



Effective Health Care Program

Technical Brief
Number 21

Management Strategies To Reduce Psychiatric Readmissions



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Technical Brief

Number 21

Management Strategies To Reduce Psychiatric Readmissions

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Prepared by:

RTI-UNC Evidence-based Practice Center
Research Triangle Park, NC

Investigators:

Bradley N. Gaynes, M.D., M.P.H.
Carrie Brown, M.D., M.P.H.
Linda J. Lux, M.P.A.
Mahima Ashok, Ph.D.
Emmanuel Coker-Schwimmer, M.P.H.
Valerie Hoffman, Ph.D.
Brian Sheitman, M.D.
Meera Viswanathan, Ph.D.

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new health care technologies and strategies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

This EPC evidence report is a Technical Brief. A Technical Brief is a rapid report, typically on an emerging medical technology, strategy or intervention. It provides an overview of key issues related to the intervention—for example, current indications, relevant patient populations and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Although Technical Briefs generally focus on interventions for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions, the decision to request a Technical Brief is not solely based on the availability of clinical studies. The goals of the Technical Brief are to provide an early objective description of the state of the science, a potential framework for assessing the applications and implications of the intervention, a summary of ongoing research, and information on future research needs. In particular, through the Technical Brief, AHRQ hopes to gain insight on the appropriate conceptual framework and critical issues that will inform future research.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome comments on this Technical Brief. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

Richard G. Kronick, Ph.D.
Director
Agency for Healthcare Research and Quality

David Meyers, M.D.
Acting Director
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

Stephanie Chang, M.D., M.P.H.
Director, EPC Program
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

Kim Wittenberg, M.A.
Task Order Officer
Center for Evidence and Practice Improvement
Agency for Healthcare Research and Quality

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Key Informants (*also provided review of the draft report)

In designing the study questions, the EPC consulted a panel of Key Informants who represent subject experts and end-users of research. Key Informant input can inform key issues related to the topic of the technical brief. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than \$10,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

The list of Key Informants who participated in developing this report follows:

Dan Bradford, M.D., M.P.H.
Veterans Administration
Durham, NC

*David Chambers, D. Phil.
National Institute of Mental Health
Bethesda, MD

Benjamin Druss, M.D., M.P.H.
Emory University
Atlanta, GA

*Laura Fochtmann, M.D., M.B.I.
Stony Brook University School of Medicine
Stony Brook, NY

*Paul Gionfriddo
Mental Health America
Alexandria, VA

*Karen E. Johnson, M.S.W.
Universal Health Services
King of Prussia, PA

Amy Kilbourne, Ph.D., M.P.H.
VA Quality Enhancement Research
Initiative (QUERI) and the
University of Michigan Health System
Ann Arbor, MI

*Kathleen McCann, R.N., Ph.D.
National Association of Psychiatric Health
Systems
Washington, DC

*Steven S. Sharfstein, M.D.
Sheppard Pratt Health System
Baltimore, MD

Peer Reviewers

Prior to publication of the final evidence report, EPCs sought input from independent Peer Reviewers without financial conflicts of interest. However, the conclusions and synthesis of the scientific literature presented in this report does not necessarily represent the views of individual reviewers.

Peer Reviewers must disclose any financial conflicts of interest greater than \$10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential nonfinancial conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

The list of Peer Reviewers follows:

Howard H. Goldman, M.D., Ph.D.
University of Maryland School of Medicine
Baltimore, MD

Tami Mark, Ph.D., M.B.A.
Truven Health Analytics
Washington, DC

Hunter McQuiston, M.D.
New York University Langone Medical
Center
New York, NY

Management Strategies to Reduce Psychiatric Readmissions

Structured Abstract

Background. Repeated psychiatric hospitalizations, affecting primarily those individuals with a serious mental illness, are a substantial problem. Little is known about the effectiveness of different lengths of hospital stay for these patients, transition support services after discharge, short-term alternatives to psychiatric rehospitalization, or long-term approaches for reducing psychiatric rehospitalization.

Purpose. To describe and compare four core management strategies to reduce psychiatric readmissions—length of stay for inpatient care, transition support services (i.e., care provided as the individual moves to outpatient care), short-term alternatives to psychiatric rehospitalization (i.e., short-term outpatient care provided in place of psychiatric rehospitalization for those not at significant risk of harm to self or others), and long-term approaches for reducing psychiatric rehospitalization—for patients at high risk of psychiatric readmission.

Methods. We searched published and unpublished sources for information about the effectiveness of these strategies. We also interviewed Key Informants, representing mental health providers, health services researchers, policymakers, payers, and patient advocacy groups, to confirm and augment our findings.

Findings. Other than Assertive Community Treatment (ACT), a long-term approach for reducing psychiatric rehospitalization, we did not identify an overall theoretical model that identified key intervention components. Components of the various strategies overlap and are likely interdependent. Evidence suggests that the most commonly measured outcome, psychiatric readmissions, probably undercounts true readmission rates; other measures of well-being and functioning need to be measured. Of the 64 studies that assessed the link between a management strategy and readmission, 2 addressed LOS, 5 addressed transition support services, 4 addressed short-term alternatives to psychiatric rehospitalization, and 53 addressed long-term approaches for reducing psychiatric rehospitalization. The bulk of these studies address three interventions: case management, involuntary outpatient commitment/compulsory treatment orders, and ACT. The availability and implementation of the various management strategies can vary substantially across the country.

Conclusions. Important next steps include determining (1) the key components, or packages of components, that are most effective in keeping those at high risk of psychiatric rehospitalization functioning in the community; (2) how to accurately measure the most meaningful outcomes; and (3) how to most efficiently apply effective strategies to areas with varying resources.

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Background

Repeated hospitalizations on a psychiatric unit, affecting primarily those individuals experiencing serious mental illness, are a substantial problem. In 2010, 29 percent of Medicare-insured psychiatric inpatients from free-standing psychiatric units or general hospital-based psychiatric units had two or more hospitalizations during the same year, and 21 percent were readmitted within 60 days of discharge; most of these patients had psychotic or depressive disorders.¹ Similarly, in 2011 in community hospitals (which include both hospital-based psychiatric units and medical/surgical units), mental disorders accounted for the greatest number of all-cause, 30-day readmissions for Medicaid patients 18 to 64 years of age and the second highest number of all-cause 30-day readmissions among those with private insurance (in each case most commonly a psychotic or mood disorder).² This issue is especially pertinent for those with chronic psychiatric illness who have experienced repeated admissions (i.e., those with two or more prior psychiatric hospitalizations); between 1996 and 2002, 40 to 50 percent of patients with a history of repeated psychiatric hospitalizations were readmitted within 12 months.³⁻⁶

Readmissions are costly and disruptive to individuals and families⁷ and can lead both providers and patients to feeling demoralized or having a sense of failure.⁸ Although readmissions can result from increased severity of psychiatric illness, ineffective inpatient care, or lack of adherence with outpatient care, in some cases they may be more related to community resource issues such as employment and residential status.⁹ A decrease in number of psychiatric admissions, typically measured over 30 days, 90 days, or 1 year, is often used as a measure of successful discharge planning and outpatient mental health treatment, but such measures can be confounded by factors such as psychiatric bed availability, readmission penalties, and utilization review policies related to admissions. With increasing pressure to decrease health care costs, reducing hospital bed days (psychiatric or otherwise) is often a key priority for providers and insurers.

Key factors in decreasing the likelihood of subsequent psychiatric admissions include (1) rendering sufficient inpatient care to address adequately the acute presenting problem and stabilize the patient's psychiatric status;⁷ (2) ensuring an adequate discharge plan¹⁰ and delivery of sufficient support services to transition psychiatric care successfully from an inpatient to an outpatient setting (e.g., discharge services, followup calls, short-term case management, bridge visits, and psychoeducation);^{11,12} and (3) continuing adequate outpatient services to allow the individual to remain in the community.¹³⁻¹⁶ Effectively preventing psychiatric readmissions includes providing short-term alternatives to psychiatric rehospitalization in individuals not at significant risk of harm to self or others (e.g., partial hospitalization, crisis residential services, intensive outpatient services) and other longer-term approaches (e.g., assertive community treatment services, involuntary outpatient commitment).

This Technical Brief stems from two important perceptions by clinicians, patients, and often families about inpatient psychiatric care: (1) psychiatric hospital stays have become too brief (in the context of financial pressures and limited outpatient support⁵) and (2) issues underlying both acute danger to self and *others*¹⁷ and the functional recovery necessary to remain an outpatient are not always addressed,¹⁸ so the risk of psychiatric readmission may be only superficially lowered. Little is known about the comparative effectiveness of different lengths of hospital stay for these patients (including circumstances under which shorter [or longer] stays might be more effective), transition support services after discharge, alternatives to psychiatric rehospitalization for those not at risk of harm to self or others, or other approaches to reducing readmissions in

individuals.¹¹ Nominators for this Technical Brief are concerned about changes based on the assumption that reducing length of stay (LOS) is efficacious and cost-effective; however, whether such analyses adequately consider short- and long-term costs to different stakeholders, and whether the correct outcomes are being measured, is debatable. Short stays may not permit psychiatric professionals to develop adequate discharge plans, particularly for transitional support. Uncertainty also surrounds the comparative effectiveness and costs of transitional support services, alternatives to psychiatric rehospitalization, and other approaches after discharge. The influence of possible effect modifiers and mediators is unknown. Key contextual variables include treatment adherence, housing stability, quality of life, substance use disorders, involvement in the criminal justice system, clinical engagement, and access to outpatient services.

This Technical Brief identifies and summarizes issues surrounding management strategies to reduce psychiatric hospital readmission (specifically, readmissions to psychiatric units in general hospitals and to psychiatric hospitals). It focuses on those patients who either have a history of multiple psychiatric admissions or are considered at high risk of psychiatric readmission. As a Technical Brief, it does not attempt to summarize the comparative effectiveness of various strategies. Rather, it maps the available evidence on a range of issues for four core components of interventions (management strategies) for patients with psychiatric hospitalizations: LOS for inpatient care, transition support services (i.e., care provided as the individual moves from inpatient to outpatient care), short-term alternatives to psychiatric rehospitalization (i.e., short-term outpatient care provided in place of psychiatric rehospitalization for those not at significant risk of harm to self or others, usually on the order of weeks), and long-term approaches for reducing readmissions (outpatient care generally of a longer duration, usually on the order of months or years).

Guiding Questions (GQs)

1. Describe core components for management strategies to reduce readmissions: LOS, transition support services, short-term alternatives to rehospitalization, and long-term approaches for reducing readmissions.
 - a. For LOS for psychiatric hospitalizations: What are clinically meaningful categorizations of LOS; what are the advantages/disadvantages of different LOSs; how do LOSs vary by patient demographics, diagnosis, and coexisting conditions; and what are the specific harms or safety issues?
 - b. For transition support services: What are the different types or modalities of transition support services proposed for or used in clinical practice; what are the advantages/disadvantages of each; how do transition support services vary by patient demographics, diagnosis, and coexisting conditions; and what are the specific harms or safety issues?
 - c. For short-term alternatives to rehospitalization: What are the different alternatives to psychiatric rehospitalization that have been proposed or used in clinical practice; what are the advantages/disadvantages of each; how do alternatives to rehospitalization vary by patient demographics, diagnosis, and coexisting conditions; and what are the specific harms or safety issues?

- d. For long-term approaches for reducing psychiatric readmissions: What are the different approaches that have been proposed or used in clinical practice; what are the advantages/disadvantages of each; how do these approaches vary by patient demographics, diagnosis, and coexisting conditions; and what are the specific harms or safety issues?
2. Describe the context in which management strategies are used.
 - a. How do these management strategies vary across the United States?
 - b. For our primary outcome of interest: how accurate and valid are psychiatric readmissions data? What are other key secondary outcomes to consider for assessing the advantages/disadvantages of the various management strategies?^a
 - c. What kinds of training/certification, staffing, and other resources are required to ensure optimal use of management strategies?
 3. Describe current evidence about the effectiveness of these management strategies. What is the effect of each strategy on readmissions and the secondary outcomes?^b
 4. Identify important issues raised by the use of these management strategies for reducing readmissions.
 - a. What are other immediate and long-term implications (such as ethical, privacy, equity, or cost considerations) of current length of psychiatric admissions, available transition support services, short-term alternatives to rehospitalization, and long-term approaches for reducing readmissions?
 - b. What gaps exist in the current evidence base on these management strategies? What are possible areas of future research?

Methods

Systematic reviews require some certainty around definitional issues and a body of studies to advance understanding of important issues. Technical Briefs, in contrast, are appropriate products for nascent fields with large uncertainties around definitional issues and limited or no evidence, precisely because they focus on uncertainties in definition, context, and outcomes. A Technical Brief does not attempt to rate the risk of bias of individual studies or grade the strength of the evidence of the literature. The purpose of a Technical Brief is to provide an overview of key issues related to the intervention, such as current indications, relevant patient populations and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention.

For GQs 1, 2, and 4, we reviewed the published and gray literature before the interviews with Key Informants (KIs) and afterwards to substantiate any new insights that the KIs might have provided. We explored points of commonality or departure between KI insights and the published literature in our analysis. We targeted our review of the literature to rely on the best and most recent evidence available to support GQs 1, 2, and 4. For GQ 3, our effectiveness

^a See Table 1.

^b See Table 1.

question, we conducted a comprehensive and systematic search of the peer-reviewed and gray literature, and we generated an Evidence Map to describe the available evidence about each management strategy's ability to reduce readmissions.

Accordingly, we integrated targeted searches of the published literature and gray literature on the nature, context, and future research directions of management strategies to reduce psychiatric readmissions with discussions with KIs. We anticipated that GQs 1 and 2 would be informed primarily by gray literature or nonsystematic published reviews, with KI discussions serving to identify relevant data sources and insights in the absence of evidence. Parts of these questions were also informed by published literature or peer-reviewed data. In instances where evidence from empirical studies informed the response, we first provide a summary of the empirical evidence, followed by a summary of information from other sources. Responses to GQ 3 are based primarily on peer-reviewed, published literature and any relevant gray literature, supplemented by themes from the KI interviews. Responses to GQ 4 are shaped by both the published literature and information from KIs. Our findings are presented in the order of the GQs.

Literature Review

Gray Literature Search

We searched the gray literature to identify information beyond the published literature on management strategies to reduce psychiatric readmissions. Sources for the gray literature included the following: HAPI, OpenSIGLE, ClinicalTrials.gov, WHO International Clinical Trials Registry Platform, Academic Search Complete, NIH RePORTER, and ERIC. We also searched Web sites of the relevant professional associations such as the American Psychiatric Association, the National Alliance on Mental Illness, the National Association of Psychiatric Health Systems, and the National Institute of Mental Health. Appendix A provides a brief description of each of these gray literature sources.

