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Dr. Matthew Lanktree: Predicting kidney disease before it starts

Dr. Matthew Lanktree says he feels a bit like a modern-day fortune teller.

Dr. Lanktree, a clinician scientist in nephrology genetics and the Medical director of the McMaster Kidney Genetics Clinic, focuses his research on understanding the genetic causes of advanced kidney disease. He's able to use imaging and biomarkers to predict which of his patients are likely to experience mild forms of the disease, and which patients are more likely to progress to kidney failure – even before they're symptomatic.

"They'll say, "I have no symptoms – what are you talking about?" But from looking at the amount of protein in their urine, and their kidney function estimate, and things like their blood pressure and their imaging, and putting that all together, I can say, "This is something we need to work on together." And it's really difficult to hear, because they can be completely asymptomatic at that point," he said.

Predicting the progression of kidney disease in various patients allows Dr. Lanktree to target treatments and therapies to each specific patient, based on the expected course of the disease.

"We can try to reassure people that are going to have mild courses, and inform people who are going to have aggressive courses, to do both the conservative therapies that are good for everybody, but then also pick out the people that are candidates for treatments that may be associated with a higher therapeutic burden," he said.

Dr. Lanktree's research is a game-changer for both patients and the healthcare system. Kidney disease is common – one in 10 Canadians will experience the disease – and debilitating, as patients are often asymptomatic until the disease becomes very advanced.

Kidney disease is also extremely expensive to treat, as dialysis for kidney transplantation costs Canadians $310 million each year. Preventing the progression of the disease for as long as possible – until a patient can retire or until their children have left the house, for example – can have major implications on patients' lives, as well as the healthcare system.

"Even delaying the onset of kidney failure by a few years can have enormous impact," Dr. Lanktree said.

Dr. Lanktree's research also focuses on why some patients are more likely to develop more serious forms of the disease, based on their genetics – a field of research that Dr. Lanktree says is "exploding."

"Why do some people have mild kidney disease, while other people progress to kidney failure? Using sequencing and whole genome analyses, I'm trying to identify the people that are at higher risk of going into kidney failure based on their genetic makeup," he said.

"We're just starting to appreciate that genetic mutations cause about 10 per cent of adult onset kidney failure. Even five years ago, people would not have thought it was that high." ■