Reviewer's report

**Title:** Minimum volume standards in German hospitals. Do they get along with procedure centralization? A retrospective longitudinal data analysis.

**Version:** 2, **Date:** 14 December 2014

**Reviewer:** Thomas Böhler

**Reviewer's report:**

1. General Remarks

In the manuscript assessed for review, Werner de Cruppé and colleagues convincingly show that between the years 2006 and 2010 the introduction of nationally concordated minimum volume standards for hospitals in Germany did not lead to an increasing centralisation of the relevant interventions (i.e., transplantations of kidney, liver, and hematopoietic stem cells, total knee replacements, complex surgical interventions on the esophagus and the pancreas).

Application of minimum volume standards to health care planning and ressource allocation is a matter of controversy in Germany and its effects are subject to scientific research in industrialised countries all over the world. It appears, however, rather difficult to prove the hypothesis underlying the introduction of minimum volume standards, i.e., that due to continuous practice medical doctors and interdisciplinary teams operating above the minimum volume limits are better trained, deliver better medical care, and reach better outcomes for their patients.

In a previous paper [Dtsch Arztebl Int 111:549-55] the authors came to the conclusion that "establishment of minimum caseload requirements in Germany in 2004 did not lessen the number of cases performed in violation of these requirements over the period 2004 to 2010". Data presented in the manuscript under review corroborate this conclusion; the paper thus makes a significant contribution to the current discussion in Germany.

In the past, some of the authors have received research grants from the German Federal Joint-Committee and/or the Federal Ministry of Health in order to evaluate the effect of the introduction of minimum volume standards in German hospitals. The group has regularly published its results both internationally [e.g., BMC Health Services Research 2007; 7:165; DOI:10.1186/1472-6963-7-165 or Dtsch Arztebl Int 2008; 105:890-6; DOI: 10.3238/arztebl.2008.0890] and nationally [e.g., Gesundheitswesen 2008; 70:9-17 and 209-218; 2010; 72:271-8]. If baseline data presented in the manuscript under review stem from these studies, it may be appropriate to acknowledge these grants (discretionary revision; 1.1).

The present version of the manuscript may, however, not be easily understood by a reader who is not familiar with the organisation of the health care system in
Germany. Although some of the topics listed below are covered in the authors’ previous publications, the information is important for the reader and should be given in a concise way in the manuscript.

The following suggestions for revision are given:

2. Background
Major compulsory revision:

2.1 The manuscript adds additional information to the authors’ recent publication in August 2014 [Dtsch Arztebl Int 111:549-55; DOI: 10.3238/arztebl.2014.0549]; this publication should be mentioned and discussed in the manuscript in order to avoid any doubts regarding the possibility of duplicate publication.

Minor essential revision:

2.2 The part on the local follow-up study on breast cancer care in one of Germany’s federal states could be skipped.

3. Methods
Major compulsory revision:

3.1 The authors should use their data set for an additional analysis of inter-quantile changes of a given provider over years. How many providers have changed their ranking from the quantile of lower to higher case volumes and vice-versa between 2006 and 2010? How many providers did not change their ranking? These data could be used to assess the somehow unavoidable "decentralisation" that occurs in a dynamic health care system where providers may continuously "step in" (starting new activities), "stop", or "fade out" (cessation of activities).

3.2 In addition, the authors should describe the validity of self-reported data in mandatory hospital quality reports in Germany more precisely. It is difficult to understand why there is no further information on this topic beyond the statement in the last paragraph of the discussion. The authors have used these data for years and have even undertaken a survey in German hospitals regarding hospitals’ attitudes towards public reporting [BMC Health Services Research 2012; 12:378].

Minor essential revision:

3.3 The source of data should be more precisely described, e.g. by citing the description of the data set according to the "Rules for Hospital Quality Reports" of the German Federal Joint-Committee.

4. Results
Major compulsory revision:

4.1 An additional analysis of inter-quantile changes of a given provider over the years should be shown (see above, commentary to the methods section).

Minor essential revision:
4.2 The legends of tables 2 to 7 should list the relevant minimum volume standard (tab. 2 and 3: 10 per yr., tab. 4: 50 per yr., tab. 5 and 6: 25 per yr., tab. 7: 20 per yr.);

Discretionary revision:
4.3 In tab. 2 to 4, column 1, "quintil" should be substituted by "quintile" and in tab. 5 to 7, column 1 should show "tertile" instead of "quintil".

5. Discussion
Major compulsory revision:
5.1 The authors should add some information on the amount of improvement in outcome parameters which was expected as a result of further centralisation (for each procedure/intervention).

Minor essential revision:
5.2 The authors should reorganise the discussion of their data (and eventually divide it by single procedure/intervention) in order to focus on their main conclusion and on the reasons for it: why did centralisation not occur? It might have not been necessary (because already in 2006 there was a good baseline centralisation as compared to other industrialised countries?) or it might have been unavoidable (due to providers continuously stepping in or fading out; see above, commentary to the methods section). Or its necessity may simply not have been accepted by the stakeholders (because hospital planning is regional, regulations of self-administration are national, and the rules how minimum volume standards are determined are not transparent enough?).

**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 am regularly performing expert testimony for statutory health insurance funds in Germany. I am member of the expert panel of the Federal Joint-Committee on quality management and minimum volume standards in neonatology in Germany.