Reviewer’s report

Title: Management of hyperlipidemia among patients with rheumatoid arthritis in the primary care setting

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Reviewer: Bindu V Nair

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Manuscript Review

1. Title:
Management of hyperlipidemia among patients with rheumatoid arthritis in the primary care setting.

2. Abstract:
The abstract does describe the study design of a retrospective observational study that defines a cohort of rheumatoid arthritis (RA) patients from the administrative health database of one academic center.

3. Is the question posed original, important and well defined?
Yes, this study does address an important issue for clinicians taking care of rheumatoid arthritis patients. In the background, the authors review the literature for the increased prevalence of coronary artery disease (CAD) for people with RA. The authors’ rationale for the study presents the importance of primary health prevention for CAD in RA patients and questions whether a care gap exists for the identification and management of cardiovascular risk factors.

4. Objectives:
This study has three objectives. First objective is to determine the prevalence of hyperlipidemia screening in RA patients. The second goal is to ascertain if lipid lowering therapy is initiated in RA patients with an indication. Finally the authors assess the performance of the Framingham cardiovascular risk score with European League Against Rheumatism (EULAR) modifier to identify further RA patients at risk.

5. Methods – Setting:
This is a retrospective cohort study set in the University of Pennsylvania Health System and utilizes data from the electronic medical record of this academic health system. The recruitment of the cohort takes place from January 2005 to February 2010. Follow up for the cohort is a minimum of one year and a maximum of three years from cohort entry.
Minor Essential Revision - In the description of the study population (third paragraph in Materials and Methods), it is not clear what proportion of the cohort were followed before 2010 and how many were followed after 2010. The authors themselves cite that the EULAR guidelines for the management of cardiovascular risk factors were published at the end of the cohort recruitment period. The dissemination of the guidelines may have influenced a change in practice and therefore the temporal context of the data retrieval could be important.

6. Methods – Participants:

The criteria used for identification of the cohort is only one physician diagnosis code for RA which is interesting as most administrative health database studies find that case definitions for RA using more than one outpatient physician diagnostic code is optimal unless the code is from a specialist such as a rheumatologist. However one of the inclusion criteria for the study was receipt of medical care for 2 or more outpatient visits which is in keeping with increasing validity of case definitions with repeated visits.

Other inclusion criteria (third paragraph under Materials and Methods) included age greater than 18, care from a primary physician (internal medicine, geriatrics or family medicine) and one year of follow up time. Note-worthy was the outpatient visits could also be provided by a physician extender such as a nurse practitioner or physician assistant.

Minor Essential Revision - Regarding the validation (fourth paragraph under Materials and Methods), the positive predictive value (PPV) for the case algorithm is high but this is a cohort from one health system. I would suggest the authors provide the data for the validation of case identification in a supplemental file to also include sensitivity, specificity, PPV and negative predictive value (NPV).

7. Variables:

The authors include appropriate covariates in their analysis.

Minor Essential Revision - One question for the authors is why biologic agents were left out and what impact this could have on the results (Sixth paragraph under Materials and Methods)?

8. Results:

Discretionary Revision - A third of the cohort is being treated with DMARDs (Table 1 - Patient Demographics). The authors may want to comment whether they feel that this is reflective of a certain level of RA disease activity and contribute to the cardiovascular risk of their cohort?

Discretionary Revision - It would be of interest to know what proportion of visits were provided by the physician extender and whether the authors would be concerned about any potential bias as a result.
Minor Essential Revision - For the flow diagram in figure 1, please add explanation of why the numbers do not add up between second last box of RA patients screened and the final box of RA patients with lipid levels and no contraindications for therapy (likely overlap between exclusion criteria).

Minor Essential Revision - The labelling of the categories of the pie charts for figure 2 is not immediately clear (‘after start’, ‘before start’).

9. Do the figures appear to be genuine, i.e. without evidence of manipulation?
Yes

10. Is the interpretation (discussion and conclusion) well balanced and supported by the data?
The study does identify a care gap in the identification and management of cardiovascular risk factors. As the authors have stated, this has been seen in other studies. However it is not clear what proportion of the observed events took place before and after the publication of EULAR 2010 Recommendations for Cardiovascular Risk Management in RA Patients.

Minor Essential Revision - It would be helpful for the authors to place the results of the study in the temporal context of the EULAR guidelines (e.g. this study shows a care gap exists after the dissemination of EULAR recommendations).

10. Are limitations of the work clearly stated?
Yes, the authors identify some of the limitations of the study including decreased generalizability of this one center study, incomplete data on several variables that may lead to an underestimation of cardiovascular risk and possible selection bias with the exclusion of participants who did not have complete lipid panels.

One strength of the study is that it sought to assess the performance of the cardiovascular risk score with the EULAR multiplier for RA patients.

Discretionary revision - It would be interesting to have more discussion about the execution of this risk calculation and whether the authors have any comments about if their results can influence future research (First and second paragraphs under discussion).

11. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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.