Reviewer’s report

**Title:** Validating surgical procedure codes for inflammatory bowel disease in the Swedish National Patient Register

**Version:** 0  **Date:** 27 Feb 2019

**Reviewer:** Reviewer 2

**Reviewer's report:**

**PEER REVIEWER ASSESSMENTS:**

**OBJECTIVE** - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?
Yes - there is a clear objective

**DESIGN** - Is the current approach (including controls and analysis protocols) appropriate for the objective?
No - there are major issues

**EXECUTION** - Are the experiments and analyses performed with technical rigor to allow confidence in the results?
No - there are minor issues

Statistics - Is the use of statistics in the manuscript appropriate?
No - there are issues with the statistics in the study

**INTERPRETATION** - Is the current interpretation/discussion of the results reasonable and not overstated?
No - there are major issues

**OVERALL MANUSCRIPT POTENTIAL** - Is the current version of this work technically sound? If not, can revisions be made to make the work technically sound?
Maybe - with major revisions

**PEER REVIEWER COMMENTS:**

**GENERAL COMMENTS:** Overall Impression
I am very sorry, but this is an extremely difficult submission to follow and understand. I have read this several times and am still uncertain exactly how this study was done. See my concerns below

What have the authors done well
It appears that the charts that were reviewed were well reviewed in a standardized way to confirm or
refute the NPR code and to confirm or refute whether the operation was added to the NPR as a code.

In what ways does it not meet best practice
The question is whether the 4 charts that were excluded should be included in the analysis as NOT confirming the NPR (kind of like an analysis of "intention to treat"
Second it is not clear whether each diagnosis of IBD was then reviewed for 2 years before and 2 years afterwards for an operative procedure.

REQUESTED REVISIONS:
Are there additional revisions the authors should make-consider

The revisions that I am having difficulty with are the following
1. Were all 257 patients with a diagnosis of IBD during the entire time period of 1966-2014 who had any diagnosis of IBD each time it was recorded then had their hospital notes reviewed for 2 years before and 2 years after EACH DIAGNOSIS OF IBD? Wouldn't that mean then that the number of episodes reviewed would be very large. When one looks at lines 127-129 for CD a total number of episodes of 555+50 and for UC OF 556 +51 would then have been required? This need to be explained much more clearly in the methods section because I am lost!

2. The word "procedure " needs to be changed to "operation"; for instance, is a colonoscopy a procedure? It is not listed in table S2 . Is draining a wound infection an operation or a surgical procedure? See JA00 table S2? I sorry but this is very confusing

ADDITIONAL REQUESTS/SUGGESTIONS:
Are there additional revisions the authors should make-consider

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1. Were all 257 patients with a diagnosis of IBD during the entire time period of 1966-2014 who had any diagnosis of IBD each time it was recorded then had their hospital notes reviewed for 2 years before and 2 years after EACH DIAGNOSIS OF IBD? Wouldn't that mean then that the number of episodes reviewed would be very large. When one looks at lines 127-129 for CD a total number of episodes of 555+50 (total of 605 episodes) and for UC OF 556 +51 (total of 606 episodes)would then have been required? This need to be explained much more clearly in the methods section because I am lost!

2. The word "procedure " needs to be changed to "operation"; for instance, is a colonoscopy a procedure? It is not listed in table S2 . Is draining a wound infection an operation or a surgical procedure? See JA00 table S2? I sorry but this is very confusing

Other changes that the authors should consider
1. Line 139 and 140. Do you mean that of the 262 charts of patients with a diagnosis of IBD , only 57 underwent an operation during the 2 years before and the 2 years after each of the multiple diagnoses of IBD was made? Or do you mean that all operations done during the period from 1987-2014 were also evaluated? This would have required that each diagnosis of IND was then reviewed.
This is not clear from the sentence as written figure 1 is also not clear! Also I am assuming that of
the 205 patients who did not undergo an operation, this was determined by review of the charts and not by the absence of an ICD code in the NPR for an operation. Is that true? In other words in table S2 you have "absence of code" meaning that there was a procedure code (does this mean an operation?) in the chart but not in the NPR but if you have not reviewed all the charts of the 205 patients who did not have a operative code in the NPR, then you might very well miss operations on the 205 patients?

2. Line 140-142 in these 4 patients, why were they excluded? If you cannot validate the code given then how can you assume they have the same accuracy as in the 53 patients you are able to determine all the data? Shouldn't they be treated as not validating any code given? (kind of like an analysis of "intention to treat?"

3. What is your definition of the "index date" on line 134? Does this mean that in a single patient who has had a diagnosis of IBD made on multiple occasions, that there would be multiple index dates? This is very important to explain clearly.

4. Line 200 change the word "procedures" to operations or to "operative procedures" and does the word procedure also include a colonoscopy or even drainage of a wound infection like JAA00 in table S1?

5. On lines 197 and 108 and line 249 shouldn't you specify that the 57 patients were identified as having an operative procedure by the NPR?

6. What do you mean by the number of 110 on line 313? How does a Surgical note relate to an operation? Does this mean that a note in the chart was written by a surgeon even if the patient did not undergo an operation?

Note: This reviewer report can be downloaded - see attached pdf file.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

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Please indicate the quality of language in the manuscript:
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