

Evaluation of an artificial intelligence-enabled digital stethoscope for detecting undiagnosed human valvular heart disease

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Abstract 13244: Real World Evaluation of an Artificial Intelligence Enabled Digital Stethoscope for Detecting Undiagnosed Valvular Heart Disease in Primary Care

Background

- Clinically significant valvular heart disease (VHD) affects 1 in 10 adults over 65.
- Cardiac auscultation is the current point-of-care clinical standard and has a 44% sensitivity for detecting VHD.

Objectives

- Evaluate real-world performance of artificial intelligence (AI) vs. traditional auscultation in identifying previously undiagnosed VHD.

Methods

- Prospective, blinded study.
- 369 patients aged 50 and older who had no prior diagnosis of VHD.
- Compared primary care provider (PCP) auscultation with a traditional stethoscope and an AI-enabled digital stethoscope to results of an echocardiogram (as the "gold standard").

Results

- Sensitivity was 41% for traditional stethoscope auscultation and 94% for AI-assisted.
- Specificity was 84.5% for AI vs. 95.5% for PCP auscultation.
- AI identified 22 new cases of VHD, whilst PCPs only identified 8.

Conclusions

- The AI-enhanced stethoscope had a **~50% higher sensitivity** than traditional auscultation.
- Higher sensitivity meant improved detection of VHD in a primary care setting.
- AI-enhanced auscultation at the point of care may significantly increase earlier VHD diagnoses, facilitate appropriate patient care and improve outcomes.

Eko Health's AI stethoscope is more sensitive than traditional auscultation for detecting clinically significant heart disease.



References: Moshe A Rancier, Igor Israel, Vimalson Monickam, John Prince, Ben Verschoore and Caroline Currie. Abstract 13244: Real World Evaluation of an Artificial Intelligence Enabled Digital Stethoscope for Detecting Undiagnosed Valvular Heart Disease in Primary Care. Meeting Abstract: Abstracts From the American Heart Association's 2023 Scientific Sessions and the American Heart Association's 2023 Resuscitation Science Symposium. Circulation Volume 148, Number Suppl_1 https://doi.org/10.1161/circ.148.suppl_1.13244

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