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Measurement of unnecessary psychiatric readmissions: a scoping review protocol

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ABSTRACT

Introduction Care transition for patients being discharged from inpatient mental healthcare to outpatient settings is a growing focus for healthcare delivery systems. Many studies of this inpatient to outpatient transition use the rate of postdischarge readmissions as a patient-level outcome measure to assess the quality of transition. However, it is unclear how studies define the measure, and whether there is a shared understanding by the field regarding which definition is appropriate for which circumstances. This scoping review thus aims to examine how published studies have approached measuring unnecessary psychiatric readmissions.

Methods and analysis The scoping review will be structured according to Levac et al's enhancement to Arksey and O'Malley's framework for conducting scoping reviews. The protocol is registered through the Open Science Framework (https://osf.io/5nxuc/). We will search literature databases for studies that (1) are about care transition processes associated with unnecessary psychiatric readmissions and (2) specify use of at least one readmission time interval (ie, time period since previous discharge from inpatient care, within which a hospitalisation can be considered a readmission). Screening and review of articles will be carried out by two reviewers, first independently then involving a third reviewer as needed for consensus. We will assess review findings through both tabular and thematic analyses, noting prevalent trends in study characteristics and emergent themes across our reviewed studies.

Ethics and dissemination This work comes at a time of heightened interest by many mental healthcare systems in high-quality practices that structure their care processes towards effective inpatient to outpatient transitions. Findings will support the systems' careful examination of alternative potential transitional interventions, helping to ensure that their often limited quality enhancement resources are put to optimal use. We will focus on disseminating our findings to the healthcare community through strong communication infrastructures and connections with health system stakeholders that our multidisciplinary study consultants will foster throughout this study.

INTRODUCTION

Poor transitions between care settings are known to heighten risks of hospital readmission and worsening of symptoms.[1] This is particularly true for inpatient to outpatient transitions. Being connected to outpatient care within 7 days of discharge is a widely accepted indicator of transition quality, but this actually occurs for less than half of discharged patients within the USA.[2] Furthermore, even as care transition interventions are being increasingly tested for general medical populations, few specifically target mental health populations.[3]

Mental health conditions affect 46.6% of the US population during their lives and 26.6% of them in any given year.[4] Care transition for patients being discharged from inpatient mental healthcare to outpatient settings is a growing focus for healthcare delivery systems. This has been especially true as more of them align their practices to the evidence-based collaborative care model (CCM).[5–7] The CCM is grounded in delivering anticipatory, coordinated and patient-centred care,[5 8 9] and in turn calls for communicative and collaborative transition processes that make such care possible.

Studies of these inpatient to outpatient transition processes, both observational[10 11] and interventional,[12 13] are thus on the rise,

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Strengths and limitations of this study

► This review plans a comprehensive search of how unnecessary psychiatric readmissions are measured, closely following Levac and colleagues' established methodological framework for conducting scoping reviews.
► This review does not aim to assess the effectiveness of approaches used by the included studies in measuring unnecessary psychiatric readmissions. This aligns with the purpose of conducting scoping reviews, which are for identifying current gaps in knowledge and for establishing a new research agenda.
► Other ways of measuring unnecessary psychiatric readmissions may exist that have not been published as peer-reviewed journal articles that are indexed by the databases included in our review.
► This scoping review will form an essential knowledge base on which to build future designs, implementations and evaluations of interventions that enable safe and appropriate care transitions from inpatient to outpatient mental healthcare settings.

and many of them use the rate of postdischarge readmissions as a patient-level outcome measure to assess the quality of transition.[14 15] It is currently unclear, however, how exactly studies define the measure, and whether there is a shared understanding by the field regarding which definition is appropriate for which circumstances. Namely, readmission rate associated with a care setting is its proportion of patients who are rehospitalised within a certain time period since their previous hospitalisation. Defining this requires, at minimum, (1) specification of the time period (ie, readmission time interval), (2) classification of 're'-hospitalisation (ie, related to the previous hospitalisation and therefore possibly unnecessary or preventable, as opposed to an unrelated hospitalisation due to a new care need), and (3) cases that should be included/excluded from consideration.

