Reviewer’s report

Title: Guideline adherence for identification and hydration of high-risk hospital patients for contrast-induced nephropathy

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Reviewer: Judith J Kooiman

Reviewer’s report:

The authors assessed the level of guideline adherence in the last year of a Dutch CI-AKI prevention program. This is a valid research question as the introduction of such safety programs is costly, and therefore, assessing adherence as an efficacy outcome is of importance.

I have the following comments:

Major Compulsory Revisions:

1. Cardiology department is used as a reference category in the analysis on guidelines adherence in terms of hydration of high-risk patients. I don’t think this is a proper reference category as cardiology patients are at high risk of acute heart failure due to volume expansion. Cardiologists might therefore be reluctant to use hydration in patients who are at a delicate balance between dehydration vs acute heart failure. I would therefore like to ask the authors to redo the analysis, using another reference category.

2. The explanation on eGFR can be deleted. However, the authors should add information on the formula used to assess eGFR. Did they use MDRD, CKD-EPI, CG? Was this the same for all hospitals?

3. The authors state that all measurements on eGFR in the past twelve months were designated as eGFR value. What do they mean by this? I assume that they used the most recent eGFR value to classify patients as high, or non-high risk?

4. Contrast volume > 150 ml was a risk factor of CI-AKI according to the safety program. How can physicians responsible for CI-AKI prevention have this knowledge prior to the contrast procedure?

5. Could the authors also provide information on the mean costs per patient for this safety program (creatinine measurements, hydration, etc)

6. The risk of CI-AKI is thought to be higher after intra-arterial contrast (such as for PTA, PCI, etc) compared with intravenous contrast injections (as used for CT-scans). This might influence guideline adherence. Could the authors show the results on guideline adherence for both groups, individually?

7. To provide further insight on guideline (non)adherence, it would be helpful to present the results split out for inpatients, outpatients, and patients presenting to an emergency department. This is probably taken into account in the multi-level analysis, but break-up of the results would be valuable.
8. The positive association between admission to day-care department and hydration seems to be the result of the safety program, as outpatients electively scheduled for CT at high-risk of CI-AKI would probably receive hydration at day-care departments.

9. The authors stress that patients not admitted were less often hydrated. How is it possible to give a patient intravenous volume expansion (hydration) when he/she is not admitted to either day care or another department? Same applies for the sentence in the discussion stressing that if a patient was not admitted, 1/3 was hydrated.

10. Please stress that reference 18 was an observational cohort study, not a randomized trial

11. The authors claim that prevention of CIN by infusion of saline or sodium bicarbonate is of importance. However, to my knowledge, there are no randomized placebo controlled studies demonstrating the risks of dialysis and other complications associated with CI-AKI to be lowered by the use of saline (or bicarbonate) versus no hydration. These endpoints reflect the true clinical importance of CI-AKI prevention.

12. Other points of the safety program were withholding nephrotoxic medication and the use of low contrast volumes. Do the authors know anything about adherence to these guideline recommendations?

13. How many patients were readmitted for complications of hydration (i.e. acute heart failure)?

Discretionary Revisions:

14. Although the introduction section is already rather long, the authors would strongly improve this section be stressing why it is of clinical importance to describe adherence to their studied safety program.

15. Within the Dutch society, top clinical hospital is a common term. However, I doubt whether colleagues from other parts of the world understand this term.

16. First line of the paragraph entitled ‘Guideline adherence to prevent CIN’ seems to miss a verb.

17. Why should assessing and registration of eGFR and subsequent interventions be reported in medical records other than for study purposes?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests