Reviewer’s report

Title: MAGnesium sulphate for fetal neuroprotection to prevent Cerebral Palsy (MAG-CP) - Implementation of a national guideline in Canada

Version: 0 Date: 15 May 2017

Reviewer: Grazia Antonacci

Reviewer's report:

Ms. Ref. No.: IMPS-D-17-00129

Title: MAGnesium sulphate for fetal neuroprotection to prevent Cerebral Palsy (MAG-CP) - a managed knowledge translation project to implement guidelines in Canada.

This paper describes and evaluate results of a managed Knowledge Translation (KT) intervention (MAG-CP) funded by the Canadian Institutes of Health Research and aimed to increase optimal use (i.e., administration when and only when indicated) of MgSO4 for women at risk of imminent birth to reduce the likelihood of cerebral palsy in the child.

The proposed multifaceted KT intervention included national clinical practice guidelines, education (a national online e-learning module and at project's sites, educational rounds), engagement of health care professionals (focus group discussions, site visits, etc.), and identification of barriers and facilitators (survey).

In order to evaluate the effect of the KT intervention two databases have been used: (i) the Canadian Perinatal Network (CPN) database, (ii) the Canadian Neonatal Network (CNN) database.

An interrupted time-series analysis was used on data provided by CPN participating sites to track the use of MgSO4 for fetal neuroprotection (NP) prior and during the KT intervention and evaluate the optimal MgSO4 use.

CNN data have also been used in order to expand the analysis to sites not included in the MAG-CP project and examine the impact of MgSO4 for fetal NP on delivery room intensive neonatal resuscitation (an outcome not available in the CPN).

The paper outlines approaches and results of great interest, which are very promising for future applications in the implementation of evidence-based practices into clinical and organizational local contexts. Hence, this work fits well with the Implementation Science's fields of interests and I recommend the acceptance of the paper after major revisions.
The contribution of this work to research and practice is twofold:

(i) It represents the first multicentre KT initiative to report results and is based on a large dataset (data represent 78% Canadian tertiary perinatal centres over a period of 11 years)

(ii) It proposes a multifaceted KT strategy, which has shown to be effective to increase the optimal use of MgSO4.

Rather than focus on the obvious strengths of the manuscript, which make this research a valuable work to be spread within the scientific community, I also have some comments that I describe below. I really hope that these comments will be helpful to revise the paper.

A. A general comment is that the contribution of this work in terms of proposed KT strategy should be better valued and contextualized in the existing literature.

B. I would suggest clarifying the gap which this work aims to fill and objectives of the paper in the "introduction" - e.g. (i) describe a multifaceted KT strategy (…), (ii) assess the effectiveness of the strategy (…).

C. In order to help the reader to go throughout the paper I would suggest adding a reminder of the sections of the paper at the end of the "introduction".

D. In the "introduction" (or as a subheading) a literature background on KT strategies / audit and feedback should be added. This would help to support the approach proposed and to identify and discuss strengths of this approach (which is shown to be successful in this context) compared to other approaches. I am aware that some literature and some reflection on this have been introduced in the "discussion" (line 343 - 352), but I think it is important having an introduction on KT strategies before presenting the proposed KT approach and then discuss the strengths of the proposed approach compared to previous studies. This would improve the perceived value of the work.

Below some literature on audit and feedback:


E. Paragraphs "CPN data collection - in the pre-MAG-CP and MAG-CP eras" and "Canadian Neonatal Network (CNN) data collection" describe not only data collection but also data analysis methods - maybe it could be helpful rename them (add "analysis" or remove "data collection"). The same in the results (the term "data collection" in the titles might be confusing).

F. It would be better broke in two or three sentences the sentence line 138-143

G. It would be better number, use bullet points or put in a table the sentence line 167-178

H. Finally I would also suggest expanding the discussion.

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