Reviewer's report

Title: Methods to Identify the Target Population: Implications for Prescribing Indicators

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Reviewer: Robert Vander Stichele

Reviewer's report:

1. General Remarks

This is a very interesting article describing within a network of GPs equipped with full EHR systems, within the population of T2DM patients, the extent of registration of diagnostic codes and of clinical measurements, as well as the sensitivity of automated generation of prescribing quality indicators in different situations (the prescription of hypertensives to hypertensive diabetics, the prescription of beta-blockers to diabetics with previous MI, the prescription of metformin to overweight diabetics).

This analysis is relevant for the appraisal of the validity of PQIs and the economics of performing quality assurance, especially in times were pay for performance, based on PQIs is becoming more prevalent.

The results show the need to address the problems of registration quality with regard to diagnostic coding.

As the primary aim of the article is to compare the performance of PQIs it is not necessary to express the performance of the two compared measurements approaches in more quantitative ways, which would need the consultation of a statistician.

2. Minor essential Revisions

2.1. Table 4

Inverse the labels of PQ1 and PQ3 (a graphical mistake)

2.2 Table 4

Add a column "total N" with:
for PQ1-1 a total N of 2070, retracable to table 2, sum of reference method)
for PQ1-2 a total N of 251, (difference with 367 in table 1 to be explained by crossing with availability of diagnosis codes and clinical measurements)
for PQ1-3 a total N of 1837 (retracable to table 2, sum of reference method)

3 Discretionary revisions
3.1

2.1 BOX 1:

The linguistic presentation with "or" and "and" and "or/and" can be misleading or confusing.

Suggestion:

denominator: Patients with: T2DM AND (Overweight OR obesity OR BMI >= 25)
nominator: denominator AND prescription of metformin

2.2.

At least in the beginning, a more full linguistic expression to indicate the difference between the two approaches is needed:

the approach based on recorded diagnostic codes in the EHR
the approach based on recorded clinical measurements in the EHR

to be further consistently abbreviated to:

the diagnostic code approach
the clinical measurement approach

Using "the diagnosis approach" rather then "the diagnostic code approach" gives a misleading clinical impression.

2.3. in the last sentence of the second paragraph of the backgroup, the double difference makes the chain of thoughts confusing. I would eliminate the difference "specific treatement" and "recommended treatment. This is probably relevant to the difference between PQI-1 and PQI-2, but is confusing in this context.

2.3. Is it correct that the automatic data extraction technique, including the recoding text to code technology, was used for identification of T2DM population, for the clinical measurement approach, and for the diagnostic code approach. If so, it should be emphasized in the discussion of generalizability to other systems, which may not have that feature.

2.4. Please reconsider the phrasing of the last sentence of second paragraph of "DATA ANALYSIS": expressed as a proportion divide by a number?

2.5 big or huge problem rather then "large' problem (first paragraph discussion)

2.6 such as rather then 'like' (idem)

2.7 you might consider to refer to a recent nordic article on ICPC as a coding system.

take a look at:
2.8 Would it be interesting to add the denominator and nominator N to Table 3?

**Level of interest:** An exceptional article

**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