Reviewer's report

Title: Distinguishing patterns in the dynamics of long-term medication use by Markov analysis: beyond persistence.

Version: 1 Date: 11 February 2007

Reviewer: John F Steiner

Reviewer's report:

General

This paper describes an innovative approach, using Markov models, for assessing persistence with medications for chronic diseases. Strengths of the paper include the creativity of the approach; the ability of this method to assess patterns of persistence over long time periods; the ability to identify individuals who refill medications after long gaps (rather than categorizing them as “discontinuers”); the characterization of persistence as a continuous rather than dichotomous measure; and the many useful examples. The methods are well described and illustrated using hypothetical and real data. The discussion and conclusions are appropriate to the findings. The title is appropriate and the writing is acceptable.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

None

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. The choice of a single fill of inhaled corticosteroids in a year to define persistence appears somewhat arbitrary, and very lenient on clinical grounds (since controller medications are the mainstay of preventive treatment for asthma). It would be useful for the authors either to justify their choice of the one-year interval in the methods section, or to speculate in the discussion about the impact on their conclusions of choosing shorter time windows (such as 3 or 6 months) which more closely reflect the supply of medications dispensed in a typical fill.

2. Although researchers in this field are increasingly distinguishing “adherence” from “persistence”, these definitions are not yet universally used in the literature. It would be helpful for the authors to define both terms in the introduction or methods, to clarify that they are proposing a method that is primarily useful for assessing persistence.

3. Their methods section suggests that once an individual entered the cohort, they were treated as a member of the cohort through 2002 or the “end of patient observation”. The authors should clarify how the end of patient observation was defined, and what types of events (such as death, or migration out of the 6-city region for which data were available) were used to define this. This additional information will help other investigators replicate their approach.

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Discretionary Revisions (which the author can choose to ignore)

4. The approach outlined in this paper will be of great use to researchers interested in accurate classification of drug exposures over time. It is harder to see how it could be applied clinically to define subgroups of patients who might respond to different interventions. It would be useful for clinical readers if the authors wished to add a paragraph suggesting what advantages this approach might have over simpler, more traditional methods of assessing either adherence or persistence.
What next?: Accept after minor essential revisions

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.