Reviewer’s report

Title: Cost-utility analysis of percutaneous mitral valve repair in inoperable patients with functional mitral regurgitation in German settings

Version: 2 Date: 3 March 2015

Reviewer: Laura Burgers

Reviewer’s report:

Dear authors,

I have read with interest the paper "Cost-utility analysis of percutaneous mitral valve repair in inoperable patients with functional mitral regurgitation in German settings"

Major Compulsory Revisions

- This study estimates the cost-effectiveness of PMVR for a time horizon of 10 years. The time horizon should be long enough to reflect all important differences in costs or outcomes between the technologies being compared. PMVR and OMT do lead to differences in survival or benefits that persists for the remainder of a person’s life and thus I think that a lifetime time horizon is required. It is not clear from the study what the life expectancy is after PMVR and therefore it is not possible to check if the time horizon of 10 years is justified. Figure 2 shows all-cause mortality only for the first 4.5 years after implantation, please show also the survival of the patients after 4.5 years. In addition, the survival of the OMT patients could be included in the figure.

- It is not clear how short term effectiveness is extrapolated to 10 years in the base-case analysis.

- Utility decrements for PCI, MI, CABG, heart transplant are not incorporated in the model.

- The deterministic results do not correspond with the probabilistic results, please clarify

- Table 2: Please explain why the percentage of patients being hospitalized with stay in ICU is not varied in the PSA. The same applies to the other percentages in this part of the table and for the disutility.

- Since performing one-way sensitivity analyses of probabilities have often an effect on both the incremental costs and incremental effects it would be useful to show also the tornado diagrams for the incremental costs and incremental effects.

- Is it possible that patients who had a device recapture undergo an additional intervention? If so, than it should be included in the model
Minor Essential Revisions

- People interested in this article without a medical background may have trouble reading it. It would be useful to make it easier to read. For example, for a reader without a medical background it is unclear that recapturing the device means that the intervention was unsuccessful. Please make clear that the 17 patients with a recaptured device are the controls.

- Please specify earlier in the model description that the decision tree estimates the cost-effectiveness for the first month after the intervention.

- The discussion could elaborate more on the assumptions that were made.

- Abbreviation EROA is not introduced.

- Please incorporate all items of the CHEERS statement (e.g. generalizability or identification of the used studies)

- Table 1 could use a column with source

- Please provide a reference for the used threshold (35,000/QALY gained)

- Expand Table 3 with the fade-out effect analysis

- Table 2: base case value ‘probability of MI, which lead to PCI’ and ‘probability of arrhythmia’ do not correspond with the beta distribution

- Table 2: the beta distributions used for six months probability….. and monthly probability…. add all up to 100. Is this coincidence or were the exact alpha, beta’s or sample size unknown

- Maybe it is good to start the method section with a description of the population, intervention and comparator.

Discretionary Revisions

- Some clinicians do not have experience with cost-effectiveness studies. It could be useful to refer to some health economic modelling papers: ISPOR, MDM or Cohen & Reynolds 2008 JACC

**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'