

# Medicines that affect fluid balance in the body



Older people are at higher risk of dehydration due to body changes in the ageing process. The risk of dehydration can be increased further when elderly patients are prescribed medicines for chronic conditions due to old age.

Some medicines can affect fluid balance in the body and this may result in more water being lost through the kidneys as urine.

The medicines that can increase risk of dehydration are listed below.



## DIURETICS

Diuretics are sometimes called 'water tablets' because they can cause you to pass more urine than usual. They work on the kidneys by increasing the amount of salt and water that comes out through the urine. Diuretics are often prescribed for heart failure patients and sometimes for patients with high blood pressure.

**Examples include: Furosemide, Bendroflumethiazide, Chlotalidone.**



Be aware that some patients e.g. Heart Failure patients, may need diuretics and have fluid restricted in their diet as they have too much fluid building up in certain parts of the body.

## LAXATIVES

Laxatives are prescribed to treat or prevent constipation by loosening stools and increasing bowel movement. The different types of laxatives work in different ways. The choice of laxative prescribed will depend on a number of different factors.

There are four main types of laxatives:

**Bulk-forming laxatives e.g. Fybogel** – these contain lots of fibre. These work in the same way that fibre in the diet normally does. They increase

the bulk of stools by getting them to retain liquid, which encourages the bowels to push them out.

**Osmotic laxatives e.g. Lactulose, Macrogol** - these soften stools by increasing the amount of water released into the bowels, making them easier to pass.

**Stimulant laxatives e.g. Senna, Bisacodyl** - these stimulate the bowels speeding up bowel movements and so less water is absorbed from the stool as it passes through the bowels.

**Stool softener laxatives e.g. Docusate** - These can cause more water to be reabsorbed from the bowel, making the stools softer.

## ANTACIDS

Antacids are also known to cause dehydration because of the moisture they require when being absorbed by your body. Drinking plenty of water can reduce the dry mouth, stomach cramps and dry skin that is sometimes associated with antacids.

The major side effect of antacids containing magnesium is diarrhoea and so more fluid loss from the body in loose stools.

Calcium and Aluminium containing antacid compounds can cause constipation and then the need for laxatives.

## ANTI-HISTAMINES and Non-Steroidal Anti-Inflammatory Drugs (NSAIDS)

These medicines have an effect on the distribution of electrolytes and salts in the body and so reduce swelling and inflammation associated with pain, injury and allergies. This can affect fluid balance in the body.

**Examples of NSAIDS include: Ibuprofen, Naproxen, Diclofenac**

**Examples of anti-histamines include: Loratadine, Cetirizine, Promethazine, Hydroxyzine**

**BLOOD PRESSURE MEDICATION** These medicines often control blood pressure by having an effect on the distribution of electrolytes, salts and water balance in the body. This can result in increased fluid loss from the body.

**Examples include: Lisinopril, Ramipril, Losartan, Amlodipine, Felodipine, Bendroflumethiazide**

# Medicines and Acute Kidney Injury (AKI)



## What is Acute Kidney Injury (AKI)?

Acute kidney injury (AKI) is sudden damage to the kidneys that causes them to not work properly. It can range from minor loss of kidney function to complete kidney failure.

AKI normally happens as a complication of another illness i.e. diarrhoea and vomiting or infection. This type of kidney damage is usually seen in older people who are unwell with other conditions and the kidneys are also affected.

## Causes of acute kidney injury:

Most cases of AKI are caused by reduced blood flow to the kidneys, usually in someone who is already unwell with another health condition.

This reduced blood flow could be caused by:

- **low blood volume** after bleeding, excessive vomiting or diarrhoea, or with severe dehydration
- **the heart pumping out less blood than normal** as a result of heart failure, liver failure or sepsis
- **problems with the blood vessels** – such as inflammation and blockage in the blood vessels within the kidneys
- **certain medicines** can affect the blood supply to the kidney – other medicines may cause unusual reactions in the kidney itself

The elderly are more susceptible to AKI, particularly if they are at risk of dehydration and take regular medication that can be toxic to the kidneys.

These medicines are listed and are often referred to as the **DAMN medicines**.

- D** Diuretics
- A** ACE-Inhibitors / Angiotensin-II Receptor Antagonists (ARBs)
- M** Metformin
- N** Non-steroidal anti-inflammatory drugs (NSAIDs)

**Diuretics** e.g. Furosemide, can cause, worsen or even cause dehydration and often disturb salt balance in the body and affect kidney function.

**ACE inhibitors (ACEI) and Angiotensin Receptor Blockers (ARBs)** e.g. Ramipril, Lisinopril, Losartan, which reduce blood pressure can affect how the kidney functions and how much salts are filtered out with the urine.

**Non-steroidal anti-inflammatory drugs (NSAIDs)** e.g. Ibuprofen, Naproxen can also affect certain kidney functions and so can also increase the risk of AKI.

**Metformin**, prescribed for diabetes is associated with an increased risk of lactic acid build up in the blood if the kidneys are not working properly, as with AKI, or with dehydration.



## Preventing acute kidney injury:

Those at risk of AKI should be monitored with regular blood tests if they become unwell or start new medication. It's also useful to check how much urine they are passing.

Any warning signs of AKI, such as vomiting or producing little urine, requires immediate investigation for AKI and treatment.

People who are dehydrated, or at risk of dehydration, may need to be given more fluids or even fluids via a drip.

Always inform the patient's GP if you suspect a medication is making your patient unwell.