

Doctors successfully use AI models to diagnose the presence of gallstones

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Expensive MRI exams are commonly used to evaluate patients with suspected gallstones, often delaying definitive intervention and increasing the risk of disease severity, further complications and longer

hospital stays.

Over a five-year period, five machine learning models were developed and tested to retrospectively predict patients' risk of choledocholithiasis, all of which outperformed existing diagnostic guidelines. The results have been [published](#) in *ANZ Journal of Surgery*.

Professor of Surgery at the University of Tasmania School of Medicine and Fellow at the Royal Australasian College of Surgeons, Dr. Richard Turner, said he's confident AI will play a strong role in the future of choledocholithiasis diagnoses.

"Choledocholithiasis accounts for approximately 15% of gallstone diagnoses, so it's important we continually explore [innovative technologies](#) like AI to enhance diagnostic accuracy, streamline [patient care](#), and ultimately improve [patient outcomes](#)," Dr. Turner said.

"These tools help accurately identify which patients would benefit from proceeding directly to definitive management of choledocholithiasis, reducing the reliance on MRI exams for patients presenting with acute biliary dysfunction.

"Our studies show patients who received an MRI prior to endoscopic procedures experience prolonged admissions, increased hospital expenses and greater rates of in-hospital complications."

Dr. Turner said the adoption of predictive AI tools is mutually beneficial for health systems and patients.

"As AI becomes more prevalent, it's important we learn how to harness its power to remove the guesswork from diagnostic assessment," Dr. Turner said.

"Embedding these tools into everyday clinical practice has the potential to drastically improve patient flow and resulting overcrowding, cut costs to both patients and health systems, and provide more efficient patient-centered care.

"The ongoing enhancement and validation of these models will further establish their credibility and applicability in optimizing patient care and decision-making processes in the management of acute presentations of choledocholithiasis and other biliary tract diseases.

"We're hopeful our AI model will become the [standard practice](#) in Australian hospitals in the future, serving as the initial touchpoint for detecting choledocholithiasis, abating the need for unnecessary MRI exams.

"Access to high quality, anonymized data routinely collected by [health services](#) is a critical enabler for the training and continued learning of AI algorithms."

More information: Joshua Blum et al, Using artificial intelligence to predict choledocholithiasis: can machine learning models abate the use of MRCP in patients with biliary dysfunction?, *ANZ Journal of Surgery* (2024). [DOI: 10.1111/ans.18950](https://doi.org/10.1111/ans.18950)

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