We found our notion of 'unnecessary readmission' to be accurately described by Goldfield *et al*'s[16] definition of 'potentially preventable readmission'—a subsequent admission that occurs within the readmission time interval and is clinically related to a prior admission, where (1) readmission is a return hospitalisation to an acute care hospital that follows a prior acute care admission within a specified time interval (ie, readmission time interval), (2) readmission time interval is the maximum number of days allowed between the discharge date of a prior admission and the admitting date of a subsequent admission, and (3) a readmission's clinical relationship to a prior admission is established using diagnostic classifications, often the principal diagnosis associated with each admission.

3M Health Information Systems' Potentially Preventable Readmissions Classification System[17] offers a proprietary methodology for measuring readmissions that is widely used by healthcare systems,[18] insurance companies[19] and state-wide organisations.[20] Its publicly available information describes the methodology's ability to consider mental health or substance abuse problems as critical factors to adjust for in measurement.[21] It is difficult to glean from the information, however, what constitutes a meaningful readmission time interval and any mental health-specific considerations that need to be made when measuring unnecessary psychiatric readmissions.

In order to advance the field regarding transitional interventions to prevent unnecessary psychiatric readmissions, we first need to establish approaches to measuring unnecessary psychiatric readmissions that, if not uniform, can at least be made explicit as to how they relate to or differ from one another. Thus, as a first step towards the eventual goal of being able to rigorously evaluate transitional interventions' effect on unnecessary psychiatric readmission rates, we will conduct a scoping review of peer-reviewed literature to delineate the current landscape of how published studies have approached measuring unnecessary psychiatric readmissions. Considering that unnecessary psychiatric readmissions may be measured differently for different populations, we will focus on the adult population and include as a part of

our review the diagnoses, comorbidities and voluntariness of readmissions that are examined by the studies. We outline below our review protocol, and also discuss our work's timeliness in terms of ethical considerations and plans for dissemination to those most in need of knowledge to be generated though this work.

OBJECTIVE
The objective of this scoping review is to systematically examine what is known in the literature about measuring unnecessary psychiatric readmissions. Closely aligning to the purpose of conducting scoping reviews, we will aim to map current knowledge, identify existing gaps and set the research agenda with regard to measuring unnecessary psychiatric readmissions.

METHODS AND ANALYSIS
We will structure the steps of the scoping review according to Levac *et al*'s enhancement[22] to Arksey and O'Malley's six-stage methodological framework for conducting scoping reviews.[23] The framework's six stages include (1) defining the research question, (2) identifying relevant literature, (3) study selection, (4) data extraction, (5) collating, summarising and reporting the results, and (6) consultation process and engagement of knowledge users. We will align to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extensions for Protocols (PRISMA-P)[24] (online supplementary file 1) and Scoping Reviews (PRISMA-ScR)[25] for conducting and reporting on the specific review steps. Modelling after Marchand and colleagues' 2018 protocol for a scoping review of patient-centred care for addiction treatment,[26] we will take an iterative and reflexive approach throughout the review process, especially to refine our study selection and data extraction steps (stages 3 and 4 below) to best target meeting our objective. Our protocol is registered through the Open Science Framework (https://osf.io/5nxuc/),[27] and we will use EndNote[28] in combination with Microsoft Excel spreadsheet software[29] for tracking and conducting literature identification, study selection, data extraction and results synthesis.