Published Literature Search

An experienced research librarian developed our search strategy (Appendix B). Given that contemporary resources, finances, and needs relevant to psychiatric hospitalization have changed substantially from approximately 25 years ago, we systematically searched the published literature from January 1, 1990, through June 23, 2014. We searched in PubMed (MEDLINE), PsycINFO, and the Cochrane Library. We also reviewed the reference lists of relevant papers to identify any relevant citations that our electronic searches might have missed, and we examined any literature suggested by KIs. We conducted updated literature searches on December 12, 2014 that was concurrent with the peer-review process.

Eligibility Criteria

Given earlier indications about a limited evidence base from this project's topic development phase, we carefully considered how best to define our eligibility criteria to both reflect the current state of the art addressing potential management strategies for preventing readmissions (GQs 1, 2, and 4) while considering the current evidence base for the effectiveness of these management strategies (GQ 3).

Our population of interest was adults (≥ 18 years of age) with repeated psychiatric hospital admissions (a history of two or more) or who were assessed as being at high risk of psychiatric readmission (i.e., selection criteria for a study indicated specifically targeting those who were at high risk of psychiatric readmission). This specification allowed us to focus on those in the repeated risk group, and it excluded studies that may have evaluated relevant management strategies but did not target this population (e.g., excluded studies might sample from a general population of those with psychiatric illness who are at risk of a single psychiatric hospitalization but have not been identified as being at risk of rehospitalization). Our population of interest included subgroups based on diagnosis (e.g., psychotic, mood, or personality disorders), demographics (e.g., elderly, homelessness, race/ethnicity, sex), and comorbidities (e.g., co-occurring medical conditions, developmental disorders, or substance use disorders).

Given that no standard categorization exists for our four groups of management strategies, we used the available literature, our content expertise, and KI input to carefully consider how best to classify each strategy. The categorization of these interventions is listed in Table 1. Eligible interventions included those that fall under our four main categories of management strategies to reduce readmissions: length of stay (e.g., short stay, long stay); transition support services after discharge, which help one successfully move from inpatient treatment to outpatient care and are generally short-term (e.g., transitional discharge services, short-term case management, bridge visits, needs-oriented discharge planning); short-term alternatives to psychiatric rehospitalization in those not at significant risk of harm to self or others, which are also generally short-term (e.g., partial hospitalization, intensive outpatient programs, crisis residential services, respite care); and long-term approaches for reducing psychiatric rehospitalization, which generally require a more extensive and ongoing effort (e.g., Assertive Community Treatment, involuntary outpatient commitment, collaborative care, peer support). We excluded non-English studies to maximize the likelihood of generalizability to our topic nominators' population of interest.

We developed slightly different criteria for our two sets of questions: GQs 1, 2, and 4 as one set and GQ 3 as the other. For GQs 1, 2, and 4, to ensure that we captured the spectrum of current thinking and evidence for the area, we applied no study design restrictions because we anticipated that relevant information might come from a variety of publications, including review articles, qualitative research, and opinion pieces. Furthermore, we did not require articles to report on outcomes.

We developed stricter eligibility criteria for our review of evidence on the effectiveness of management strategies to prevent readmissions (GQ 3). We required studies to address readmission rates, but we also noted if any of the secondary outcomes of interest were reported (see Table 1). Study designs eligible for GQ 3 included a wide range of designs from systematic reviews to pre-post studies (see Table 1), but case reports, case series, opinions, commentaries, letters to the editor, and nonsystematic reviews were excluded.

Trained members of the research team dually reviewed all abstracts for eligibility based on the pre-established inclusion/exclusion criteria presented in Table 1. Studies marked for possible inclusion by reviewers underwent full-text review. Any study with inadequate information in the abstract also underwent full-text review. We retrieved and reviewed the full text of all articles included during the title/abstract review phase. Trained members of the research team dually reviewed each full-text article for inclusion or exclusion on the basis of the eligibility criteria. Reasons for exclusion were documented and those for inclusion tagged for the relevant GQ that

the article addressed. Disagreements about inclusion were resolved by discussion or consensus with review by the full research team as needed.

Table 1. Eligibility criteria

Criterion	Inclusion	Exclusion
Population	<p>All GQs</p> <ul style="list-style-type: none"> Adults (≥18 years) with repeated psychiatric hospital admissions or assessed as being at high risk of psychiatric readmission^a including subgroups based on diagnosis (e.g., psychotic, mood, or personality disorders), demographics (e.g., elderly, homelessness, race/ethnicity, sex), and comorbidities (e.g., co-occurring medical conditions, developmental disorders, or substance use disorders) 	<p>All GQs</p> <ul style="list-style-type: none"> <18 years Single psychiatric hospital admission
Intervention	<p>All GQs</p> <ul style="list-style-type: none"> Varying length of stay for psychiatric hospitalization Transition support services after discharge (e.g., supervised discharge, transitional discharge services, needs-oriented discharge planning, short-term case management, bridge visits, computerized decision-support tool for inpatient/outpatient service coordination) Short-term alternatives to psychiatric rehospitalization (e.g., partial hospitalization, scheduled intermittent hospitalization, intensive outpatient programs, crisis residential services, respite care), generally on the order of weeks Long-term approaches for reducing psychiatric rehospitalization (Assertive Community Treatment, involuntary outpatient commitment, case management [both intensive and nonintensive], psychoeducation, various outpatient services, including detoxification, collaborative care, peer support), generally on the order of months or years 	<p>All GQs</p> <ul style="list-style-type: none"> Approaches that do not specify the use of at least one of these four core components

Table 1. Eligibility criteria (continued)

Criterion	Inclusion	Exclusion
Comparator	<p>GQs 1, 2, and 4</p> <ul style="list-style-type: none"> No limitations <p>GQ 3</p> <ul style="list-style-type: none"> <i>Length of stay for psychiatric hospitalization</i> <ol style="list-style-type: none"> Different length of stay compared with each other Length of stay compared with one or more variants of the three other management strategies listed above <i>Transition support services after discharge</i> <ol style="list-style-type: none"> Different transition support services compared with each other Transition support services compared with usual care Transition support services compared with one or more variants of the three intervention management strategies listed above <i>Short-term alternatives to psychiatric rehospitalization</i> <ol style="list-style-type: none"> Different short-term alternatives to rehospitalization compared with each other Short-term alternatives to rehospitalization compared with usual care Short-term alternatives to rehospitalization compared with psychiatric rehospitalization <i>Long-term approaches to reducing readmissions</i> <ol style="list-style-type: none"> Different long-term approaches compared with each other Long-term approaches compared with usual care Long-term approaches to reduce readmissions compared with psychiatric rehospitalization 	<p>GQs 1, 2, and 4</p> <ul style="list-style-type: none"> Not applicable <p>GQ 3</p> <ul style="list-style-type: none"> Approaches that do not employ at least one of these comparators
Outcomes	<p>GQs 1, 2, and 4</p> <ul style="list-style-type: none"> No limitations <p>GQ 3</p> <ul style="list-style-type: none"> <i>Primary outcomes:</i>^b <ul style="list-style-type: none"> Readmission rates, number of readmissions, length of stay, time to readmission <i>Secondary outcomes:</i> <ul style="list-style-type: none"> Treatment adherence Housing stability Social support Remission of underlying psychiatric disorder Physical health outcomes Quality of life Clinical engagement Individual and family feelings about adequately addressing factors prompting the admission Individual and family felt the stay was sufficient to address safety and dangerousness concerns Satisfaction with care Relapse Criminal justice encounters Suicide, suicide attempts, other self-injurious behaviors Homicide and other aggressive behaviors Relapse into substance use 	<p>GQs 1, 2, and 4</p> <ul style="list-style-type: none"> Not applicable <p>GQ 3</p> <ul style="list-style-type: none"> Outcomes not attributable to the interventions/approaches of interest

