Author's response to reviews

**Title:** Protocol for a Systematic Review on Inequalities in Postnatal Care Services Utilization in Low- and Middle-Income Countries

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**Version:** 4  **Date:** 12 June 2013

Author's response to reviews: see over
Montreal, Canada, 11 June 2013

Dear Dr. Moher,

We wish to thank BioMed Central Systematic Reviews' editorial board for the opportunity to submit the manuscript, and the most useful peer-revision of our protocol. It is with great pleasure that we submit to Systematic Reviews a revised version of the « Protocol for a Systematic Review on Inequalities in Postnatal Care Services Utilization in Low- and Middle-Income Countries ». We thank the reviewers, Dr. Vivian Welch and Dr. Shi Wu Wen, for their utmost relevant comments and edit suggestions.

As per the editorial request, please note that this systematic review is now registered with the PROSPERO database (registration number: CRD42013004661). Furthermore, it is a pleasure to submit herein a point-by-point response to the issues underlined by the reviewers. We also highlighted (tracked changes) the edits within the revised manuscript submitted.

In light of Dr. Welch’s comments on the data analysis section of the protocol, please note that the latter was thoroughly revised by Dr. Igor Karp, experienced Epidemiologist and Researcher at the Research Centre of the University of Montreal Hospital Centre (CRCHUM) / Department of Social and Preventive Medicine, University of Montreal, Canada). Dr. Karp joined our review team and is now an author on the protocol per his involvement in critically revising the document for important intellectual content, and special contribution to the data analysis section.

We have followed Dr. Welch’s advice to have our search strategy reviewed by another experienced librarian. The search strategy was thus revised by Mrs. Diane St-Aubin, Senior Librarian and Director, Documentation Center of the University of Montreal Hospital Centre (CHUM). The comprehensive reviewed search strategy is attached to
the protocol as *Additional File 1*. Furthermore, we included the standardized data collection form as *Additional File 2*.

We thank *BMC Systematic Reviews*’ editorial team for consideration of the revised manuscript, and wish you all the best.

Yours truly.

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Review 1.

We wish to thank Dr. Shi Wu Wen for the review and useful comments. Please find below answers to his queries and comments.

1. The setting: Low and Middle income countries (LMICs) are evolving over time. Some countries that are eligible before (e.g., China) are not eligible now by international agencies such as CIDA. As a result, it is very complicated to define the setting at first place.

Our main objective is to assess inequalities in utilization of postnatal care services by birthing women living in resource-strained settings. We aim at providing evidence to health policy planning in order to increase utilization of postnatal care (PNC) services in low- and middle- income countries (LMICs). Rates of PNC services utilization in such resource-limited settings are dramatically low; In Kenya for instance, fewer than 20% of women receive postnatal care in the six-week postpartum period [1]. Focusing our review on LMICs - as per The World Bank Group’s classification [2] - will entitle us to synthetize scientific evidence according to similar contexts and challenges pertaining to LMICs’ health systems. Numerous researches in health care services utilization – including but not limited to essential obstetric care - have restricted their studies to low- and middle-income countries (e.g. Pande et al, Cochrane Database Syst Rev 2013; Lagarde and Palmer 2008) [3, 4]. A focus on LMICs entitles drawing conclusions applicable to evidence-based health policy making in poverty-stricken settings. We acknowledge that LMICs classification can vary over time, but please note that we consider a country’s classification at the time when the study was undertaken. China for instance evolved in the past years (according to the World Bank) from a «lower» middle income country to an «upper» middle income country, hence it will be included in our review. This is important for our team, in light of China’s vast inequalities in utilization of essential obstetric care services. Furthermore, we will stratify the evidence tables and meta-analyses results to account for the variations in settings across the World Bank’s income groups.

2. There are huge within-country variations, e.g., geographic (rural versus urban), ethnic/racial (black/Hispanic/white in the United States, aboriginal versus non-aboriginal in Canada etc.) variations etc. Addressing the inequality issue by country-level income may be too simplistic and I am not sure if it is necessary at first place.

The Cochrane Effective Practice and Organisation of Care (EPOC) group developed guidelines to assess “When should EPOC reviews only include studies from low- and middle-income countries?”, stating that: “There are compelling reasons to believe that the problem or the intervention(s) or the outcomes of interest are different in low- and middle-income countries (LMICs) and high- income countries (HICs), and the intervention(s) would be expected to function differently in LMICs and HICs, so that the evidence would be unlikely to be transferrable between LMICs and HICs”[5]. The objective of this systematic review is to provide evidence on postnatal care services coverage in resource-strained settings, in order to inform policy making in LMICs. As per the Cochrane EPOC guidelines, we indicate the focus of our review on LMICs in the
title of the protocol. We also standardized the use of the term “low- and middle-income countries (LMICs)” in replacement of “developing countries”, as per the Cochrane EPOC guidelines.

3. The language: English, French, and Spanish seem not enough. Portuguese and Chinese should be included at least.

As per Dr. Shi Wu Wen’s advice, we enlarged our search strategy to include articles in other languages than English, French, and Spanish. Our systematic review will identify studies in English, French, Spanish, Portuguese and Chinese – provided inclusion of an English abstract.

4. A single term of “postnatal care” may again be too simplistic. That may miss a lot of important studies that address a single, important intervention without mentioning the term “postnatal care”, e.g., management of postpartum haemorrhage, social support etc.

As per Additional file 1 of the protocol, our search strategy includes among others the following keywords and medical subject headings (MeSH):

(((postnatal care) OR postpartum care) OR perinatal care) OR puerperium care) OR postnatal follow up) OR postpartum follow up) OR puerperium follow up) OR postnatal monitoring) OR postpartum monitoring) OR puerperium monitoring)

Please refer to Additional file 1 for a comprehensive list of keywords and MeSH employed. Utilization of MeSH headings entitles us to retrieve numerous articles related to our main theme of concern (PNC services utilization). The search strategy is broad and appears very extensive according to preliminary screening of articles retrieved. In this regard, we confirm that the above search strategy generated articles pertaining to the management of postpartum haemorrhage or postpartum infections, among others.

Reference in the protocol to the adoption of the single term “postnatal” relates to the World Health Organization's advice in this regard. In a recent WHO Technical Consultation on Postpartum and Postnatal Care (2010), a scientific panel agreed that adopting the term “postnatal” would aid clarity and should be used for all issues pertaining to the mother and the baby after birth [6].

2. Review 2

Many thanks to Dr. Vivian Welch for the most exhaustive review of the protocol, relevant comments and edit proposals. The extent and quality of the review is much appreciated. We have addressed each interrogation and suggestion below.

1. It is not clear how the authors intend to compare inequalities in access to postnatal services from intervention studies (e.g. randomized trials), and those from cross-sectional studies.
Evidence tables and meta-analysis will be stratified and results presented separately for experimental, quasi-experimental and non-experimental studies. Depending on the number of studies, we will further stratify observational studies according to design (cohort, case-control, cross-sectional) and/or association measure - odds ratio, risk ratio, incidence rate ratio, hazard ratio, and prevalence ratio - exploring potential heterogeneity. Where feasible, we will carry out separate meta-analyses of adjusted vs. non-adjusted (or insufficiently adjusted) association measures.

Such precisions are included in the revised version of the protocol submitted to *BMC Systematic Reviews*.

2. **How will the authors describe and contrast the settings in which utilization of postnatal service is measured, which will be critical for making this useful for policy planners?**

Description of settings and contextualization of study results is indeed of the utmost importance in appraising scientific evidence and informing policymaking [7, 8]. In this regard, we included in the data collection form a specific section to extract information about settings and contexts. A section of the standardized form (page 4) thus provides for explicit description of settings - including but not limited to healthcare system characteristics and health financing (e.g. user fees at point of service or financial coverage of PNC services through universal health coverage (UHC) or health insurance schemes) – and social context. Kindly note that we attached the standardized data collection form to the systematic review protocol ([Additional file 2](#)).

Setting and context will also be descriptively summarized in the evidence tables outlining the study characteristics. We could for instance stratify the results pertaining to socioeconomic inequalities according to existence of user-fees (or not) for PNC services. We will also assess contextual attributes according to the study population descriptors derived from descriptive statistics, e.g. distribution of place of residence - formal/informal rural vs. urban area - religion, ethnicity, along with average education and income levels. Finally, the systematic review data will be synthetized and analyzed according to subsets defined by the countries’ income level, as per The World Bank Group’s classification. Evidence tables and meta-analyses results will hence be stratified and contrasted according to different contextual characteristics of low-vs. middle-income countries.

The main objective of the proposed methodology is to account for heterogeneity of settings and contexts. We thus aim to provide proper contextualization of results and judgement on external validity, most useful for policy planning purposes in LMICs.

3. **It is not clear that this study design will adequately support decision-makers since the documentation and triangulation of quantitative data with contextual and setting details is not described. For example, inequalities in access to postnatal services across particular ethnicities may only be relevant in certain setting, and this protocol does not describe how it will describe the social context of studies to allow this interpretation.**

Dr. Welch underlines the utmost importance of contextualizing the scientific evidence
identified in this systematic review, a matter particularly relevant to health policy planning and implementation. We definitely agree that proper description of setting details are essential to assess evidence on essential obstetric care services utilization, and inequalities thereof. As described in Answer no2 above, data on studies’ settings will be extracted with use of a standardized data collection form. Information on social context, location, health system attributes and distribution of population descriptors will be appraised and synthetized in the summary tables outlining the study characteristics. This will entitle us to provide adequate assessment of results in light of research contexts. In this regard, we have underlined in the protocol the importance of contextualizing the study results, particularly with the aim of informing policymaking. We added the following assertion to the protocol (p. 14): "Particular attention will be provided to assessing results in light of study settings, to ensure proper contextualization of evidence, and relevance for policy planning purposes in LMICs".

Furthermore, data will be analyzed according to subsets defined by the countries' income level - to provide for different contextual characteristics of low- vs. middle-income countries. We acknowledge that LMICs present diverse attributes pertaining to health systems and distribution of sociodemographic and economic characteristics. We will definitely address this matter in the systematic review's discussion, namely the results’ external validity issues and limitations thereof. Nevertheless, we are confident that properly contextualized results of this systematic review will provide informative insights to support access to and utilization of PNC services in LMICs.

4. We combined Dr. Welch's following questions pertaining to data analysis and synthesis:

There is insufficient description about the proposed statistical analysis. The protocol does not specify whether a statistical meta-analysis will be performed. And if a meta-analysis is used, how will it be carried out. For example, will data from RCTs be combined with other study designs? If so, how?

It is not clear whether meta-analysis will be considered. With or without a meta-analysis, it is not clear how results from different study designs will be compared or used, and how setting characteristics will be considered. For example, if an RCT and a case-control study both have data on inequalities across income/asset index; will they be compared somehow?

It is not clear how inequalities will be analyzed. The protocol states relative risks will be used- with odds ratio, risk ratio, incidence rate ratio in parentheses?

Please find below the newly drafted Search Results & Data synthesis sections of the protocol. We precised the proposed statistical analysis accordingly. This section was reviewed by two senior Epidemiologists and Researchers, Dr. Maria Victoria Zunzunegui and Dr. Igor Karp (Research Centre of the University of Montreal Hospital Centre (CRCHUM) / Department of Social and Preventive Medicine, University of Montreal, Canada). Please note that Dr. Karp joined our review team, and is now an author on the protocol per his involvement in critically revising the document for important intellectual content, and special contribution to the data analysis section.
**Search results**
Evidence tables will be generated to descriptively summarize the included studies and results: 1. authors, 2. study design, 3. objectives, 4. setting, 5. population, 6. outcomes assessed, 7. determinants / predictors, 8. results, and 9. scientific quality. Evidence tables will be stratified by countries’ income level (World Bank classification) to provide for different contextual characteristics of low- vs. middle-income countries.

**Data synthesis**
Where feasible, data will be combined to obtain a pooled measure of association evaluating PNC services inequalities, through meta-analyses conducted by using The Cochrane Group’s Review Manager software (RevMan 5.1) [9]. Data will be analysed along subsets defined by the countries’ income level, and grouped by determinants of PNC services utilization (socioeconomic, geographic, demographic). Due consideration will be given to heterogeneity ($I^2$ statistic) and corresponding analysis (fixed vs. random-effects models; meta-regression if necessary). Data synthesis will be stratified and presented separately for experimental, quasi-experimental and observational studies. Depending on the number of studies, we will further stratify observational studies according to design (cohort, case-control, cross-sectional) and/or association measure - odds ratio, risk ratio, incidence rate ratio, hazard ratio, and prevalence ratio - exploring potential heterogeneity. Where feasible, we will carry out separate meta-analyses of adjusted vs. non-adjusted (or insufficiently adjusted) association measures. Should we notice conditions that impede meta-analysis, we will synthetize the data narratively to provide for PNC services inequalities. Particular attention will be paid to assessing results in light of study settings, to ensure proper contextualization of evidence, and relevance for policy planning purposes in LMICs. Results will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement, with a focus on health equity (PRISMA-Equity 2012 Extension) [8].

Furthermore, we will refer to the Meta-analysis of observational studies in epidemiology (MOOSE) checklist to report the results of non-experimental studies [10].

**5. How will inequalities in access or utilization be measured? Will it be an absolute or relative comparison to a reference group? Is it likely that some studies will measure gradients in access to services, using the concentration index?**

We will consider quantitative results of the association between potential determinants and postnatal care services utilization. Published results have to compare utilization of PNC services across two or more groups. In this regard, we will consider relative comparisons – e.g. relative concentration index (RCI) or relative index of inequality (RII) - to a reference group, along with absolute differences in PNC services utilization, such as absolute concentration index (ACI) or slope index of inequality (SII). Such reported disparities will be useful in making comparisons over time or across geographical areas, populations or indicators, in light of the Centers for Disease Control and Prevention (CDC)’s guidelines [11]. Tugwell *et al* (2010) & Keppel
et al (2005) recommend considering both absolute and relative measures of inequalities in access to and utilization of health services [7, 11]. "Both of these are important, and probably should be used in combination. It is common to assess the importance of difference in relative rather than absolute terms; however, a 50% higher rate of a rare health problem may be much less important to public health than a 10% higher rate of a frequent health problem. Presentation of the absolute difference would make this clear" [12].

Information on the reference group will be extracted with use of the data collection form (p. 6: "specify the reference group"), and summarized in the evidence table.

6. There is insufficient detail about missing data. How will missing data be handled?

We included a specific section in the data collection form (p. 5) to extract information on missing data in the included studies. Should missing data represent a threat to internal validity of study results (e.g. missing data not at random), due consideration of this matter will be provided through the scientific quality assessment of studies. Furthermore, missing information on particular determinants – e.g. lack of measurement, non-response - will further be underlined in the evidence and summary tables. Missing data on key characteristics (e.g. health system settings) will be dealt with by contacting the study authors and through complementary research (e.g. existence of user fees for maternal health services at time of the study).

7. Cohort, case control and quasi-experimental studies may present adjusted analyses-adjusted for potential confounders. How will the authors deal with adjusted data?

The data collection form will entitle us to extract information on the potential confounding factors and effect modifiers accounted for in the selected studies. We will also collect information on the crude and adjusted association measures (data collection form, p. 5). Control for confounders and effect modifiers will inform validity assessment of the studies’ results, along with scientific quality of the latter. Possible spurious associations in PNC services utilization will be stressed if important potential confounders and/or effect modifiers are not accounted for.

Where feasible we will carry out separate meta-analyses of adjusted vs. non-adjusted (or insufficiently adjusted) association measures.

8. There are some typos (see below) that could be checked with spell checker

The entire protocol was run through a professional spell checker. Manuscript was re-read and edited by the CRCHUM reviewers (EVL, IK, MM, MVZ). An anglophone scientist, Mr. Jonathan Hope, conducted an English-language revision of the manuscript (grammar, syntax, orthography).

9. It is not clear why you want to also include experimental studies, unless you want to assess or compare effects of interventions on inequalities in access. The context and
setting of the study (e.g. whether postnatal care is free or whether user fees are required) would seem to be as important as documenting the existence of inequalities since inequalities across income in one setting with user fees may not be relevant in another setting with free access.

**Setting & financial accessibility.** Study setting is indeed a most important aspect of research addressing health services utilization and inequalities in access to maternal health care. Amongst contextual factors, financial accessibility to obstetrical services is crucial in evaluating PNC services utilization, and will be provided due consideration. Gabrysch and Campbell (2009) underline that financial access to health services in LMICs encompasses supply-side attributes (direct/indirect costs), as well as demand-side (capacity to pay, SES) [13]. Socioeconomic inequalities in PNC services utilization thus have to be studied according to contextualized provision of obstetric services. In this regard, available data on the existence of user fees at point of PNC service and financial coverage of essential obstetric care services (universal health coverage, health insurance schemes) will be explicitly extracted as health care system characteristics in the data collection form (p. 4). Please refer to answers provided to questions 2 & 3 above for thorough explanation of the strategy to assess study context and setting.

