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Category: Implementation science (Study of methods to promote the adoption and integration of evidence-based practices/interventions into health care)

Title: Use of an Automated Electrocardiogram Screening Application and Referral Process to Analyze and Enhance Utilization of Cardiac Electrophysiology Services

ABSTRACT BODY

Background: Utilization of cardiac electrophysiology (EP) may be low in practices, where this service line has only been recently introduced. We developed a screening and referral process to analyze the barriers and facilitate access to evidence-based EP interventions, which reduce morbidity and mortality.

Methods: An automated screening app was developed to identify electrocardiograms (EKG) within an inpatient electronic medical record system (McKesson Cardiology), where EP referral may have significant impact on outcomes (left bundle branch block, atrial flutter, supraventricular tachycardia, 2nd or 3rd grade atrioventricular block). The processed data was then reviewed to identify unferred candidates without valid contraindications. The primary providers were then notified with the specific indication and recommended intervention.

Results: 3354 EKGs were analyzed in a 2-month period (1877 patients). 111 patients had at least one positive screening criterion. 32% had no valid indication after review, 16% had already been seen by EP, 15% were false positives due to incorrect EKG interpretation, 15% had valid contraindications, 6% had inpatient EP referral. A further 17% had valid EP referral indication (58% for ablation, 16% for device implant, 26% for cardiac/EP workup); notices were sent to the cardiologist (63%), primary care physician (26%), while an outpatient provider could not be identified in 11%. Despite providing the indication and recommended intervention, no outpatient EP referrals were made.

The automated screening app saved an estimated 560 minutes of manual EKG review time. The screening had a positive predictive value of 87.9% and a negative predictive value of 99.2% for the selected criteria. 287 minutes were required for the chart reviews.

Conclusions: the developed automated screening app is time-efficient and accurately identifies patients who may benefit from EP interventions. The low outpatient referral rate, despite providing specific indications, will need to be targeted for improvement.

Clinical Implications: understand the efficacy of an automated electrocardiogram screening application to identify candidates for cardiac electrophysiology referral.