Table 1. Eligibility criteria (continued)

Criterion	Inclusion	Exclusion
Time frames	All GQs <ul style="list-style-type: none"> • None 	All GQs <ul style="list-style-type: none"> • None
Setting	All GQs <ul style="list-style-type: none"> • Inpatient or outpatient, primary care or mental health (specialty) care 	All GQs <ul style="list-style-type: none"> • None
Study design	GQs 1, 2, and 4 <ul style="list-style-type: none"> • No limitations GQ 3 <ul style="list-style-type: none"> • Systematic reviews • Randomized controlled trials • Nonrandomized controlled trials • Prospective and retrospective cohort studies • Case-control studies • Single-group pre-post studies 	GQs 1, 2, and 4 <ul style="list-style-type: none"> • Not applicable GQ 3 <ul style="list-style-type: none"> • Case reports • Case series • Cross-sectional studies • Opinions • Commentaries • Nonsystematic reviews • Letters to the editor with no primary data
Other	All GQs <ul style="list-style-type: none"> • English language • Published 1990 and later 	All GQs <ul style="list-style-type: none"> • Non-English language • Published prior to 1990

GQ = Guiding Question.

^a Includes patients with violent behavior

^b Studies not reporting on primary outcomes are ineligible for GQ 3.

Discussions With Key Informants

KIs provide context to empirical findings (or lack of them) and may raise new concerns that prompt additional literature searches. Because we are not surveying a representative sample of KIs, their insights require further empirical exploration, by reviewing our literature searches or performing additional searches of the evidence.

In consultation with our team and the Agency for Healthcare Research and Quality (AHRQ), we identified distinct perspectives that were needed to inform the development of a well-rounded and balanced Technical Brief on management strategies for reducing psychiatric readmissions. Specifically, we sought to recruit KIs representing a spectrum of expertise. We interviewed eight KIs who represented various fields related to psychiatric readmissions: mental health providers (n=3), health services researchers (n=2), policymakers (n=2), and patient advocacy groups (n=1). Some KIs represented multiple fields of expertise. More detail about the KI process is available in Appendix A.

We shared our preliminary GQs and other materials with the KIs prior to the calls. An experienced moderator led the calls following a semistructured guide with built-in places for obtaining input from the KIs. Insights from KIs were used to confirm the findings from our literature review and the scope of our Technical Brief. Specifically, we focused on the preliminary GQs (specifically, GQ 1: description of core components for management strategies to reduce readmissions; GQ 2: context in which management strategies are used; and GQ 4: key important issues raised by the use of these management strategies for reducing readmissions), using the subquestions for each GQ as prompts to discuss issues further.

Data Management and Abstraction

All literature screening results were tracked in the EndNote database. We recorded the reason that each excluded full-text publication did not satisfy the eligibility criteria (Appendix C). We abstracted data into a standardized template from any studies that met our inclusion criteria for GQ 3. For each study, we captured study characteristics (study design, interventions, comparators, sample size, duration, sample size, country, and setting), population characteristics (types of serious mental illness, comorbid substance abuse, number of repeated hospitalizations, comorbid developmental disorders, comorbid medical conditions, homelessness, age, sex, race), and outcomes (data on readmission rates, listing of other outcomes of interest reported). One member of the research team collected the data, and a second team member reviewed it for accuracy and completeness.

Peer Review and Public Comment

The draft report was available for peer review and public comment at www.effectivehealthcare.ahrq.gov from December 1 to December 29, 2015. Two individuals or organizations offered public comment. In addition, nine peer reviewers provided us with feedback on the draft report. We revised the report in response to these comments where appropriate.

Findings

For each of the following sections, we will first provide a summary of the key findings and then provide a detailed synthesis of the data collected.

Discussion of Interventions: Core Components for Management Strategies (GQ 1)

Key Findings

This section describes categorizations, advantages and disadvantages, variation in use, and harms of four management strategies: length of stay (LOS), transition support services, short-term alternatives to psychiatric rehospitalization, and long-term approaches for reducing psychiatric rehospitalization. In contrast to LOS in a psychiatric hospital, which is a distinct approach to reducing readmissions without any component parts, the other three strategies involve various components that can overlap at times (e.g., case management services could be a part of either a transition support service or a long-term approach for reducing readmissions). We have conceptualized transition support services as services following hospital discharge, short-term alternatives to psychiatric rehospitalization as relatively short-term services (i.e., lasting weeks to months) targeting patients at high risk of readmission who may be in crisis but are not an imminent danger to self or others, and long-term approaches (i.e., lasting months to years) for reducing psychiatric rehospitalization in this group. We acknowledge that at times these strategies may overlap.

Other than Assertive Community Treatment (ACT), we did not identify an overall theoretical model that identified what components may be important and why, nor did our review provide an empirical basis for identifying what components may be most effective. We found several studies reflecting on the reasons for success or failure of novel applications of various management strategies, but comparatively few on variations in use and harms. The latter data require sustained evaluation of implementation and dissemination efforts, for which we found no studies. Also, we found one y comparing the advantages and disadvantages of different management strategies.

Categorizations of Management Strategies (GQ 1)

Length of stay for psychiatric hospitalizations. Literature regarding LOS and psychiatric readmissions is limited, and there is a lack of consistency regarding what constitutes brief, average, and long LOS.^{19,20} LOS categorizations in the literature cover longer lengths of time than those mentioned by KIs. One study categorized LOS into less than 30 days, versus 31 days and longer;²⁰ a second study used less than or equal to 1 week as well as 8 to 14 days (brief stay); 15 to 30 days (average stay); 31 to 60 days (longer than average stay); more than 60 days (extended stay).¹⁹ Both of these studies are from the early- to mid-1990s; what is considered *brief*, *very brief*, or *long* has probably changed considerably. KIs offered somewhat different interpretations of LOS: less than 4 days (brief stay); 4 to 14 days (intermediate stay); more than 14 days (long stay). A short-stay category of 24 hours may be referred to as *observation status*.

Transition support services for psychiatric hospitalization discharges. Table 2 describes the various types of transition support services included in the literature: aftercare services, a

computerized decision-support tool for coordination of inpatient and outpatient services, supervised discharge, needs-oriented discharge planning, and transitional discharge services. Although the literature describes the provision of transition support services, no consensus exists regarding optimal alternatives to psychiatric rehospitalization.

