

ACUTE KIDNEY INJURY

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Acute Kidney Injury

What is acute kidney injury (AKI)?

Acute kidney injury (AKI) is a sudden and recent reduction in the level of kidney function. Doctors usually say AKI is severe when the kidney function, measured by blood tests, has dropped by one half (50%).

Acute kidney injury often gets better in a few days or weeks. It is often caused by 'stress' on the kidney from problems elsewhere in the body, rather than diseases starting in the kidney. However, if you are identified as at risk then it is important you seek specialist assessment and treatment to ensure the issue does not progress. Many cases can be easily managed with the right treatments.

What does AKI mean?

Acute

The term 'acute' means an illness that has developed recently. This can be within the last 6 weeks, but often AKI develops over a period of days. 'Acute' does not always mean that a problem is severe, just that it developed recently.

Kidney

AKI reduces the ability of the body to remove waste products from the blood, by the kidney. This is usually detected by blood tests taken when you are unwell. Sometimes the kidneys cannot get rid of excess water and this can build up in the legs or in the chest. Generally, AKI will affect each of your two kidneys to the same extent.

Injury

Injury means that the kidney is damaged, usually by another illness or sometimes by medication.

AKI used to be called acute kidney failure, which is misleading because often the kidneys don't failure completely, and usually get better. Therefore, it is now called kidney injury.

How is AKI detected?

Doctors rely on blood tests to confirm that someone has AKI. AKI may have no other symptoms other than the symptoms of the illness leading to it. If it is severe, it may cause symptoms such as sickness and generally feeling unwell, and the amount of urine you pass may be reduced. However, the amount of urine being passed is not always a reliable sign of AKI so blood tests are required.

The most important blood test to diagnose AKI is a waste product in the blood called creatinine. If the level of this waste has doubled it means that the kidney function has halved and that there is AKI. If the creatinine level has increased but not doubled, AKI not severe but action may be necessary to try and avoid it worsening. Creatinine is not the only measure of AKI, and it is best to combine results of creatinine and other factors such as the amount of urine you pass for the doctor to assess how severe the AKI is.

What causes AKI?

There are many causes of AKI. One of the first steps doctors will take if someone has AKI is to try and find the cause or causes. Often there is more than one factor leading to AKI.

Some of the important causes of AKI are:

Infection – severe infection can ‘stress’ the kidneys, even if the infection is not in the kidneys themselves

Dehydration – severe dehydration will reduce the blood flow to the kidneys. Without blood flow providing oxygen to the kidneys, the kidneys do not work as well.

Drugs – sometimes drugs can cause AKI. This does not necessarily mean they were prescribed incorrectly, but for anyone with AKI it is important for the doctors to know what medication you are taking. This includes drugs not on prescription, especially painkillers.

Blockages to the flow of urine – urine is made in the kidneys and has to pass down long thin tubes to the bladder, and then the bladder releases the urine from time to time. Blockages to the drainage tubes or the bladder can cause AKI. A simple scan can usually detect blockages.

Surgery – an operation can ‘stress’ the kidneys and cause AKI, especially if there is infection and/or dehydration. During surgery the blood flow to the kidneys may be reduced and this can lead to AKI. Before having an operation, the anaesthetic team will review your medication and may make some changes to try and protect your kidneys.

Chronic kidney disease – if your kidneys are not working perfectly in the first place and you get ill for any reason, you are more likely to get AKI than someone with perfectly normal kidneys. (link to CKD)

Kidney diseases – there are several kidney diseases that can develop rapidly and cause AKI (link to vasculitis and myeloma)

What tests will I need ?

Anyone with AKI requires blood tests to look for the causes of AKI and monitor progress. You may not need to go to hospital if the cause is clear and you get better when it is treated. If you do not get better or it is severe, you may need to go to hospital for further tests and even be admitted to hospital for treatment.

The first test is that urine will be tested for infection and to see if blood and protein is leaking from the kidneys.

If you are in hospital, a scan of the kidneys using an ultrasound scanner will usually be performed. This will show if there is blockage to the flow of urine from the kidneys or bladder. An ultrasound will not show everything, for example if there is infection in the kidneys the scan may look normal.

More detailed scans, such as a CT scan may also be required. A CT scan is where you lie on a couch and are moved through a large circular scanner.

You may need blood tests related to the cause of the AKI and in some cases some blood tests looking for kidney diseases which lead to AKI.

If doctors think there is a disease inside the tissue of the kidney causing AKI, then it may be necessary to perform a kidney biopsy to confirm the diagnosis. A biopsy is a small piece of kidney removed with a needle that is examined under the microscope. (link to biopsy)

What treatment will I need?

This depends on the cause of AKI, and on how severe it is.

If you have dehydration and an infection, common causes of AKI, then you will have a needle put into your arm to receive fluids and antibiotics.

It is usually important to monitor the amount of urine you are passing, so a thin tube called a catheter is passed into the bladder, and the urine passes out into a drainage bag.

Rarely, if the AKI is severe and there is a critical build-up of waste chemical in the blood, or too much fluid in the body, then dialysis treatment may be needed. Dialysis is artificial kidney treatment. Usually, blood is washed through a machine, in some cases fluid can be

If illness causing AKI affects other parts of the body so that the blood pressure is very low or the breathing is badly affected, it may be necessary to go to the Critical Care Unit (or Intensive Care Unit). Tubes may be put into blood vessels to monitor the blood pressure more closely, and to give drugs to increase the blood pressure. If breathing is very difficult it may be necessary to have a machine help with breathing (an artificial ventilator). In addition, you will receive artificial kidney treatment with a dialysis machine.

How long will I be in hospital?

In some cases, AKI may resolve in a couple of days with fluid and antibiotics. In other cases, the illness affecting the kidneys and the rest of the body may be so severe that recovery takes two or three weeks or even longer.

Am I likely to die from AKI?

The chances of dying depend on the severity of the illness causing the kidney injury. If someone has an infection and the germ responds very quickly to antibiotics, the chances of getting further complications and dying may be low – perhaps 1 in 30. If someone has other health problems, such as a bad heart, and goes to the Critical Care Unit, the chances of dying may be much higher, perhaps 1 in 2. Each case is different and the doctors will be able to explain the risks.

Will I make a full recovery from AKI?

This varies from person to person, and depends on what caused the AKI; how severe the AKI was, and what other health problems someone has.

The kidneys may go completely back to normal. But if the kidneys were not normal to start off with, they may not make a complete recovery. A few people need ongoing dialysis treatment. For others it is just the blood test that doesn't go back to the starting point, they don't feel any different in the long term.

AKI, like any stay in hospital, will make you feel weak and it can take some time to get full strength back. If someone had difficulty walking before an episode of AKI, this recovery or rehabilitation period could take weeks. Specialist rehabilitation services may be required, and some people need help at home from carers.

What can be done to stop me getting AKI again?

If you recover from AKI, you should check with the doctors to see what warning signs you should look out for in the future that might help prevent further AKI. This might mean getting a medical check if you feel ill for more than 1 day, rather than waiting 3 or 4 days. A doctor will also be able to advise you on drugs to avoid that could cause a worsening of the condition, especially when dehydrated (eg. When suffering from diarrhoea and vomiting, or travelling to a very hot country).

If your AKI was due to an infection, it may be worth making sure the infection is fully cured after the antibiotics have been stopped. For example, if your AKI was due to a urine infection, sending urine samples to the laboratory to check for infection a month or so after full recovery might be sensible.

Another leaflet available

“Preventing AKI’s”

The National Kidney Federation cannot accept responsibility for information provided. The above is for guidance only. Patients are advised to seek further information from their own doctor.

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