NEJM Journal Watch

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An Easy Screen for Left Ventricular Dysfunction

An algorithm developed with artificial intelligence was applied to electrocardiograms of patients presenting with dyspnea to the emergency department.

New articles about artificial intelligence–related decision-support tools are being published at a rapid pace. These investigators assessed the accuracy of an algorithm to predict left ventricular systolic dysfunction (LVSD) among people presenting with dyspnea to the emergency department (ED). The premise was that the rapid identification of LVSD, especially in settings where ultrasound is not readily available, could facilitate clinical decision making.

The researchers retrospectively identified 1606 people with dyspnea through claims codes (median age, 68; 47% women; 91% white) and applied the algorithm to the first available electrocardiogram. The outcome with the algorithm was compared with the result from an echocardiogram performed within 30 days of the index visit. People with known prior heart failure were excluded.

The median time to echocardiography was 1 day, and LVSD (≤35%) was identified in 164 people. The area under the receiver operating characteristic curve for identifying LVSD with the algorithm was 0.89, with an accuracy of 86%. Sensitivity was 74%, and specificity was 87%; negative predictive value was 97%, and positive predictive value was 40%.

COMMENT

The researchers stated that this previously developed algorithm "can be an effective tool for rapid detection of LVSD in patients presenting to the ED with acute dyspnea." The study does not answer questions about interpretability (what is driving model performance) and whether the performance is good enough to bring the algorithm into practice. Also, the authors did not report the accuracy of the claims coding for dyspnea, a key parameter for developing their cohort. Nevertheless, they deserve credit for continued testing of an existing tool, as validation of algorithms is very much needed. The next step is to determine if this algorithm can, in fact, improve patient outcomes.

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Adedinsewo D et al. Artificial intelligence-enabled ECG algorithm to identify patients with left ventricular systolic dysfunction presenting to the emergency department with dyspnea. **Circ Arrhythm Electrophysiol** *2020 Aug; 13:e008437. (https://doi.org/10.1161/CIRCEP.120.008437)*

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