Table 2. Overview of types of transition support services

Type of Transition Support Service	Description
Aftercare services	Services include weekly followup calls, home visits, and psychoeducation services for family members of the patient ^{21,22} or individualized transitional psychoeducation and long-term preventive monitoring. ²³
Computerized decision-support tool for coordination of inpatient and outpatient services	Computerized decision-support tool for psychiatrists to enhance coordination of services by providing suggestions for services. These services are based on certain clinical and psychopathological conditions of the patient, including psychoeducation, group therapy, and social-worker care, which would then be provided by the local hospital. The software makes these recommendations when clinical or psychopathological needs are met. ²⁴
Needs-oriented discharge planning	Needs assessment to standardize discharge planning, outpatient treatment, and adherence. Adherence to this plan is then monitored during the postdischarge period. ^{25,26}
Supervised discharge	Supervised discharge refers to specifying a location of treatment or residence for patients upon discharge, and may include several features, such as requiring attendance at specific treatment sessions and allowing access to a community supervisor. ^{27,28}
Transitional discharge services	This model includes two parts: (1) peer support for a period of 1 year, and (2) ongoing support provided by hospital staff to form a therapeutic relationship with the community care provider. ²⁹ In the peer-support phase, peer volunteers help patients form friendships, and teach them skills useful for transition to the community. Activities in this phase of the therapeutic drug monitoring included telephone conversations and meeting for coffee.

Short-Term Alternatives to Psychiatric Rehospitalization

Table 3 describes the two types of short-term alternatives to rehospitalization included in the literature. Crisis residential care is a treatment modality that is available outside an individual's home in the case of psychiatric destabilization not requiring involuntary commitment. It exists in many forms but is meant to be less restrictive and less expensive than regular inpatient psychiatric care, and thus an alternative. It is also intended primarily for individuals voluntarily seeking treatment without significant comorbid medical needs that would necessitate an inpatient level of care.³⁰⁻³² Scheduled intermittent hospitalizations are planned short-term psychiatric inpatient admissions for persons with serious mental illness ranging from 3 to 11 days every 3 months.^{32,33}

Table 3. Overview of types of short-term alternatives to rehospitalization

Type of Alternative to Rehospitalization	Description and List of Relevant Studies
Crisis residential care	Crisis residential care is a mechanism to provide an intermediate level of care between standard outpatient treatment and involuntary psychiatric hospitalization to conserve resources and promote the least restrictive environment, with goals that include proactively decreasing the need for inpatient days. ³⁰⁻³²
Scheduled intermittent hospitalization	Planned short-term psychiatric inpatient admissions for persons with serious mental illness ranging from 3 to 11 days every 3 months. ^{32,33}

Long-term approaches for reducing psychiatric rehospitalization. Our literature search revealed four main categories of long-term approaches for reducing psychiatric rehospitalization: (1) ACT, (2) involuntary outpatient commitment (OPC) or compulsory treatment orders (CTOs), (3) case management (intensive or nonintensive), (4) collaborative care, (5) peer support, (6) psychoeducation, and (7) various outpatient services. Table 4 lists each long-term approach for reducing psychiatric rehospitalization, along with brief descriptions of each.

Table 4. Overview of types of long-term approaches for reducing psychiatric rehospitalization

Type of Long-term Approach for Reducing Rehospitalization	Description and List of Relevant Studies
Assertive Community Treatment	ACT is a form of multidisciplinary, wraparound outpatient care that is available 24/7 and targeted at individuals with severe and persistent mental illness to support placement in the community instead of extended inpatient psychiatric care (historically in State hospitals). ³⁴⁻⁴⁵
Case management	Support services, usually provided by a case manager, nurse, or other health care professional, provided to the patient based on assessment of the patient's needs to ensure needs are met. ⁴⁶⁻⁶¹ In some cases, case management services may also be provided by a consumer provider. ⁶² When being considered a specific strategy, one is usually referring to intensive case management.
Collaborative care	A collaborative care model to treat chronic bipolar disorder among veterans treated at Veterans Affairs hospitals was created by identifying important patient characteristics, sources of provider variability, and system-related barriers and then combining and modifying two different conceptual models to best meet patient needs given their available resources. ⁶³⁻⁶⁵
Involuntary outpatient commitment or compulsory treatment orders	Involuntary OPC, existing in the United States, and CTOs, existing abroad, are legal orders that compel individuals with mental illness to engage in outpatient treatment to avoid future rehospitalization. ⁶⁶⁻⁷⁵
Peer support	Peers (former mental health patients in recovery) who receive a salary for their services, but do not report back to the mental health system, provide support and mentorship to their mentees. ⁷⁶
Psychoeducation	Psychoeducation services, such as sessions provided by therapists where patients (and possibly to their relatives) are taught about stressors, etc. during inpatient stays. ⁷⁷⁻⁷⁹
Various outpatient services	Services include (1) day treatment or partial hospitalization, (2) intensive psychiatric rehabilitation, (3) vocational services, (4) prevocational services, and (5) detoxification services. These services addressed various issues such as (1) medication education, (2) symptom education, (3) care continuity, (4) social relations, (5) daily structure, (6) daily living, and (7) kin involvement. ⁸⁰

ACT = Assertive Community Treatment; CTO = compulsory treatment order; OPC = involuntary outpatient commitment.

ACT is an evidence-based practice for the treatment of individuals with severe and persistent mental illness and recent history of repeat psychiatric hospitalizations, criminal justice involvement, homelessness, and/or comorbid substance use.⁸¹ The model is based on a multidisciplinary team composed of social workers, rehabilitation therapists, nurses, and a psychiatrist with a low client-to-staff ratio (1:10), frequent visits in the community, 24/7 availability, and the ability to provide comprehensive services, as well as assertive community

outreach for individuals requiring assistance in engaging in treatment.⁴⁵ It is meant to provide highly individualized wraparound services so that a client does not have to work with multiple providers and can be supported through most psychiatric crises without hospitalization, and thus provide care in the least restrictive environment.⁴⁴ Originally pioneered in the late 1970s in Madison, Wisconsin, ACT was developed as part of a “quest for alternatives to mental hospital treatment for patients that suffer from chronically disabling psychiatric illness.”³⁷ Subsequently, modified forms (with larger caseloads and decreased visit frequency) have been created to fit local funding and personnel constraints, particularly in developing countries.³⁶

An OPC (as it exists in the United States) or CTO (as it exists in the United Kingdom, Canada, New Zealand, Australia, and Israel) is a form of compulsory outpatient psychiatric treatment that involves some degree of legal enforcement, with large variations based on jurisdiction and specific State/country law. For example, outpatient commitment laws in the United States require a judge’s order, supported by clinician input, and generally do not allow patients to be given medications forcibly. Compulsory treatment orders, also referred to as community treatment orders, can often be implemented by a clinician, without the need for court involvement, and in some countries, such as Australia and Canada, the administration of intramuscular forced medication is allowed as part of the order. The concept of compulsory outpatient treatment developed from numerous forces, including deinstitutionalization of those individuals with a serious mental illness beginning in the 1950s, rising hospital readmissions, and public concern arising from rare, but tragically violent acts committed by individuals with serious mental illness living in the community, who were often found to be nonadherent to treatment.^{66,70,72} OPC/CTO requires individuals to engage in psychiatric treatment in the community for a certain period of time or be faced with returning to the hospital for treatment and involves input from clinicians and the judicial system. The literature implies that some individuals may need involuntary treatment to prevent readmission because of the high prevalence of anosognosia (i.e., lack of insight as part of the disease process) with severe and persistent mental illness.^{71,72} Specifics of the orders (e.g., whether medication can be given forcibly by intramuscular injection and what conditions need to be met to actually return a patient to an inpatient setting involuntarily) vary by specific State and country. However, all are based on the principle that compelling outpatient treatment will avoid future hospitalizations, and thus, be less restrictive overall.⁷³

