Machine learning for the diagnosis of acute coronary syndrome using a 12-lead ECG: a systematic review

ECG interpretation for acute coronary syndrome is difficult:

68.5% POOLED ACCURACY
(Up to 4% missed)

Question: Can machine learning (ML) help?

A systematic review was performed:

INCLUSION

- **P** Adults with symptoms concerning for ACS
- **I** ML algorithms
- **C** Clinicians or non-ML based software
- **O** Diagnostic accurary

ML without comparator, unclear clinical context, non 12-lead ECG, ML algorithm using other clinical datas

Ten studies were included:

ACCURACY
ML was **more sensitive** but **less specific** than clinicians on non-ML-based software

NEXT STEPS
More rigorous primay research is needed to demonstrate ML benefit, as its popularity grows

QUALITY OF EVIDENCE
Studies were heterogeneous and with limited sample sizes. Risk of bias in some studies is high.

Take Home Message: ML models can complement physician ECG interpretation, though use caution in relying solely on them.

Zworth et al. *CJEM. Oct 2023*
https://doi.org/10.1007/s43678-023-00572-5
Infographic by: S Wilson, MD

canadiem CJEM JCMU