Stage 1: defining the research question
We developed our research question by following the recommendations of Levac *et al*'s enhanced framework[22] to start broadly then hone the question while keeping in mind the scoping review's main purpose. We started with, 'What is known about measuring unnecessary psychiatric readmissions?' An initial exploratory search of article databases including National Center for Biotechnology Information (NCBI–PubMed) revealed several systematic reviews of discharge planning and transitional interventions associated with psychiatric readmissions.[30–32] Although findings from these reviews were focused on examining the interventions' content and their related

multilevel (eg, individual to system) characteristics, these works helpfully noted that they came across substantial variabilities in how their reviewed studies (1) designated the readmission time interval to be considered,[30 31] (2) set the inclusion/exclusion criteria for unnecessary readmissions,[32] and (3) approached case-mix adjustment in their measurement of readmission rates to account for factors related to a patient's clinical status that are associated with readmission risk.[32]

Hence, this scoping review aims to answer the following questions:

1. What durations are used as the unnecessary psychiatric readmission time interval?
2. What criteria are applied to designating a psychiatric readmission as unnecessary?
3. What risks are adjusted for in calculating unnecessary psychiatric readmission rates?

We plan to additionally examine any reasons put forth by our reviewed studies on their choices of these durations, criteria and risks.

Stage 2: identifying relevant literature

In order to systematically examine what is known about measuring unnecessary psychiatric readmissions, we will conduct a comprehensive review of the existing literature and evidence base. To ensure methodological rigour, our search strategy (online supplementary file 2) will include a range of bibliographic databases and related article searching. 'Readmission' is often used interchangeably with related terms such as unnecessary hospitalisation, inappropriate hospitalisation, unplanned admission or unscheduled admission.[33] Our research objective therefore poses a challenge to keyword formulation. The search strategy will address this issue by being iteratively developed by the research team in collaboration with experienced medical and social services librarians as well as consulting experts within the field. This peer review of the search strategy will also provide a subjective validation.[34] Search terms will be harvested using benchmark article terms and subject headings, titles and abstracts of key articles, dictionaries, and synonyms and subject headings within Embase and PubMed's MeSH database.

The electronic databases in which the comprehensive search will be conducted include Medline (Ovid), Embase (Ovid), PsycINFO, CINAHL, Cochrane and ISI Web of Science (online supplementary file 2 demonstrates our search using Medline (Ovid) that resulted in 1747 identified articles). These sources include relevant journals within the fields of medicine, health services and the social sciences and were selected to capture a comprehensive sample of literature. Boolean logic and proximity operators will be used to combine and refine search terms. Duplicate articles will be removed. The first 100 search results from each database will be reviewed by the research team to ensure the validity of the search strategy.

Stage 3: study selection

Selection of studies to include in our scoping review will proceed in two phases. In the initial title/abstract screening phase, we will designate a study or a literature review of studies to be eligible for the subsequent full-text screening phase if it (1) concerns the mental health population, (2) measures psychiatric readmission rates, (3) is set in a healthcare context, and (4) is a peer-reviewed journal article published in English from January 2009 through February 2019 (we will exclude editorial and other articles that report on individual viewpoints). Then, in the full-text screening phase, we will designate a study or a literature review of studies to be included in the scoping review if it (5) is conducted in (and explicitly mentions) the context of some care transition process that is either already being carried out (for non-intervention studies) or is being tested as an intervention (for intervention studies) and (6) specifies at least one readmission time interval used.

We have developed these criteria for study selection a priori, collaboratively as a research team and in close discussions with our consultants (please see the Stage 6: Consultation Process and Engagement of Knowledge Users section). For each phase, the criteria will first be applied to the larger of 10 articles or 10% of articles to be screened, then refined to be applied to the remaining articles. Two independent screeners (CW and BK) will be responsible for first independently screening, then comparing with one another their individual decisions on, whether each article meets the criteria. We will calculate Cohen's kappa and per cent agreement to assess interrater reliability/agreement between the screeners. For articles for which the individual decisions differ, a third screener (CBW) will be involved in discussions towards reaching group consensus.