Several studies examined case management, including intensive case management (ICM), and its use as a transition support service. Nonintensive case management includes many of the same components as ICM, such as ongoing assessment of the patient needs, monitoring progress, defining outcomes of care, and linking patients with supportive resources.⁴⁷ Although there is general agreement that ICM more aggressively and proactively maintains contact with patients, and attempts have been made to conceptualize case management models that can vary by intensity,⁸² the literature shows that the difference between intensive and nonintensive case management has been difficult to articulate,⁶⁰ and we found no clear guideline, standard, or fidelity scale for case management. A retrospective cohort study that examined how case management teams staffed with consumer providers differed from those staffed with professionally trained nonconsumer providers, with respect to service delivery and outcomes, found that teams with consumer providers with significant life experience but limited educational background were likely to have outcomes comparable with teams led by nonconsumer staff.⁶²

Various psychoeducation services are described in the literature, including group therapy sessions provided to patients and their relatives.⁷⁷ One study focused in particular on comparing

single family psychoeducational treatment (where a minimum of three sessions for family engagement was followed by two or three educational sessions to educate family members on various aspects of disease and management, concluding with sessions with a clinician who helped implement guidelines) with multiple-family psychoeducational treatment (where five families were assigned to each group and then received an educational workshop).⁷⁸

We found a single study that examined peer support, in which a recovering mental health patient provided support and mentorship to a current patient.⁷⁶ KIs identified this intervention as an important strategy whose use was increasing.

Collaborative care is a general term, but there is literature describing a specific model of collaborative care for bipolar disorder aimed at reducing psychiatric hospitalization.⁶³⁻⁶⁵ This particular program incorporated all of the domains of a chronic medical care model: patient self-management, provider decision support, delivery system redesign, and facilitation of information flow (e.g., scheduled and unscheduled care, telephone contacts, missed appointments, liaison to other providers, hospitalizations, and information flow).⁶⁵

KIs also raised the alternatives described above during interviews. In addition, they noted that jails and prisons have become a significant, albeit unintended, alternative to psychiatric hospitalization. Data support this observation. Approximately 20 percent of jail inmates and 15 percent of State prisoners have a serious mental illness, a rate that is approximately 10 times that of individuals with serious mental illness remaining in State hospitals.⁸³

Advantages/Disadvantages

We found several studies reflecting on the reasons for success or failure of all three management strategies. A number of studies focused on novel implementation of transition support services, short-term alternatives to psychiatric rehospitalization, and long-term approaches for reducing psychiatric rehospitalization in particular (Table 5). One study compared the advantages or disadvantages of different management strategies.⁸⁴ We present the results below as potential or theoretical advantages or disadvantages rather than as empirical evidence of comparative advantages or disadvantages.

Length of stay for psychiatric hospitalizations. Potential advantages of brief LOS include deinstitutionalization and freeing up of hospital beds to accommodate more patients who require inpatient treatment.^{19,20} However, a potential disadvantage in brief LOS is the difficulty in clearly identifying patients who require longer care.¹⁹ KIs pointed out that the primary advantages of longer stays are the additional monitoring that patients receive, and the opportunity to be stabilized via treatment. They noted that among the disadvantages of longer stays are unintended consequences of hospitalization (e.g., acquiring infections, loss of job, loss of housing). Also, the lack of knowledge regarding the specific consequences of longer hospitalizations (e.g., beyond 20 days) is a disadvantage for a provider who needs to make a decision about the LOS.

Transition support services for psychiatric hospitalization discharges. The literature regarding advantages and disadvantages associated with each type of transition support service summarized in Table 5 is limited, particularly for certain interventions.

Table 5. Advantages and disadvantages of management strategies

	Length of Stay for Psychiatric Hospitalizations	Transition Support Services for Psychiatric Hospitalization Discharges	Short-Term Alternatives to Psychiatric Rehospitalization	Long-Term Approaches for Reducing Psychiatric Rehospitalization
Advantages	<ul style="list-style-type: none"> • Brief LOS: deinstitutionalization and freeing up of hospital beds to accommodate more patients who require inpatient treatment • Longer LOS: additional monitoring that patients receive, and the opportunity to be stabilized via treatment 	<ul style="list-style-type: none"> • Computerized decision-support tool: provides recommendations for interventions to reduce readmissions • Supervised discharge: NR • Needs-oriented discharge planning and peer-support services: NR 	<ul style="list-style-type: none"> • Crisis residential care: maintenance of continuity with community supports, greater levels of healing, empowerment and satisfaction, shorter LOS, and cost savings • Scheduled intermittent hospitalization: NR 	<ul style="list-style-type: none"> • ACT: decreased hospital admissions or bed days, increased social functioning and consumer satisfaction, sustained contact with difficult-to-engage patients • Collaborative care: fewer hospitalizations • ICM: adaptable, potential to lower costs associated with hospital readmissions • Nonintensive case management programs: NR • OPC/CTO: fewer hospitalizations, decreased homelessness, reduced seclusion and restraint, possible synergistic effect when combined with long-acting injectable antipsychotics, decreased arrest for subgroups, increased engagement in community treatment • OPC/CTO combined with ACT: fewer hospitalizations than ACT alone, increased engagement in outpatient services • OPC/CTO combined with ICM: fewer hospitalizations than ACT alone, increased engagement in outpatient services • Psychoeducational services: may satisfy information needs and relieve emotional stress of patients and families

Table 5. Advantages and disadvantages of management strategies (continued)

	Length of Stay for Psychiatric Hospitalizations	Transition Support Services for Psychiatric Hospitalization Discharges	Short-Term Alternatives to Psychiatric Rehospitalization	Long-Term Approaches for Reducing Psychiatric Rehospitalization
Disadvantages	<ul style="list-style-type: none"> • Brief LOS: difficulty in clearly identifying patients who require longer care • Longer LOS: unintended consequences of hospitalization (e.g., infections) 	<ul style="list-style-type: none"> • Computerized decision-support tool: lack of adaptability or utility for patients with wide range of needs or high rates of readmissions • Needs-oriented discharge planning NR • Supervised discharge: potentially negative perception 	<ul style="list-style-type: none"> • Crisis residential care: NR • Scheduled intermittent hospitalization: NR 	<ul style="list-style-type: none"> • ACT: Services focused on medication education: unique contribution of service unclear: varying data about its cost-effectiveness, labor intensive compared with other forms of case management • OPC/CTO: unclear or inconsistent information on optimal length of commitment and outcomes following expiration of court order • Case management in general: more expensive than usual care, result in heavier workloads for case managers, potentially poorer results • ICM: professional staff may initially resist the use of community-living aides to support them • Collaborative care: NR • Peer-support services: NR • Psychoeducational services: may require consistent use of services, may not be effective without trained staff and clinicians with dedicated time • Services focused on medication education: unique contribution of service unclear • ACT: varying data about its cost-effectiveness, labor intensive compared with other forms of case management

ACT = Assertive Community Treatment; CTO = compulsory treatment order; ICM = intensive care management; LOS = length of stay; NR = not reported; OPC = involuntary outpatient commitment.

Aftercare services have the advantage of being low-intensity services, particularly when compared with Assertive Community Treatment or intensive case management, which could increase costs or limit access when continued for prolonged periods of time.²² Additionally, aftercare services may appeal to patients with a wide range of mental illnesses.²³ A potential disadvantage of aftercare services is the challenge associated with establishing these in low- or middle-income countries.²¹

A computerized decision-support tool has the advantage of providing recommendations for interventions to reduce readmissions, but its primary disadvantage is the tool's lack of adaptability to meet the needs of patients with a wide range of needs. In particular, the authors point to the tool's inability to provide the level of care and support needed by patients who have high rates of readmissions.²⁴ These patients did not participate in the intervention or quit the intervention early.²⁴

The literature is lacking regarding advantages of supervised discharge. One disadvantage is concern about how it may be perceived. When it was introduced in the 1990s, supervised discharge was seen to be ineffective and was not viewed positively in the mental health community.²⁷ It is unclear from the available information whether this perception has changed.

