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Hong Kong develops new algorithm to predict diabetic kidney disease

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A simple blood sample could help doctors catch kidney disease earlier in type 2 diabetes patients

Researchers from The Chinese University of Hong Kong (CUHK) and Sanford Burnham Prebys, in the US, have developed a computational approach to predict whether a person with type 2 diabetes will develop kidney disease, a frequent and dangerous complication of the condition. Their results, published in Nature Communications, could help doctors prevent or better manage kidney disease in people with type 2 diabetes.

Diabetes is the leading cause of kidney failure worldwide. In Asia, about 50% of cases of end stage kidney disease and dialysis are due to diabetes.

The new algorithm depends on measurements of a process called DNA methylation, which occurs when subtle changes accumulate in our DNA. DNA methylation can encode important information about which genes are being turned on and off, and it can be easily measured through blood tests.

The researchers developed their model using detailed data from more than 1,200 patients with type 2 diabetes in the Hong Kong Diabetes Register. They also tested their model on a separate group of 326 native Americans with type 2 diabetes, which helped ensure that their approach could predict kidney disease in different populations.

The computational model can use methylation markers from a blood sample to predict both current kidney function and how the kidneys will function years in the future.

The researchers are currently working to further refine their model. They are also expanding the application of their approach to incorporate other data that can further enhance their ability to predict other diabetes-related outcomes.