



## Diabetes and Kidneys

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Diabetes causes kidney problems in a number of ways. The main thing it causes is problems with the blood vessels in the kidneys and in order to understand what that means, it's important to know what the kidneys do. So, the kidneys are responsible for filtering the blood, so, filtering out toxins and waste products and ensuring that the water balance in the body is as it should be. In addition to that, kidneys are important for controlling blood pressure and the kidneys also produce hormones which ensure that one has enough red blood cells and also to ensure the health of bones.

If the kidneys are affected by diabetes, the first thing that happens is that the blood vessels within the kidneys get a little bit leaky. And so that affects the filtering ability of the kidneys. And then as the kidney disease progresses, if it does, then those other things that I mentioned can also be affected. So a control of blood pressure becomes more difficult and the hormonal effects can cause anaemia and problems with the bones as well.

So, about a third to a quarter of people with diabetes get problems with our kidneys, but there are things that we can do to prevent that. And on the other hand, if you don't do these things, then you're more likely to get problems with your kidneys. So, all the things that we usually do or recommend for people with diabetes are really important. So, making sure that you eat a healthy diet, do plenty of physical activity, are careful about weight and, and if you're overweight, trying to lose weight and on top of that, make sure that you don't smoke. And then in order to actually prevent or reduce the chance of developing kidney disease in diabetes, good blood sugar control is extremely important as is good blood pressure control.

So in people with diabetes, we like to check the kidney function at least once a year and if the kidney function deteriorates a bit then we do that more frequently.

So the two tests we do to monitor kidney function in people with diabetes are a urine test and a blood test. In the urine, we're looking for very small amounts of protein, which indicates that the blood vessels might be a little bit leaky and that protein is called microalbuminuria. And the way we measure it, or the number that's produced is something called the albumin creatinine ratio or ACR. In the blood, we measure a protein called creatinine, which is a waste product and from that we can calculate how well the kidneys are filtering and that's something called the estimated glomerular filtration rate or eGFR.

Once we detect the very early stages of diabetic kidney disease, which we do with the urine test. Then there are specific treatments that we use to either reverse the condition or stop it from getting any worse. Those are two classes of medication we use. One's called ACE inhibitors, so, those are drugs that end in the word "pril", so, you might be aware of Ramipril or Lisinopril or we use another class of drug called,



angiotensin receptor blockers, which end in “sartan”. So the commonly used ones are Losartan and Candesartan or Irbesartan. Even as kidney disease progresses, we continue to concentrate on blood sugar control and blood pressure control. And indeed the blood pressure targets come down as people progress with their kidney disease because we really need good blood pressure control to stop the kidney disease from getting any worse or even reverse it a little bit.

If people are nervous about attending check-up appointments, I would encourage them to do so on the basis that with kidney disease, it doesn't really produce many symptoms, particularly in early stages. So it's possible to have kidney disease and not know you have it. However, if we can monitor for it, we can treat it at an early stage and hopefully prevent kidney disease happening in the first place, or if it does occur, try and stop it from getting any worse or even reverse it. So as this is something that is eminently treatable and without symptoms, I would encourage people, even if they are nervous, which is entirely understandable, to attend for their check-ups.