The literature is lacking regarding advantages and disadvantages of needs-oriented discharge planning and peer-support services.

One potential disadvantage, raised by a study of the transitional discharge model, is the potential for under-implementation in health systems. For this particular intervention, under-implementation may have been driven by part-time hours, lack of therapeutic relationship, sickness, very few day shifts, and resistance to changing individual and hospital system practice.²⁹

Short-term alternatives to psychiatric rehospitalization. Given the small number of articles meeting inclusion criteria that addressed crisis residential care or scheduled intermittent hospitalizations, we found little discussion about advantages and disadvantages beyond the examination of the primary outcome of reduction in hospitalization. We did find data supporting cost-effectiveness of residential crisis programs and scheduled hospitalizations.^{31-33,85} Other possible advantages mentioned included enhanced continuity with community supports, greater client satisfaction/self-esteem, and decreased complaints of negative emotions and physical symptoms.^{31,33,85}

Long-term approaches for reducing psychiatric rehospitalization. The literature did not mention any specific advantages of ACT in comparison with other long-term approaches for reducing psychiatric hospitalization, nor did the KIs delineate any. However, the primary advantages of ACT as a treatment modality include its consistent ability to decrease hospital admissions or bed days,^{34,44,45} even in modified forms;³⁶ its ability to sustain contact with difficult-to-engage patients (such as clients requiring home-based services due to lack of insight or other psychological factors);^{38,43} and its ability to affect other outcomes such as increased social functioning and consumer satisfaction.^{34,45} A major disadvantage mentioned in the literature is varying data about its cost-effectiveness⁴⁵ and that it is labor intensive compared with other forms of case management.⁴¹

The literature identified by this Technical Brief minimally addressed advantages and disadvantages of OPC/CTO outside of the primary outcome of a reduction in hospitalization, and KIs did not offer additional comments or comparisons with other alternatives to rehospitalization. One study was able to demonstrate that involuntary outpatient commitment decreased homelessness during the 4-month period following hospital discharge for participants

with severe functional impairment at baseline.⁷³ Another study reported that patients with extended OPC/CTO and a prior history of multiple hospitalizations and prior arrests/violent behavior (≥ 180 days) had a lower probability of arrest than before OPC/CTO.⁸⁶ In yet another study, patients receiving OPC/CTO and long-acting injectables demonstrated a higher adherence rate and lower readmission rate than patients receiving OPC/CTO and oral medications.⁷⁴ Because the comparison group did not experience the same effect, the authors suggested that OPC/CTO may be particularly advantageous when combined with long-acting injectable medications.⁷⁴ Additionally, two included studies identified increased engagement in community treatment during the course of the order as a positive, albeit predictable, outcome of OPC/CTO.^{84,87} Finally, one study suggested that OPC/CTO was associated with decreased episodes of seclusion and restraint in addition to decreased episodes of hospitalization.⁸⁸ Although not strictly a disadvantage, a limitation of OPC/CTO implied by the literature is that the optimum length of commitment to ensure desired outcomes remains unclear given that studies were inconsistent on whether extended periods of commitment were necessary to demonstrate a reduction in hospital utilization (whether by readmission or LOS)^{67-69,72} and whether treatment maintenance continued after the court order expired.^{70,75}

Potential advantages of ICM include its role in reducing costs associated with hospital readmissions and its ability to be easily adapted to various contexts.^{46,50} Disadvantages may include additional new costs being incurred for the mental health systems to run ICM; we found conflicting information on whether this disadvantage may be minimized by significant reductions in inpatient costs, although the findings lean toward ICM being cost effective.^{50,54-56} As noted by a KI, the complexity of considering the advantages and disadvantages is notable in the following scenario: ICM could produce overall cost savings by getting people care earlier in a severe episode, which could cause a paradoxical increase in readmissions but allows symptoms to be controlled more rapidly and hence could lead to shorter stays and fewer total hospital days. Professional staff may initially resist the use of community-living aides (who serve as peer-support specialists) as part of ICM.⁵⁰ However, in one instance, these concerns were alleviated by competent community-living aides who were able to demonstrate their value to professional staff.⁵⁰ We found very limited information in the literature on the advantages of *nonintensive* case management programs. One of the major disadvantages of case management in general is that these interventions rely heavily on the case managers and their workloads, and heavy workloads may contribute to disappointing results.⁴⁷ Additionally, case management is more expensive than providing usual care.⁵⁸

Only one study compared different management strategies with one another, specifically, the combination of ACT and OPC/CTO with the combination of ICM and OPC/CTO and with ACT alone.⁸⁴ Aside from the interventions' effects on hospitalization, patients receiving either combined intervention were more engaged in outpatient services as rated by case managers than patients receiving ACT alone. No information about the comparative disadvantages of these interventions was available.

A potential advantage of psychoeducational services is that these interventions satisfy the information needs and relieve the emotional stress of patients and their families.⁷⁷ A study on multifamily groups noted that the tone of these groups tends to be more upbeat and positive than in single family groups.⁷⁸ Another advantage of multifamily groups is more productive problem-solving as a result of group functioning with more people with the same problem working toward a solution.⁷⁸ A potential disadvantage associated with psychoeducational services is that the benefit accrued from these services is directly related to whether patients (and their relatives, if

applicable) make use of the services in a consistent manner.⁷⁷ Psychoeducational services, when offered in real-world settings, may not be as effective as research studies with trained staff and clinicians with dedicated time to meet with participants in the psychoeducational services as frequently as required.⁷⁹

Only one study addressed collaborative care and contained little discussion about advantages and disadvantages beyond the examination of the primary outcome of reduction in hospitalization. The KIs did not address collaborative care.

A single study comparing various outpatient services noted that the disadvantages of services focused on medication education included the fact that most patients have already learned about their medications from their hospitals, and information about medication use is easily available even without the service. The study did not comment on the advantages or disadvantages of other services such as symptom education, service continuity, and daily structure.⁸⁰

Variation in Use by Patient Demographics, Diagnosis, and Coexisting Conditions

In general, we found very little information on variations in use for transition support services: the little specific information we found relates to intensive case management. We found no studies on LOS or transition support services; information continues to be lacking on specific issues as variation in use by coexisting conditions (Table 6).

Length of stay for psychiatric hospitalizations. Information is lacking in the literature on whether LOS varies by patient demographics, diagnoses, and coexisting conditions. However, KIs commented extensively on these issues. They pointed out that patients with the lowest socioeconomic status, including the poor, uninsured, and the homeless, have shorter LOS and are more likely to have multiple short stays. However, some KIs also noted that Medicaid patients sometimes have paradoxically longer LOS than patients with private insurance for a variety of reasons, among them not having a stable home to be discharged to and the severity of their illness.

With respect to diagnoses, KIs noted that patients with first episodes of schizophrenia have longer LOS, as do patients admitted with the ICD-9 code corresponding to “unspecified psychosis.” The latter category often corresponds to patients for whom treatment is complex and challenging, therefore leading to longer LOS. KIs indicated that LOS can vary substantially among patients with personality disorders because these patients may use language to prompt a hospital admission and can lead hospitals into either extending or shortening their stays. Preparing a treatment plan that is safe from a medical and legal standpoint for patients with personality disorders may be especially difficult when they have a chronic history of suicide attempts or self-harm.