**Effects of interventions.** Dr. Welch is right when mentioning the "effects of interventions on inequalities". We are indeed interested in analyzing the effect of experimental or quasi-experimental interventions on inequalities in PNC services utilization in LMICs. Concepts of "inequality paradox" or "inverse equity hypothesis" provide for a greater effect of interventions and programs within educated and socioeconomically favoured households [14, 15], yet evidence is not robust in this regard in the field of maternal health in LMICs. We are particularly interested in identifying interventions, programs or policies deemed pro-poor. Our initiative is further aligned with promotion by Welch et al (2012) of systematic reviews assessing effects of interventions on equity [8].

10. Search Strategy

10.1 Search strategy provided in supplemental file does not indicate which terms are textword and which are MESH headings.

We have included this precision in the new Additional File 1 attached.

10.2 Any limits based on “inequalities” or “inequities” is likely to miss studies because inequities and inequalities and social determinants are poorly indexed, and may not be described in titles and abstracts. Therefore, if you intend to use this, this filter should be well justified, with consideration of the risks and benefits of using this filter (e.g. some references related to filters are provided in the Cochrane Handbook, in the PRISMA-Equity reporting guidelines (Welch et al 2012), and in the PRESS guidelines).

- Given the risks of applying filters related to defining inequalities, you may consider using the PRESS (Peer Review of Electronic Search Strategies) guidelines and having
We acknowledge that “equity” limits in the search strategy could result in missing studies [8, 16]. Nevertheless, we wish to underline that the terms “inequalities” or “inequities” are not included in the strategy as *sine qua none* filters. They were mentioned with the conjunction OR, not AND, e.g. postnatal care AND utilization AND (determinant OR inequality). Furthermore, these words are included in the search strategy alongside more generic and well-indexed terms such as “determinants”, “factors”, “predictors” – e.g. determinant[All Fields] OR predictor[All Fields].

We have followed Dr. Welch’s advice to have our search strategy reviewed by another experienced librarian scientist. The search strategy was thus revised by Mrs. Diane St-Aubin, Senior Librarian and Director, Documentation Center of the University of Montreal Hospital Centre (CHUM). The reviewed search strategy is attached. We also consulted the PRESS (Peer Review of Electronic Search Strategies) guidelines. Further to Mrs. St-Aubin’s suggestion - and in light of the PRESS guidelines - we added the “explode” option to the Emtree terms (MeSH equivalent) among the EMBASE research. To explode a subject heading involves including a selected subject heading and all of the narrower terms that are below it in the hierarchy (subject headings are arranged hierarchically in many thesauri) [17].

Please note that we also added the EMBASE search strategy to Additional file 1

10.3 You do not include the register of the relevant Cochrane review group, which may include relevant abstracts identified through hand searching

Search Strategy for Cochrane databases (below) is included in Additional file 1 as well. We specifically hand-searched relevant abstracts in the following review groups: Cochrane Neonatal Group (377); Cochrane Pregnancy and Childbirth Group (596); and Cochrane Public Health Group (29).


11. PRISMA is a guideline for how to report a systematic review. So, this framework could be used to structure the reporting, but is not intended to provide guidance about how to conduct the review. Guidance about how to carry out each of the steps/items described in PRISMA is available in the Cochrane Handbook.
We amended the Methods section to precise the following:
“The current protocol adopts a strategy informed by the guidelines of *The Cochrane Handbook for Systematic Reviews*”,
and
“Results will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement, with a focus on health equity (PRISMA-Equity 2012 Extension)”.

12. *Introduction does not mention support/promotion of exclusive breastfeeding.*

Background section actually mentioned the importance of exclusive breastfeeding, but we precised the WHO recommended duration (6 months EBF) to insist on this life-saving behaviour. The former sentence (“In LMICs context, postnatal care services include health education on early and exclusive breastfeeding”) now reads:

“In LMICs context, postnatal care services include health education concerning early and exclusive breastfeeding (EBF) for a period of six months”.

13. *Introduction does not mention HIV in context of low- and middle-income countries.*

We included in the background section the following assertion:

“Preterm, low birth weight, and HIV-infected newborns further need special care in the postnatal period”.

**References**


