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: Michael Choi

Reviewer’s report:

Ennis et al. have submitted a well written interesting manuscript on the impact of a guideline based clinical decision support system (CDSS) on laboratory monitoring and achievement of laboratory target in 12,533 stage 3-4 CKD patients compared to 42,996 matched controls whose physicians did not receive the CDSS. Areas studied were kidney function, CKD mineral bone disorder, anemia and lipids. The authors concluded the automated laboratory based CDSS improved physician adherence to guidelines with respect to timely monitoring of CKD laboratory parameters although achievement of targets was variable. I have the following questions and comments

Major Compulsory Revisions:

1. If data was collected between 2009 and 2012, could the authors explain the short median follow up time? Was there a percentage of physicians who discontinued use of CDSS? I would think this would be uncommon.

2. In the results section, would TSAT be expected to be checked in those who were not anemic? I am surprised by the magnitude of the p values for OR when absolute differences between CDSS and control in achievement of 25 D and LDL-C targets were small. Can the authors discuss why there would be a decrease in the % success for both CDSS and control groups in regards to testing for PTH and phosphorous for stage 4 vs. stage 3b (figure 2).

Discretionary Revisions:

1. Although not controlled for in this study, it seems that there would be other data that would be interesting to the readers for those patients who had CDSS. Did the use of optional flow sheets seem to increase laboratory testing or achievement of laboratory targets? In those patients with longer follow up, was there increased adherence to testing or target achievement? In those patients who had physicians with a larger number of patients, was there increased adherence with testing or target achievement?

2. I would organize the data in the tables 1, 3 and 4. The data could be organized by the 4 areas tested. Kidney function (eGFR, CO2, urine albumin/creatinine, urine protein/creatinine), CKD-MBD (PTH, 25 –hydroxy vitamin d, calcium, phosphorous), anemia (hemoglobin, TSAT), then lipids. They would not have to be labelled by section.

3. Do the authors think the Institute of Medicine’s target for 25 D of > 20 ng/ml
could be contributing to the low achievement rates?

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests