# AI improves early detection of kidney disease in type 2 diabetes patients



Researchers from the universities of Dundee and Glasgow have presented a groundbreaking study at Diabetes UK’s Professional Conference 2025, revealing that artificial intelligence (AI) could significantly enhance early detection of kidney disease in patients suffering from type 2 diabetes. The findings indicate that this advanced technology could identify kidney disease years before traditional diagnostic methods are able to do so, a crucial development given that many early-stage cases are asymptomatic.

The research utilised nearly one million eye screening photographs taken from almost 100,000 individuals with type 2 diabetes across Scotland. The AI tool was specifically developed to differentiate between images of patients with and without kidney disease. Following its initial training, the tool was validated with data from an additional 30,000 patients and demonstrated an 86% accuracy in detecting existing kidney disease. Notably, it also showed a 78% accuracy rate in predicting which patients would develop kidney issues within the next five years.

Diabetes UK highlighted the effectiveness of this AI-driven tool, stating that it "outperformed" standard tests by identifying risks for future kidney disease when conventional evaluation methods yielded no prior warnings. This could potentially lead to earlier interventions for patients, which is critical considering that one in five individuals with type 2 diabetes will require treatment for kidney disease.

Dr Alex Doney, the lead researcher of the study, explained that the retina at the back of the eye is uniquely suited for this type of analysis. "The retina... is the only place where the fragile network of blood vessels, critical to the health of all organs throughout the body, can be conveniently visualised and photographed," he stated. He added that AI systems are capable of identifying subtle early signs and patterns in these images which often go unnoticed by human observers.

Dr Elizabeth Robertson, the director of research at Diabetes UK, emphasised the significance of early detection of kidney damage. “This fascinating research has offered a new window into kidney health – through the eyes,” she noted. “By revealing intricate patterns in images taken during eye screenings, this AI tool could in future alert healthcare professionals to early signs of kidney damage."

The implications of this research extend beyond simple detection; the AI technology could enable healthcare professionals to provide tailored support aimed at slowing or halting the progression of kidney disease, potentially saving lives. The current findings suggest that routine diabetic eye screenings could be transformed into a multi-functional tool for predicting and preventing various diabetes-related complications, demonstrating the promise of AI in modern healthcare strategies.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.diabetes.org.uk/about-us/news-and-views/ai-can-predict-kidney-disease-routine-eye-screening-images> - This URL supports the claim that AI can predict kidney disease from routine eye screening images with high accuracy, outperforming traditional tests. It also highlights the potential of this technology for early detection and intervention.
2. <https://elifesciences.org/articles/81878> - This study demonstrates the use of machine learning to predict diabetic kidney disease risk, which aligns with the idea of using advanced technology for early detection of kidney issues in diabetic patients.
3. <https://www.diabetes.org.uk/about-us/news-and-views/ai-can-predict-kidney-disease-routine-eye-screening-images> - This article further explains how the retina's unique visibility of blood vessels makes it an ideal target for AI analysis to detect early signs of kidney disease.
4. <https://elifesciences.org/articles/81878> - The study shows that machine learning models can identify novel risk factors for diabetic kidney disease, supporting the idea that advanced technologies can uncover hidden patterns in health data.
5. <https://www.diabetes.org.uk/about-us/news-and-views/ai-can-predict-kidney-disease-routine-eye-screening-images> - This article emphasizes the importance of early detection of kidney damage and how AI can enable healthcare professionals to provide timely interventions.
6. <https://elifesciences.org/articles/81878> - The study highlights the potential of combining clinical data with machine learning to improve the prediction accuracy of diabetic kidney disease, which aligns with the broader implications of using AI in healthcare.
7. <https://www.heraldscotland.com/news/24967569.ai-can-use-eye-scans-predict-kidney-risk---study/?ref=rss> - Please view link - unable to able to access data