Reviewer's report

Title: Clinical Decision Support Improves Physician Guideline Adherence for Laboratory Monitoring of Chronic Kidney Disease: A Matched Cohort Study

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Reviewer: Ebony Boulware

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Summary: The authors present an analysis studying the effectiveness of CDSS to improve rates of guideline concordant laboratory testing and achievement of recommended clinical targets among patients with CKD. Physicians self-selected as utilizers of CDSS, and were more enriched by nephrologists. Patients of physicians were matched by demographic characteristics and clinical parameters. Overall, findings demonstrate that patients of CDSS physicians were more likely to have laboratory tests ordered in accordance with guidelines. However, for the most part, they were no more likely to achieve clinical targets (with the exception of LDL-c and 25-D). Generally, this study represents a very nice effort to obtain information on the value of this tool. More information on how the tool was used and the implications of findings would enhance the manuscript.

Major Compulsory Revisions Requested:

Methods:
1. A major weakness in the approach described in the manuscript is the potential self-selection of physicians using CDSS. Clearly, physicians that opted to use CDSS for CKD would be more likely to be interested in CKD or more likely to be nephrologists. The data actually bear that out, given more nephrologists in the CDSS group. Given this weakness, it would be very nice for the authors to revise the manuscript to discuss this. Authors mention that physicians who would participate in an RCT would be different from those who did not. Indeed, that same logic applies to their own study. Those who opted in to CDSS are likely different from those who did not. It would be nice to see this issue further addressed in the discussion.

2. A second weakness is the use of CKD Epi non-African American as the default eGFR value. Why was this done? Please explain. Is it because race data are not considered reliable in the LabCorp data?

3. On page 5, paragraph 3: Authors state: “CDSS physicians were those who chose to receive any of the program offerings.” Is there more detail on this? How many CDSS providers opted to receive all program offerings? To what extent do the authors know whether providers gave the information to all patients?

Discussion:

4. On implications—Given lack of improvement in the majority of clinical
parameters despite better testing, what are some potential solutions for improving actual clinical outcomes? If more tests are performed but no improvement in outcomes is achieved, the implication is that over testing is occurring or that needless testing is occurring. Authors mention prior clinical trials demonstrating a lack of CDSS effectiveness, particularly those that are used within EMRs. Given a move away from paper-based reporting systems and more EMR use, what do the authors recommend for future work to overcome barriers? How would CDSS fit into a larger model to improve patients’ clinical outcomes?

5. Discussion of changes in iPTH guidelines brings up an important nuance. Prior studies have shown that when physicians do not trust guidelines, they are less likely to adhere to them. The extent to which the KDIGO guidelines are evidence based (and the level of evidence they rely on) and are trusted by health care providers could play a large role in whether providers actually adhere to recommendations. Can authors provide further insights?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests