Reviewer's report

Title: Cholesterol treatment with statins: Who is left out and who makes it to goal?

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Reviewer: Max Oscar Bachmann

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This study of participants in NHANES surveys investigates factors associated with need for statins among those not taking statins, and factors associated with cholesterol control among those taking statins. It also investigated whether indicators of access or utilisation influenced such associations.

The finding that, among statin users, men and poorer participants were less likely to achieve cholesterol goals is original and straightforward to interpret. However, as the authors discuss, the cross sectional design limits explanation of causal mechanisms, especially as these associations seemed not to be influenced by indicators of access or utilisation.

The study is generally well conducted and written, but there are two major limitations with the paper in its present form.

Major issues

1. The authors' inference from this study is incorrect when they interpret the analysis restricted to participants not receiving statins. They show that, among these participants, being older, male, poorer and less educated was associated with being ELIGIBLE for statins. From this they incorrectly infer that "men and the socio-economically are at risk of failing to RECEIVE statins.." {in Abstract conclusions}. But this is not what they show, since EVERYBODY in this analysis failed to receive statins. All they have shown is the (predictable) distribution of cardiovascular risk factors among those not receiving treatment.

A more interesting analysis would have been to examine all those eligibile for statins (including those receiving statins) and examine which characteristics were associated with receipt of statins. For this analyses they would probably have to adapt their definition of statin eligibility to include those already receiving statins, regardless of their current cholesterol levels.

2. The authors set out to investigate whether "access/utilisation factors would attenuate these disparities", which is reasonable aim. However there are some problems with their use and reporting of these variables:

2.1 It is questionable whether home language or "availability of care (any vs none)" are valid indicators of access.

2.2 The authors do not report whether these factors were associated with the
respective outcomes. They only say in the text that they were not independently associated with these outcomes after adjustment for covariates in multivariable models. Table 1 does cross-tabulate these indicators with outcomes not for the subgroups analysed in the regression models, and without reporting statistical significance.

2.3 Instead of just seeing whether adding these indicators to regression models changed the coefficients for the other factors, in principle they should have conducted interaction tests.

Minor issues

3. Table 1:

3.1 It is not clear what the denominators are - they seem to be different for the last two columns compared to the other columns.

3.2 It would be better to split this into two tables, with the last two columns in the second table, and with statistical significance of comparisons reported.

4. In tables 2 and 3, P=0.00 should be changed to P<0.01

Level of interest: An article of importance in its field

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.