

There are patient Information booklets available from the Renal Unit or the Health Information Centre at University Hospital Coventry and Warwickshire. Please ask.

Websites

www.kidney.org.uk

www.kidneyresearchuk.org.

Useful numbers

Renal Unit open: Open Monday to Saturday 7.00am – 12.30pm

024 7696 7777

Renal Ward 50 for emergencies on Sunday

024 7696 8258

Renal Dietitian

024 7696 6132

Patient Information

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 024 7696 7777 and we will do our best to meet your needs.

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