PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Measurement of unnecessary psychiatric readmissions in the context of care transition interventions: a scoping review
AUTHORS	Kim, Bo; Weatherly, Christopher; Wolk, Courtney; Proctor, Enola

VERSION 1 – REVIEW

REVIEWER	Domenico Giacco University of Warwick, UK
REVIEW RETURNED	17-Oct-2020

GENERAL COMMENTS	This scoping appears well-conducted and does address the research question. The implications for practice are limited but some relevant directions for future research are provided. I have only three minor queries: - Was there any iterations when defining the search terms? I.e. were there any initial preliminary searches to identify the final terms? And could this described in more detail? - Why was the search limited to articles published after January 2009? Is it for convenience or for clinical/methodological considerations (e.g. changes in services or in reporting systems, etc.)? Either way this should be clarified. - If patient and public involvement was a substantial part of the methodology. more details as to how and in what activities service users were involved should be provided.

REVIEWER	Jorid Kalseth SINTEF Digital
REVIEW RETURNED	22-Nov-2020

GENERAL COMMENTS	This scoping review addresses the very important and timely question how unnecessary psychiatric readmissions are defined and measured. The overall impression is positive. The authors have performed the work in a very thorough manner, and they identify gaps in the literature and provides clear recommendations for bringing this field of research forward. I have only some minor comments that may help to clarify and strengthen the manuscript further. The scoping review is restricted to studies of readmission as outcome for evaluation of care transition interventions. This is not evident from the title. Since the literature on psychiatric readmission is broader, it could be beneficial to clarify this limitation already in the title. Different countries or mental health care systems differ in the organisation of mental health services, the role of inpatient care and how far they have come in the "deinstitutionalisation" process. The reason for bringing this up is the two first sentences in the first

	section of the Background paragraph pointing e.g. to high-resource requirements in inpatient treatment. Does this relate to the baseline admission or the readmission? The sentences made me think that the authors had long-stay psychiatric patients in mind. Care transitions (and related unnecessary readmissions) may be an issue both in short acute inpatient stays and for long episodes of hospitalisation. But the type of interventions and perhaps also the time period to use when evaluating readmission rates could differ. For readers not so into the readmission literature, some more text on why and how the time interval question is important could be enlightening. The rationale behind choice of time frame (January 2009-February 2019) should be included. The information that a hospital perspective is taken, i.e. focusing on hospital lead interventions (page 22 om outpatient follow up), is important and could be explained in the background section. In the discussion, the three research questions are highlighted as key specifications for calculating the readmission rate as an outcome. Other methodical requirements could be mentioned or problematized such as the correct handling of the timing of intervention and outcome (readmission) (logically the readmission must come after the intervention for the intervention to be able to affect readmission). Even though not a key issue here, it is a very important question in making guidelines for evaluation of care transition interventions. Hence, at least making a reference to other requirements could be in place. The choice of restricting the review to care transition was made after recommendations from reviewers to the protocol article, and I will not challenge this. However, I think it is fair to assume that the same problems of undefined concepts of unnecessary readmission and lack of explicitly qualified choice of readmission time period is not restricted to studies of care transmission. Hence, this warrants additional scoping reviews. Anyway, I think the very good recommendations made by the authors should be extended to include studies of unnecessary (or potentially avoidable or preventable) psychiatric readmissions in general.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1's comments:

R1.1. This scoping appears well-conducted and does address the research question. The implications for practice are limited but some relevant directions for future research are provided. I have only three minor queries.

Thank you very much for your comments. We have addressed each of them within the revised manuscript, as specified below for R1.2 through R1.4.

R1.2. Was there any iterations when defining the search terms? I.e. were there any initial preliminary searches to identify the final terms? And could this described in more detail?

We now provide more detail regarding our initial preliminary searches to identify the final terms.

Specifically, we have included the following information under the {Methods section, “Stage 2: Identifying relevant literature” subsection}.

... we iteratively developed our search strategy. In particular, we refined our search strategy to include terms that are often used interchangeably. For example, in addition to ‘readmission,’ our initial preliminary searches based on early iterations of the strategy helped us identify related terms to include, such as unnecessary hospitalisation, inappropriate hospitalisation, unplanned admission, and unscheduled admission.

R1.3. Why was the search limited to articles published after January 2009? Is it for convenience or for clinical/methodological considerations (e.g. changes in services or in reporting systems, etc.)? Either way this should be clarified.

Please see our response to Comment R2.4 below.

R1.4. If patient and public involvement was a substantial part of the methodology. more details as to how and in what activities service users were involved should be provided.

We now provide more details as to how and in what activities service users were involved. Specifically, we have included the following information under the {Methods section, “Patient and public involvement” subsection}.

These representatives came to be involved with our work through the first author’s research centre (Center for Healthcare Organization and Implementation Research (CHOIR), a Department of Veterans Affairs Health Services Research and Development Center of Innovation)’s established Veterans Engagement Research Group (VERG). VERG is a CHOIR-based community that is explicitly chartered to engage veterans and their family members as active partners in research through communication regarding opportunities to be involved, codevelopment of research ideas and collaboration on tasks. The representatives played a key role in helping us understand the current status of readmissions and formulating the questions that our scoping review focused on answering. They were consulted on developing the criteria for study selection and disseminating our findings to the larger healthcare community beyond the scientific community.

Reviewer 2’s comments:

R2.1. This scoping review addresses the very important and timely question how unnecessary psychiatric readmissions are defined and measured. The overall impression is positive. The authors have performed the work in a very thorough manner, and they identify gaps in the literature and provides clear recommendations for bringing this field of research forward. I have only some minor comments that may help to clarify and strengthen the manuscript further.

Thank you very much for your comments. We have addressed each of them within the revised manuscript, as specified below for R2.2 through R2.7.

R2.2. The scoping review is restricted to studies of readmission as outcome for evaluation of care transition interventions. This is not evident from the title. Since the literature on psychiatric

readmission is broader, it could be beneficial to clarify this limitation already in the title.

We have revised the title to make more evident that the scoping review is restricted to studies conducted in the context of care transition interventions. Specifically, the title now reads as follows.

Measurement of unnecessary psychiatric readmissions in the context of care transition interventions: a scoping review

R2.3. Different countries or mental health care systems differ in the organisation of mental health services, the role of inpatient care and how far they have come in the "deinstitutionalisation" process. The reason for bringing this up is the two first sentences in the first section of the Background paragraph pointing e.g. to high-resource requirements in inpatient treatment. Does this relate to the baseline admission or the readmission? The sentences made me think that the authors had long-stay psychiatric patients in mind. Care transitions (and related unnecessary readmissions) may be an issue both in short acute inpatient stays and for long episodes of hospitalisation. But the type of interventions and perhaps also the time period to use when evaluating readmission rates could differ. For readers not so into the readmission literature, some more text on why and how the time interval question is important could be enlightening.

The revised manuscript now further reflects how inpatient stays may differ in length and the implications of this difference when considering the time interval and other specifications for readmissions measurement. First, we have included a parenthetical statement to note the relevance of inpatient treatment’s high-resource requirements especially for longer and repeated inpatient stays, in the {Background section, first paragraph}.

Drivers of this increased interest include inpatient treatment’s high-resource requirements (especially for longer and repeated inpatient stays), … .

Second, we have specified different lengths of inpatient stay as meaningful subgroups to investigate and specific contexts to account for, in the {Discussion section, third and fourth paragraphs, respectively}.

… among subgroups of investigations (e.g., for different diagnoses, for different study settings, for different types of care transition interventions, for different lengths of inpatient stay).

… relevant for specific study contexts (e.g., particular target populations, types of intervention, and/or lengths of inpatient stay).

R2.4. The rationale behind choice of time frame (January 2009-February 2019) should be included.

We now provide the rationale behind our choice of the review time frame. Specifically, we have included the following information after the first sentence of the {Methods section, “Stage 3: Study selection” subsection}.

We set the review time frame to start in 2009, so that it follows the 2008 publication of Goldfield and colleagues’ [19] concept of ‘potentially preventable readmission,’ to which we align our notion of ‘unnecessary readmission.’ We set the review time frame to end in February 2019, as we initiated our review tasks in March 2019.

R2.5. The information that a hospital perspective is taken, i.e. focusing on hospital lead interventions (page 22 om outpatient follow up), is important and could be explained in the background section.

We now further explain the reason for specifying ‘outpatient follow-up’ as a category for care transition processes that are primarily handled by the hospital or health care system rather than by community programs. The reason was to be able to differentiate these processes from ones that get categorized as ‘community liaison.’ After careful consideration, because process categories are mentioned in the Results section, we added this specification to the Results section. Namely, we updated the bracketed statement of examples that is provided alongside outpatient follow-up under the {Methods section, “Additional findings from the review” subsection, “Care transition processes” subsubsection}.

Outpatient follow-up [e.g., including telephone check-ins, home-visits, peer support, and crisis teams, handled primarily by the hospital or health care system rather than by community programs (in order to differentiate from care transition processes that are categorized as community liaison)], ...

R2.6. In the discussion, the three research questions are highlighted as key specifications for calculating the readmission rate as an outcome. Other methodical requirements could be mentioned or problematized such as the correct handling of the timing of intervention and outcome (readmission) (logically the readmission must come after the intervention for the intervention to be able to affect readmission). Even though not a key issue here, it is a very important question in making guidelines for evaluation of care transition interventions. Hence, at least making a reference to other requirements could be in place.

We now mention that, especially when applied to studying the impact of an intervention on readmissions, the guidelines can be extended to encompass important additional requirements regarding the intervention process, such as including intervention fidelity and the handling of the timing of implementing key intervention components (e.g., time interval measurement should be appropriately adjusted in cases for which readmission is part of the intervention design). Specifically, we have included the following information into the {Discussion section, fourth paragraph}.

Especially when applied to studying the impact of an intervention on readmissions, the guidelines can be extended to encompass important additional requirements regarding the intervention process, such as including intervention fidelity and the handling of the timing of implementing key intervention components (e.g., time interval measurement should be appropriately adjusted in cases for which readmission is part of the intervention design).

R2.7. The choice of restricting the review to care transition was made after recommendations from reviewers to the protocol article, and I will not challenge this. However, I think it is fair to assume that the same problems of undefined concepts of unnecessary readmission and lack of explicitly qualified choice of readmission time period is not restricted to studies of care transmission. Hence, this warrants additional scoping reviews. Anyway, I think the very good recommendations made by the authors should be extended to include studies of unnecessary (or potentially avoidable or preventable) psychiatric readmissions in general.

We now mention that the recommendations stemming from this work can be applicable to psychiatric readmissions beyond those that are considered in the context of care transition interventions. Specifically, we have included the following information into the {Discussion section, second to last paragraph}.

Additional reviews of such studies can be expected to identify, to varying extents, similar issues of

studies using different definitions of unnecessary psychiatric readmissions and reporting limited details surrounding their choice of definition. Our recommendations above for future work (establishing a reporting framework, devising guidelines for measuring unnecessary readmissions, and investigating the sensitivity of research findings to varied specifications of the readmissions measure) can in turn be applicable to psychiatric readmissions beyond those that are considered in the context of care transition interventions.

Editor's comment:

E.1. Please work on improving the reporting of the study in the abstract. For example, which databases were searched? What were the dates of coverage? Please revise the formatting of your abstract so that it includes the following sections: Objectives >> Design >> Data Sources >> Eligibility Criteria >> Data extraction and synthesis >> Results >> Conclusions.

Thank you for advising us to improve the abstract, and we especially appreciate your pointing us to an example, which we closely followed in updating the abstract. We now specify the databases searched and the dates of coverage within the abstract. We have also reformatted the abstract to include the recommended sections. Please find below the updated abstract, which is also in the main manuscript file.

Objective: The objective of this study was to examine how published studies of inpatient to outpatient mental healthcare transition processes have approached measuring unnecessary psychiatric readmissions.
Design: Scoping review using Levac et al.'s enhancement to Arksey and O'Malley's framework for conducting scoping reviews.
Data sources: Medline (Ovid), Embase (Ovid), PsycINFO, CINAHL, Cochrane, and ISI Web of Science article databases were searched from 1 January 2009 through 28 February 2019.
Eligibility criteria for selecting studies: We included studies that (i) are about care transition processes associated with unnecessary psychiatric readmissions and (ii) specify use of at least one readmission time interval (i.e., the time period since previous discharge from inpatient care, within which a hospitalization can be considered a readmission).
Data extraction and synthesis: We assessed review findings through tabular and content analyses of the data extracted from included articles.
Results: Our database search yielded 3478 unique articles, 67 of which were included in our scoping review. The included articles varied widely in their reported readmission time intervals used. They provided limited details regarding which readmissions they considered unnecessary and which risks they accounted for in their measurement. There were no perceptible trends in associations between the variation in these findings and the included studies' characteristics (e.g., target population, type of care transition intervention).
Conclusions: The limited specification with which studies report their approach to unnecessary psychiatric readmissions measurement is a noteworthy gap identified by this scoping review, and one that can hinder both the replicability of conducted studies and adaptations of study methods by future investigations. Recommendations stemming from this review include (i) establishing a framework for reporting the measurement approach, (ii) devising enhanced guidelines regarding which approaches to use in which circumstances, and (iii) examining how sensitive research findings are to the choice of the approach.

VERSION 2 – REVIEW

REVIEWER	Jorid Kalseth SINTEF Digital, Norway
REVIEW RETURNED	22-Dec-2020

GENERAL COMMENTS	The authors have responded to my previous comments and I have no further comments.