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Category: Quality improvement (Systematic and continuous actions leading to measurable improvement in health care service and/or health status)

Title: Effect of Electronic Medical Record (EMR) Intervention on Appropriateness of Transthoracic Echocardiogram (TTE) Orders

ABSTRACT BODY

Introduction: Echocardiography accounts for nearly half of U.S. spending on cardiac imaging. We developed an EMR-based decision-support algorithm for TTE ordering and hypothesized that it would increase appropriateness of TTE orders.

Methods: This prospective observational study was performed at the Veterans Affairs Ann Arbor Healthcare System. From October-December 2016 (pre-intervention), consecutive TTEs ordered in the inpatient, outpatient, and emergency department settings were included. In May 2017, a decision-support algorithm was incorporated into the EMR, giving immediate feedback to providers. Chart review was performed for TTEs ordered from June-August 2017 (early-intervention) and from June-August 2018 (late-intervention). Appropriateness was determined based on the 2011 Appropriate Use Criteria for Echocardiography.

Results: Appropriate TTE orders increased from 87.6% pre-intervention to 94.5% early-intervention (z=0.00018) but decreased to 90.0% late-intervention (z=0.51, compared to pre-intervention) (Figure). Among patients with no previous TTEs in our system, 95.3% of TTEs were appropriate, compared with 87.7% of TTEs for patients with prior TTEs within 30 days prior (p = 0.0014 by chi-squared test).

Conclusion: The EMR algorithm initially increased the percentage of appropriate TTEs, but this effect decayed over time. Additional stops within the EMR, especially for patients with recent TTEs, might bolster the efficacy of this intervention.

Clinical Implications: reduce unnecessary and inappropriate TTE orders.