Checklists as Computer Decision Support at the Point of Care: A Step Forward in the Recognition and Treatment of CKD by Primary Care Physicians

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CKD is under-recognized and undertreated in offices of primary care physicians (PCPs) despite the Kidney Disease Outcomes Quality Initiative clinical practice guidelines and the more recent Kidney Disease Improving Global Outcomes guidelines (1–3). As a result of competing demands, the PCP has inadequate time to complete all of the evidence-based preventative services and interventions for chronic disease management (4–6). The promise of the electronic medical record (EMR) to promote efficiencies in population health and chronic disease management has not yet been realized. Therefore, any steps that help the PCP or office staff be more efficient in the care of chronic complex comorbid conditions, such as CKD, are welcome. Importantly, the design of decision-support tools to integrate into routine PCP and staff workflows is essential for the successful implementation.

Mendu *et al.* evaluated adherence to an evidence-based CKD computer decision-support checklist in 105 patients treated by four PCPs compared with usual care in 263 patients of nine control PCPs at a single site (7). After being populated with relevant laboratory and clinical parameters unique to the patient, the checklist was e-mailed to the intervention PCP in advance of the outpatient visit as well as incorporated into the EMR for review, annotation, and maintenance in the EMR as a separate note from the visit documentation. After 1 year, the EMR registry revealed that the intervention resulted in both clinically and statistically significant changes in CKD care versus controls in a number of measures including increased use of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers from 48.7% to 67.6% ($P<0.001$), documentation of a discussion regarding avoidance of nonsteroidal anti-inflammatory drugs, increased vaccination for influenza and pneumococcus, and improved hemoglobin A1C levels. In addition, process measures were improved for appropriate laboratory testing for albuminuria, serum phosphorus, and parathyroid hormone. There was no change in achievement of BP or cholesterol targets. One of the strengths of this study is attention to the clinician's workflow, using the checklist to create a priority so that CKD was treated appropriately. This is a step above a simple alert at the point of care. PCPs are now suffering from "alert fatigue" from too many pop-ups and alerts occurring (5). Therefore, both the tool and its incorporation into the workflow that are important in making these kinds of projects successful.

Although the study by Mendu *et al.* is not a randomized controlled trial, it is important quality improvement (QI) research. QI research evaluates a QI intervention group versus a comparison group, using scientific rigor. Another strength of the article by Mendu *et al.* is that the analysis considered confounding variables such as historical performance in implementing evidence-based guidelines and contemporary performance for other measures that were not part of the checklist (7). The extra time and attention necessary for the PCP to improve CKD care did not seem to deleteriously affect performance in other areas of preventive care.

The checklist could be very useful, even if it were modified as a reference guide for the treatment of CKD instead of a point-of-care reminder tool. This summary of the best evidence from CKD guidelines is easy to read and understand. Much of the checklist can be filled out by the office staff at the time of the visit, and parts of the checklist can be used as a template for standing orders. The checklist could also be used for previsit planning that is now commonly a part of PCP practices that have become patient-centered medical homes (6).

There are several limitations of this single-center study of 13 PCPs and 368 patients (7). Randomization of the physicians to intervention and control groups would have made this a pragmatic clinical trial. Study inclusion of PCPs who were not involved in other QI projects circumvents lack of time as the single biggest barrier to PCPs treating chronic disease. Less busy doctors are expected to perform better than their busier colleagues in any QI project that is not already part of typical workflow.

Because this is a nonrandomized, single-center study, the findings may not be generalizable to other PCP practices. Generalizability should be the subject for future research. There are several unique characteristics of this site. First, there is an effective EMR system that can extract the needed data at the point of care. The second is a culture of QI at this site. This is far from routine in the usual primary care practice, based on our experience with the practice-based research network. Training PCPs and practice staff on the basics of QI may be required for

future study design. This was clearly not necessary at the study site.

The missed opportunity of this study is capturing qualitative data on PCP and office staff regarding perception and utilization of the checklist. A mixed-method study collecting both qualitative and quantitative data would have been more effective in informing future studies to determine not only what was successful but why the intervention might have worked. What were the facilitating factors and barriers to the implementation of the project?

In summary, this study is a significant step forward in helping PCPs recognize and treat CKD in the office in an efficient way. Further qualitative and quantitative studies to analyze the effectiveness of this checklist are in order. A larger randomized pragmatic clinical trial is the next logical step.

Disclosures

None.

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See related article, "Implementation of a CKD Checklist for Primary Care Providers," on pages 1526–1535.