Reviewer’s report

Title: Should health insurers target prevention of cardiovascular disease? An analysis of the costs and effects of an individualized programme in Germany based on routine data

Version: 2
Date: 6 February 2014

Reviewer: Thomas Reinhold

Reviewer’s report:

The article by Aljutaili et al. examined the cost-effectiveness of KardioPro, a health-care program initiated by a German sickness fund. The analysis was based on secondary health insurance data. Overall, the authors used common methods for this health economic evaluation. Nevertheless, some minor and also major points should be considered by the authors:

Major points

Methods:
1. Since KarioPro is a prevention program focused on preventing cardiovascular events, why did the authors decide on the endpoint death due to all cases? It would be more interesting to evaluate the deaths due to CV events.

Results:
2. The costs are broadly aggregated. However, as the authors state on page 6, they seem to have more defined costs available (as they have the patients’ ICD-10 codes). If more detailed costs were available and the relation to cardiovascular diseases is identifiable, we would like to see e.g. the hospital costs related due to cardiovascular diseases. Maybe an assignment of costs to specific ICD-codes was not possible based on the available data; this potential limitation should be discussed.

3. Regarding the effect endpoint event-free days, we would like to see the raw numbers of subjects experiencing an endpoint event. Preferably the number of deaths due to a CV event, the number of MIs and number of stroke in both groups.

4. P. 9: Please report confidence intervals for all results stated in the text.

5. Table 3 and 4: We would appreciate if the authors could show the raw cost and effect data to us, not just the difference between the groups.

6. Table 4: We would like to see the costs and effects per patient, not only based on the total sample.

7. Table 3: A confidence region, such as the 95% confidence interval, for the ICER is missing (but it should be calculated by using the bootstrap method). Having calculated and stated that in table 3 would make figure 3 redundant.

8. Figure 1, 2, 3: These figures are strongly misleading as they state the total
difference of the whole sample instead of the differences per patient/person. For instance the dot for “all patients” would always lie wide outside (in terms of costs and time to event - differences) according to the large sample size (more than 13,000 patients) compared to e.g. the “high risk group”.

Discussion:

9. P. 10: The authors state that “the decrease in hospital costs and costs related to medical drugs […] results from avoided cardiovascular events” (see also p. 9). As the authors did not report disease-related costs or total number of events, this statement cannot be verified by the data provided.

Minor points

10. Some sentences are really hard or impossible to comprehend. Some examples for unclear sentences:

11. p. 4: “The risk groups originally defined in KardioPro were not suitable for economic evaluation, as they only considered participants.”

12. p. 7: “To illustrate the efficient strategies when targeting risk groups, we also focused on combined strategies, i.e. on offering KardioPro to simultaneously selected risk groups.”

Methods:

13. The perspective of the evaluation is missing. Although it seems to be analysed from the health insurance perspective, this should be stated in the methods section.

14. The population of the controls is unclear. Was every insured person of the sickness fund eligible as a potential control? Were any exclusion criteria specified? How many potential controls were available initially?

15. The authors state that they performed propensity score matching on initially 140 variables. It would be nice to see the final logistic regression model. Therefore the readers would know which important variables were included in the score.

16. Regarding the propensity score, we would like to know whether the baseline costs of the subjects were included in the model or whether the authors adjusted for it later. As it is known that the baseline costs are a good predictor for future costs, it would be desirable to have shown these costs (total, hospital, drugs and physicians) in the baseline table for both groups and to have adjusted for in the analyses.

17. Use of annually aggregated costs may cause a lack of preciseness. If a person enters the KardioPro program at the end of a year and all his or her costs for the year are considered, the cost effects of the program for that year may be skewed. Maybe the authors could discuss this point in their discussion.

18. “Time until death” is in our opinion not a sensitivity analysis but rather an additional analysis of the data or another secondary endpoint. As stated above, death due to a CV event would be the preferable outcome.

19. p. 7: “To derive SE, we performed […]” should be revised to “To derive SE for
the incremental analyses, we performed [...]” In our understanding the bootstrap method in that study was used for calculating uncertainty of ICERs.

20. The sensitivity analysis of modelling the discount rate is unnecessary in our opinion. The authors did only inspect a very short time horizon; therefore we would not expect the discount rate to make a relevant difference. Maybe the authors can consider a better-suited variable for the sensitivity analysis.

Results:

21. If the authors chose the perspective of the health insurance company, it would be desirable to report the additionally costs due to the KardioPro program separately.

22. P. 8: The authors state that KardioPro was associated with a significant health gain (3.2 event-free days per participant, p = 0.0002). With the big sample size a difference of 3.2 days might relatively easy become significant. Yet, the authors do not state whether a difference of 3.2 days between the groups is also a relevant difference.

23. P. 9: The cost efficiency statement that the ‘high’ strategy is dominated by ‘CHD’ (death free time) and ‘CHD’ is dominated by ‘high’ is a long shot. Figures 1 and 2 do not seem to be showing a relevant difference.

24. Table 1: Please include baseline costs of the subjects if available.

25. Table 3: ‘days free of event per person’ and ‘euros per person’ should be renamed to ‘difference of …..’ That’s what the authors presented here.

26. Table 3 and 4: Besides the total costs and the costs per patient, we would like to get information to costs and effects per year (annual costs and effects per patient).

Discussion:

27. The authors state that it might be better to perform risk stratification from sickness funds’ routine data instead of calculating the PROCAM score. As their analysis is based on that data – why did they not calculate the risk score from that data?

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