Author's response to reviews

Title: Identifying and explaining the variability in development and implementation costs of disease management programs in the Netherlands

Authors:

Apostolos Tsiachristas (tsiachristas@bmg.eur.nl)
Bethany Hipple-Waters (walters@bmg.eur.nl)
Samantha A Adams (adams@bmg.eur.nl)
Roland Bal (r.bal@bmg.eur.nl)
Maureen PMM Rutten-van Mölken (m.rutten@bmg.eur.nl)

Version: 4 Date: 30 September 2014

Author's response to reviews: see over
Dear Editor,

Thank you for giving us the opportunity to revise our manuscript entitled ‘Identifying and explaining the variability in development and implementation costs of disease management programs in the Netherlands’. We found the comments of the two reviewers very helpful to improve the relevance of our paper and interpretation of the results.

Enclosed, you can find a revised version of the paper, in which ‘track changes’ is used to mark the adjustments. You can also find a point-by-point reply explaining how exactly we have dealt with the comments of the reviewers.

The most important revisions include: a) providing more information about the background and external validity of the study, b) elaborating on the definition and calculation of development and implementation costs, and c) presenting and discussing annualised development costs.

We hope that the revised paper incorporates adequately the recommendations of the reviewers and meets the expectations of the Editorial Board for publication.

Yours sincerely, on behalf of the co-authors,
Apostolos Tsiachristas
Reply to the comments of the reviewers

Manuscript (MS: 1989800000121027): Identifying and explaining the variability in development and implementation costs of disease management programs in the Netherlands

We were glad with the reviewers’ statement that the paper explores an interesting topic in the growing area of integrated care. We have revised the manuscript according to their comments by: a) providing more information about the background and external validity of the study, b) elaborating on the definition and calculation of development and implementation costs, and c) presenting and discussing annualised development costs. Below, are enlisted our detailed responses to the comments of the two reviewers.

Response to Reviewer 1:

Major revisions

- Reviewer’s comment: “Please report costs on an annual basis rather than aggregate. Two of the three positive association are costs to duration, suggesting that not reporting them annually might skew interpretation of findings. Moreover, decision makers generally care about costs annualized to decide upon budgets from year to year. By normalizing costs in this way and dropping the associations between costs to duration, we might come to slightly different conclusions and might identify that costs are not as widely distributed as reported after all. I strongly believe that some type of normalization is required before this can be published.”

Authors’ reply: In the methods regarding the quantitative analysis we added the following sentence “In the analysis, we included the development costs during the development phase, the annualized development costs, and the implementation costs in the year after implementation.” We have also presented the annualized development costs (Table 1) and their relation with potential cost drivers (Table 2 and Supplementary File 2).

Minor revisions

- Reviewer’s comment: “minor revisions are included in comment bubbles in the manuscript”.

Authors’ reply: We have adjusted the manuscript according to the suggestions of reviewer 1.

Response to Reviewer 2:

Main Issues

- Reviewer’s comment: “if I understand the manuscript right, as D&I costs those costs were taken that have been funded in the project grants. From the second part of the
manuscript it becomes clear that an important correlate of the D&I costs is the pre-project phase investments. This makes the calculation of D&I costs rather arbitrary. If an organization had invested in the right ICT solutions before the project period and hence did not include this in its grant proposal, the D&I costs are seen as low. But the investments in ICT have been made and paid for. Consequently the main conclusion of the manuscript is the last one on p. 20. But this conclusion says more about the approach in this evaluation than about the reality of the needed investments for DMPs.”.

