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Nudging to Improve Cardiovascular Care-Clinicians, Patients, or Both

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Since the first randomized clinical trials on computerized clinical decision support (CDS) tools in the 1970s, numerous studies of clinician CDS have demonstrated improvement in clinical processes and, to a lesser extent, clinical outcomes across diverse use cases and settings. The widespread adoption of electronic health records (EHRs) over the past decade across the US health system created the opportunity for the scaling of clinician CDS tools to increase uptake of evidence-based therapies in cardiovascular care, but myriad challenges, including poor user experience and lack of EHR interoperability, have limited the ability of CDS to address large gaps in evidence-based care.

Nudge theory, which was popularized in the late 2000s, draws from the fields of economics, social psychology, and cognitive science and describes the complex interaction of biases, social motivations, and cognitive constraints underpinning human behavior. Enthusiasm for infusing nudge theory into clinician CDS has led to numerous studies with some promising but often modest results.^{1,2} Even when nudges are effective, significant gaps often remain, with a sizable group of patients for whom the desired outcome did not occur. Factors beyond the clinician, including patient, community, health system, and policy factors, all influence the effectiveness of a clinician-directed nudge and whether a gap in care quality is addressed during a clinic visit.

For those reasons, digital health nudges targeting patients in addition to clinicians have emerged as an area of investigation. For example, the EPIC-HF (Electronically Delivered, Patient-Activation Tool for Intensification of Medications for Chronic Heart Failure with

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Reduced Ejection Fraction) randomized clinical trial showed a 19% improvement in the prescription of guideline-directed medical therapy with a novel, digital health intervention comprising a video and checklist to activate patients before a cardiology clinic visit.³ In a randomized clinical trial testing strategies to encourage influenza vaccination, patients who received text messages before primary care visits had greater vaccine uptake than those who did not receive a message.⁴

In this context, Adusumalli et al⁵ report the results of a cluster randomized clinical trial that tested whether nudges targeting clinicians, patients, or both in combination vs usual care increased the prescription rate of statin therapy for eligible patients (based on US Preventive Services Task Force guidelines) during primary care visits. In this single health system study of 28 primary care practices, including 158 clinicians and 4131 patients in 4 study groups, the investigators found that the clinician and patient nudges and clinician-only nudges increased statin prescription rates; however, patient nudges alone did not increase prescription rates compared with the control group. Although the magnitude of increase in prescription rate was higher with the combined patient and clinician nudge than the clinician-only nudge, the investigators did not test for an interaction effect per the prespecified protocol. Of note, the prescription rate for all trial groups remained low (15.5%), with absolute differences from the control group of 7.2 percentage points for the combined clinician and patient nudge and 5.5 percentage points for the clinician-only nudge in adjusted models.

We commend the authors for this rigorous, pragmatic study testing clinician and patient nudges embedded into routine care of patients in primary care clinics and conducted under a waiver of consent for clinicians and patients. The capability to rapidly conduct pragmatic trials like this comprises an essential component of learning health systems for cardiovascular care. Although the differences in the combined clinician and patient and clinician-only arms were small, this outcome needs to be interpreted in the context of the population in which the study was performed. There was a high baseline prescription rate of statins in the statin-eligible population (approximately 70%) and a high rate of already established patients. Furthermore, the majority of untreated patients were candidates for primary, not secondary, prevention, making this group of patients particularly challenging for seeing large effect sizes of interventions. The authors should also be commended for including an analysis of medication dispensation data as a sensitivity analysis, which further supports the validity of the primary finding of the effectiveness of the combined clinician and patient nudge.

Before reaching general conclusions about differences in effectiveness of clinician-directed vs patient-directed interventions, we should look to the specifics of the design and implementation of the interventions used, particularly because some previous patient-directed interventions successfully increased statin uptake.⁶ The clinician nudge was iteratively codesigned with input from key stakeholders and tested in a previous study. This nudge included 2 components: an active choice prompt embedded in the EHR ordering section and a monthly peer comparison report received in the clinician EHR. In contrast, the patient text message was relatively simple, and the investigators did not describe the design or testing of the patient nudge in a user-centered design process. Only one-third of

patients agreed to receive the text after receiving the initial prompt. Moreover, there were other aspects of the patient nudge that warrant additional investigation, such as the timing and total number of text messages, the percentage of patients who accessed the third-party shared decision-making tool, user feedback on the nudge and the shared decision-making tool through interviews or surveys, and measurement of unintended consequences and implementation costs. Finally, evaluating whether another modality for the patient nudge, such as the patient portal or secure email, would be preferable is another unanswered question. For patient nudges, like clinician nudges, the details matter.⁷

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