Stage 4: data extraction

Identified literature and their selection status through the title/abstract and full-text screening phases will be tracked using EndNote[28] and Microsoft Excel[29] spreadsheet files. Data extraction from resulting articles to be included in the scoping review will use an Excel-based template designed to collect the article identification number and relevant information from each article. The domains for which data will be extracted are listed and defined in table 1. Although our focus is on measurements of unnecessary psychiatric readmissions, we are opting to extract data on intervention and controls, if applicable to the study being reviewed, to understand in detail the context under which the study used its approach to measuring unnecessary psychiatric readmissions. The data extraction template, particularly its domains and definitions, will be piloted on the larger of 10 or 10% of articles to be reviewed, then refined for data extraction from the remaining articles. CW will serve as the primary data extractor for half of the articles, and BK will serve as the secondary extractor, reviewing the same articles to verify and augment the extraction. The other half of

Table 1 Definitions of domains for which data will be extracted

Domain	Definition
Author(s)	Author(s) of the article
Year	Article's year of publication
Country	Article's country of publication
Objective	Aim of the study
Design	Approach taken by the study to reach its aim—for example, experimental/observational, quantitative/qualitative/mixed methods, review
Healthcare context and setting	Clinical, organisational and geographical environment in which the study was conducted—for example, inpatient psychiatric care, integrated healthcare system, urban/rural practice
Study/target population	Population to which the study results are meant to be applicable
Diagnoses and comorbidities	Primary diagnoses defining the target population and comorbidities accounted for in the study
Sample size	Number of individuals, clinics and/or organisations (depending on the study's focus) involved in the study
Intervention	The difference across which study outcomes were examined (ie, independent variable)—for example, a newly implemented inpatient to outpatient discharge planning tool
Control	Individuals, clinics and/or organisations (depending on the study's focus) used as a baseline against which the intervention's impact was assessed—for example, parallel, historical, not applicable
Voluntariness of re/admissions	Whether the re/admissions being considered by the study are voluntary and/or involuntary
Readmission time interval	Duration since the previous discharge from inpatient care, within which an acute care hospitalisation was considered to be a readmission
Criteria for designating a readmission as unnecessary	Standards applied by the study to designate an admission as a readmission—for example, occurred within a certain readmission time interval of a prior admission, diagnostically related to a prior admission
Criteria for excluding a readmission from being considered unnecessary	Standards applied to exclude a readmission from being a part of the study's readmission rate calculation—for example, associated with conditions for which subsequent readmissions are expected
Risk adjustments in calculating readmission rates	Factors potentially influencing the readmission rate (and are independent of care quality) that the study accounted for—for example, symptom severity
Other outcomes	Measurements other than for readmissions that the study also examined across its comparison groups (ie, dependent variables)
Key findings	Main results of the study
Additional notes	Other information from the article that may be pertinent to this scoping review

the articles will have BK as the primary data extractor and CW as the secondary extractor. Articles for which the primary and secondary data extractors do not agree on the extracted content will involve a third reviewer (CBW) to discuss towards reaching consensus.

Stage 5: collating, summarising and reporting the results

The extracted data will be readied for presentation using a tabular representation. Aligning to the specific questions that our scoping review aims to answer (listed under the Stage 1: Defining the Research Question section), we will summarise the findings along the dimensions of (1) readmission time interval, (2) unnecessary readmission definition, and (3) case-mix adjustment approach used

by our reviewed studies. We will follow the PRISMA-ScR[25] guidelines for reporting these findings.

In addition to the main dimensions along which the findings will be tabulated and examined, we will conduct a thematic analysis of prevalent trends in study characteristics across our reviewed studies. CW and BK will independently review the extracted data to identify emergent codes representative of the nature of the study design and key findings. Constant comparison combined with consensus-building discussions[35] will be used to finalise the list of emergent codes and their definitions. We will identify overarching themes based on reviewing the data associated with each code, and supplement delineation of the themes using relevant numerical trends from the

data for additional context (eg, proportion of studies conducted within an integrated care system context).

Stage 6: consultation process and engagement of knowledge users

Keeping in mind the initial motivation for our scoping review to inform future research to implement evidence-based inpatient to outpatient transition models into mental healthcare systems, we will closely engage our multidisciplinary research colleagues and partnered healthcare system representatives for each of stages 1 through 5 above. These individuals have clinical and administrative expertise in mental healthcare delivery and their system-wide organisation, including front-line practitioners, leadership of local, regional and national care networks, and health services researchers with expertise in care transitions and admissions data. They have already played a key role in helping us understand the current status of readmissions measurement and formulating the questions that our scoping review will focus on answering. We plan to seek ongoing consultation from these individuals, to help ensure relevant contextualisation of our review efforts.