Authors’ reply: This comment of Reviewer 2 points to two aspects of the definition of D&I costs in our study. The first point is whether we included only costs that were financed by ZonMw. This stems probably from the ambiguous definition of the development and implementation costs in the previous version of the manuscript. In the 5th sentence of the sub-section “Quantitative methods” of the previous version, it was stated that “The development costs included all costs made during the preparation phase of DMPs...”. Apparently this sentence was unclear to Reviewer 2. By “all costs” in this sentence, we meant all costs that an organization has carried to develop a DMP regardless of the financing body of these costs. To clarify this, we added the following sentence a couple of sentences later in the revised manuscript: “We collected the development and implementation costs regardless of the budget holder for their financing; the budget holders could include care groups, health insurers, and/or government.” The second point raised by the reviewer is that development costs before the start of setting-up a DMP and not included in our study. This is a valid and important limitation of our data which is acknowledged in the discussion in the following sentence: “In the diabetes case study, the majority of the development work involved in implementing the ICT system occurred before the study period, but nonetheless the work did happen; however, the cost for this work is not included in the financial data in the diabetes project. As the ICT work (and the costs associated) was included in the D&I period of the CVRM project, this may be an explanation for variation in costs.”.

• Reviewer’s comment: “Definition of the D&I costs: why is costs of care coordination included? Care coordination seems to be one of the core characteristics of DMPs; so care coordination is part of the running costs of care delivery in DMPs.”

Authors’ reply: We agree with the reviewer that costs for care coordination are part of the running costs in the provision of DMPs. This is indeed the reason we included the costs for care coordination in the implementation costs of DMPs. In other words the coordination costs would not have been occurred in the absence of DMPs. Thus these costs have to be incorporated as part of implementing a DMP. We hope that the reasoning for incorporating the care coordination costs in the D&I is clearer to Reviewer 2.

• Reviewer’s comment: “How was the development of a DMP defined? Is the DMP the same as the organization that implements a DMP? Do all organizations have to develop DMPs themselves or do blue prints of DMPs exist? Isn’t it rather about adapting a DMP to the local organization then developing a DMP?”.

Authors’ reply: We agree that more information about DMPs is needed. We have added the following text:

“Disease management was defined by the funding organization as:

a broad programmatic approach to chronic diseases, and a comprehensive care chain of diagnosis, treatment and counseling, as well as prevention, early detection
and self-management. The approach is based on multidisciplinary care standards and is organized around the patient and his condition, as much as possible, in conjunction with his surroundings. (Call for proposals, page 7)

In the programs proposed by the care delivery organizations and in the literature about DMPs, patients’ participation in the treatment and management of their condition is a key component of DMPs [2], as is the involvement of multiple medical professionals in care planning and delivery [3], and the development and implementation of information systems (most frequently computer-based systems) to support chronic disease treatment and management [4]. The development of the DMPs at the selected sites included interventions altering the existing organization of healthcare delivery (e.g. regular multidisciplinary meetings and regular monitoring of patients) and interventions that were implemented as new processes (e.g. case management, self-management support, ICT). A more detailed description of the interventions is given in elsewhere [5]."

• Reviewer’s comment: “In the manuscript it remains unclear what kind of organizations the manuscript is about. As far as I know, they include individual primary care practices and health centres, primary care groups (cooperatives of practices that facilitate DMP implementation and that contract bundled payments) and hospitals. The size of the organizations largely coincides with the distinction between primary care organizations and hospitals. The size of the organizations is seen as quite important, also in the discussion and conclusions. I doubt whether it is size or something else.”.

Authors’ reply: We agree with the reviewer’s comment and have added more information about the types of organizations involved in the research study in the background of the study (on page 3). The text states: the majority of the sites were primary care cooperatives. Furthermore, we still found a negative relation between organization size and D&I costs after having excluded the three hospital-based DMPs.

• Reviewer’s comment: “Conceptual framework: under this heading there is only one paragraph but this cannot be seen as a conceptual framework. Here for the first time mention of project plans and grant proposals. Should something like ‘potential cost drivers’ not be part of a conceptual framework?”.

Authors’ reply: We agree that the conceptual framework was not clear. This section has been moved to the qualitative research methods section. Information about the project plans and grant proposals was added to the Background section.

• Reviewer’s comment: “External validity: how can the conclusions of this study be generalized? Is there a good reason why organizations that did not apply for subsidy or that were not selected, show comparable D&I costs to the organizations in the projects? In other words, how selective is the sample of organizations that was studied in the evaluation? ”.

Authors’ reply: We have added a paragraph in the discussion about the representativeness of the 22 DMPs that reads: “The 22 DMPs are considered to be representative of the DMPs that have been implemented the last 3 years in the Netherlands because (a) they cover all diseases for which DMPs have been implemented, (b) they include DMPs in primary and/or secondary care (the most common settings for DMPs), (c) they cover a wide variety of diverse regions and geographic areas with different population density and (d) they differ in the attributes of the DMPs put into place and in the structure of multidisciplinary teams [5]. The study
population per disease is also representative of the overall disease population in the Netherlands with respect to age and gender.”

**Minor issues**

- **Reviewer’s comment:** “Include box with relevant info on Dutch health care system”.

  *Authors’ reply:* Considering the already lengthy manuscript, we have added a supplementary file (i.e. Supplementary File 1) with background information on the Dutch health care system following the suggestion of the Reviewer 2.

- **Reviewer’s comment:** “Relation between funding by health insurance organizations and project subsidies is unclear.”.

  *Authors’ reply:* The 22 DMPs got subsidized by ZonMw by almost the same amount of money. The project grant was independent of additional funding from health insurers. In addition to the ZonMw grant most projects were negotiating with insurance companies about the bundled payment. We have shown that there was relation between development and implementation costs of the 22 DMPs and the type of DMP financing

- **Reviewer’s comment:** “Link between projects and bundled payments for DMPs: bundled payments did not exist for all the DMP subject groups included in the projects. How does that influence the comparison of D&I costs between different payment methods?”.

  *Authors’ reply:* We have addressed this relation in the results (in the last paragraph of the sub-section “Variability in D&I costs and cost drivers”. This paragraphs mentions that there were no statistically significant difference in the D&I costs across different types of DMP financing. Figure 7 and Figure 8 in the Supplementary File 2 show also this relation. These results show that there is no relation between D&I costs and type of DMP financing.

- **Reviewer’s comment:** “Methods section: How are the quantitative and qualitative approaches combined. How was the iterative integration of economic and qualitative data (second para, p.7) actually done?”.

  *Authors’ reply:* We agree that this was not clear. We have added more information on the process of iterative integration. The last sentence of the methods elaborates on the iterative integration of the results and reads: “This was done through frequent meetings between the first two authors and the rest of the authorship team.”

- **Reviewer’s comment:** “Last para methods section: this paragraph on ‘Themes’ should be in the results section.”.

  *Authors’ reply:* We agree and have moved the paragraph on Themes to the first paragraph of the Results section.

- **Reviewer’s comment:** “The comments in the manuscript on Fig 4 (‘there might be a small negative relation’) and the correlation coefficient in Table 2 (-.08) is an over-interpretation.”.

  *Authors’ reply:* This statement is based on Figure 4 which shows a slight negative relation between the implementation costs and the number of DMP participants. We acknowledge that the correlation between the two as presented in Table 2 is minor (-.08). However, our discussion does not fully rely on the correlation due to the small sample size. The scatterplots supplement the information from Table 2 and in some
cases, they may be more informative than the correlation coefficients. We agree with Reviewer 2 that this may be an overstatement. We have rephrased the sentence into “Moreover, the minor, though negative, relation between the number of DMP participants and the implementation costs, as illustrated in Figure 4, may indicate the presence of economies of scale.”

- Reviewer’s comment: “On page 9 there is a heading ‘Intervention’. It was never made clear that this manuscript is about an intervention study, nor is it clear what exactly the intervention is.”.

Authors’ reply: We have clarified this text. The heading is now ‘Program attributes’.

- Reviewer’s comment: “At some points in the qualitative part of the manuscript the authors mention that project managers coordinated the efforts of the research team (e.g. p. 15 last para). Is that part of the D&I costs of the DMPs?”.

Authors’ reply: The time that the project leaders spent for the research is included in the D&I costs. This is because the results of the research were used by the project leaders as feedback to support their decision making. These costs were therefore seen as integral part of DMP implementation. However, the operational costs for the evaluation research such as mailing the questionnaires, data collection, data-entry and data-analyses were not included in D&I costs.