Patient and public involvement

To ensure that patient perspectives are fully incorporated into every step of our planned scoping review, our consultants include patient representatives who will actively shape the research team's consensus, methods refinement, interpretation of findings and subsequent research planning. 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. VERG's quarterly meetings will serve as a key forum through which we will regularly share our progress and receive additional timely feedback.

Anticipated timeline of research activities

Our anticipated timeline for the research activities outlined above is provided in the Gantt chart (table 2).

ANTICIPATED LIMITATIONS AND STRENGTHS OF SCOPING REVIEW FINDINGS

This scoping review plans a comprehensive search of how unnecessary psychiatric readmissions are measured, including both intervention and non-intervention studies that are conducted in the context of care transitions. We will closely follow Levac and colleagues' established methodological framework for conducting scoping reviews, adhering to the PRISMA-ScR[25] for reporting on the specific review steps.

This review does not aim to assess the effectiveness of approaches used by the included studies, and in turn will not assess the methodological quality of the included studies beyond specifically examining how they measure unnecessary psychiatric readmissions. This aligns with the purpose of conducting scoping reviews, which are not intended for synthesising knowledge on effectiveness and rather intended for identifying current gaps in knowledge and establishing a new research agenda.[36]

There may exist other ways of measuring unnecessary psychiatric readmissions that have not been published as peer-reviewed journal articles that are indexed by the databases included in our review. As we allow findings from this scoping review to form an essential knowledge base on which to build future designs, implementations and evaluations of care transition interventions from inpatient to outpatient mental health settings, we will remain strongly engaged with our multidisciplinary research colleagues, partnered healthcare system representatives and patient collaborators (mentioned in the Stage 6: Consultation Process and Engagement of Knowledge Users section and the Patient and Public Involvement section). This will help ensure that we incorporate into our next research steps their experiences with measurement practices and

Table 2	Anticipated timeline for scoping review activities							
	Research month							
Research activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Stage 1: defining the research question (completed)								
Stage 2: identifying relevant literature	X							
Stage 3: study selection	X	X	X					
Stage 4: data extraction				X	X	X	X	
Stage 5: collating, summarising and reporting the results						X	X	X
Stage 6: consultation process and engagement of knowledge users	X	X	X	X	X	X	X	X
Patient and public involvement	X	X	X	X	X	X	X	X

other practical considerations, beyond knowledge generated from our review.

ETHICS AND DISSEMINATION

This review, to our knowledge, is the first to focus on comprehensively outlining the landscape of how unnecessary psychiatric readmissions are defined for measurement. There is no need to seek informed consent for study approval, given that no human research participants are involved. Specifically, our engagement with patient stakeholders is as research collaborators, rather than their involvement being as research subjects. Thus, informed consent, anonymity and ethics approval from our institutions are not applicable.

This work will be conducted at a time of heightened interest by many healthcare systems in devising high-quality practices that structure their care processes towards effectively coordinating inpatient to outpatient transitions.[37 38] Particularly for public sector organisations with substantial commitments to delivering mental healthcare, findings from our review will support their careful examination of alternative potential transitional interventions, helping to ensure that their often limited quality enhancement resources[39] are put to optimal use.

We will share findings from this scoping review with the scientific community through peer-reviewed journal publications and presentations at national conferences. We will additionally focus on disseminating our findings to the larger healthcare community through both existing communication infrastructures (eg, VERG, described in the Patient and Public Involvement section) and newly formed connections with health system stakeholders that our multidisciplinary consultants (please see the Stage 6: Consultation Process and Engagement of Knowledge Users section) will help foster. Importantly, this close communication with stakeholders will help shape our subsequent research agenda to ensure that it is appropriate and feasible, maximising the potential for real-world health system impact.

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