KIs identified substance abuse as a comorbidity that is strongly related to LOS. For dual-diagnosis patients, LOS tends to have two very different potential patterns: some patients who are judged to need substance abuse rehabilitation services because of safety concerns may have a longer LOS in the psychiatric hospital during the transfer process whereas some dual-diagnosis patients may also be discharged quickly because health care providers believe that they will continue their substance use regardless of care received as inpatients.

Transition support services for psychiatric hospitalization discharges. We found no data regarding how transition support services vary by patient demographics, diagnosis, and coexisting conditions.

Table 6. Variation in use of management strategies

	Length of Stay for Psychiatric Hospitalizations	Transition Support Services for Psychiatric Hospitalization Discharges	Short-Term Alternatives to Psychiatric Rehospitalization	Long-Term Approaches for Reducing Psychiatric Rehospitalization
Variations in use by patient demographics	<ul style="list-style-type: none"> Low SES and accompanying severity of illness and instability of residence may result in multiple short stays or longer LOS per stay 	<ul style="list-style-type: none"> NR 	<ul style="list-style-type: none"> NR 	<ul style="list-style-type: none"> ACT: wide implementation, likely not affected by patient demographics. OPC: use varies by State laws within the U.S. Collaborative care model: NR
Variations in use by patient diagnosis	<ul style="list-style-type: none"> First episodes of schizophrenia and patients hospitalized with “other psychosis diagnosis” likely to have longer LOS Substantial variation in LOS for patients with personality disorders 	<ul style="list-style-type: none"> NR 	<ul style="list-style-type: none"> NR 	<ul style="list-style-type: none"> ACT: designed for individuals with serious mental illness who are relatively heavy inpatient service utilizers OPC/CTO: also designed for patients with serious mental illness (e.g., primary psychotic disorders) Collaborative care model: one study in bipolar patients
Variations in use by patient coexisting conditions	<ul style="list-style-type: none"> Longer LOS for patients with co-occurring substance abuse who need rehabilitation services and pose safety concerns Shorter LOS likely for dual-diagnosis patients if providers believe that they will continue their substance use regardless of care received as inpatients 	<ul style="list-style-type: none"> Schizophrenia patients with a history of substance abuse had more psychiatric hospitalizations during the first year of the community support program with intensive case management than patients without substance abuse histories. 	<ul style="list-style-type: none"> NR 	<ul style="list-style-type: none"> NR

ACT = Assertive Community Treatment; CTO = compulsory treatment order; LOS = length of stay; NR = not reported; OPC = involuntary outpatient commitment; SES = socioeconomic status.

Short-term alternatives to psychiatric rehospitalization. The included literature did not comment on variation in use of any of the short-term alternatives to psychiatric rehospitalization by patient demographics, diagnosis, and coexisting conditions.³⁰⁻³² Because only one collaborative care model was identified, and it was specifically designed for individuals with bipolar disorder,⁶³⁻⁶⁵ variation in use of this alternative to rehospitalization is essentially unknown.

Long-term approaches for reducing psychiatric rehospitalization. ACT has been applied in a multitude of settings, both rural and urban, and across a diverse set of countries, suggesting that it is not affected by patient demographics.^{34-36,40,44,45} High-fidelity ACT clearly specifies components and processes^{89,90} and, if administered correctly, should not vary substantially. The original investigators designed ACT for adults with serious mental illness (who may use resources heavily and be hospitalized repeatedly), rather than for other diagnostic groups. The populations involved were composed primarily of patients with schizophrenia, schizoaffective disorder, and bipolar disorder, although comorbid substance abuse was common. It has also been used with other diagnostic groups that are relatively heavy inpatient service utilizers, such as those with chronic depression,^{43,44,59} borderline personality disorder,^{32,51,70,79} and posttraumatic stress disorder,^{32,49,91} although the evidence base and use in these groups is less substantial.

OPC/CTO was generally designed to target individuals with serious mental illness (as opposed to the general psychiatric population) and, accordingly, is most frequently used for patients with primary psychotic disorders. This approach is supported by data that OPC/CTOs may be most effective for individuals with nonaffective psychoses⁷² and/or individuals without insight or with severe functional impairment.⁶⁷ Most States within the United States have OPC laws, although the laws may differ among States, and States may variably apply the law; as a result, use of OPC varies based on geography.⁷²

In one study, schizophrenia patients with a recent or lifetime history of substance abuse had more psychiatric hospitalizations while they were enrolled in the first year of a community support program with intensive case management than did patients without a history of substance abuse.⁵⁴ However, differences in outpatient Medicaid charges were not statistically significant.⁵⁴ Other data on how transition support services vary by patient demographics, diagnosis, and other factors are lacking.

The KIs did not offer any additional insights into how any of the discussed long-term approaches to reducing rehospitalization vary by demographics, diagnosis, and/or coexisting conditions.

Harms

In general, we found limited information on harms (Table 7) but note that potential or theoretical disadvantages of a particular approach, when disseminated and implemented widely, could result in harms.

Length of stay for psychiatric hospitalizations. The information in the literature regarding harms is lacking, but KIs discussed the possibility of unintended consequences, such as infections, of longer LOS. KIs noted that in many cases, patients are discharged from psychiatric hospitals as soon as the safety issue prompting admission is stabilized, without providing sufficient longer-term treatment. KIs also pointed out that the implications of different LOS depend on available community resources. For instance, a shorter LOS can be very effective within a well-developed community mental health system but disastrous if used within a poorly developed one.

Transition support services for psychiatric hospitalization discharges. We found no data from the literature regarding harms and safety concerns associated with these transition support services.

Short-term alternatives to psychiatric rehospitalization. We found no data from the literature regarding harms and safety concerns associated with short-term alternatives to psychiatric rehospitalizations.

Table 7. Harms of management strategies

Harm	Length of Stay for Psychiatric Hospitalizations	Transition Support Services for Psychiatric Hospitalization Discharges	Short-Term Alternatives to Rehospitalization	Long-Term Approaches for Reducing Psychiatric Rehospitalization
Unintended consequences	Infections associated with longer LOS	NR	NR	NR
Early discharge not addressing treatment needs	Shorter LOS (or early discharges based on resolution of safety issue upon admission) do not address the need for sufficient longer-term treatment	NR	NR	Prioritizing the least restrictive environment conflicts with benefits from longer hospital stays
Early discharge into poorly developed community health system	Shorter LOS can be disastrous in contrast to those discharged to a well-developed community health system	NR	NR	NR
Forcing treatment	NR	NR	NR	Potential ethical concerns if the ends are not thought to justify the means.

LOS = length of stay; NR = not reported.

Long-term approaches for reducing psychiatric rehospitalization. The literature identified for inclusion in the Technical Brief was largely silent on the issue of potential patient harms or safety concerns related to each of the identified long-term approaches for reducing psychiatric rehospitalization. The OPC/CTO literature noted the challenge of balancing restrictions on individual liberty with the potential benefits of longer treatment. In this regard, if this equipoise is not achieved, one could theoretically, albeit unintentionally, do harm. In addition, one study questioned whether those with serious mental illness might benefit from longer hospital stays and criticized the premise of prioritizing the least restrictive environment.⁶⁹ KIs seconded this concern.

Discussion of Interventions: Description of the Context for Using Management Strategies (GQ 2)

Key Findings

This section describes contextual issues associated with the use of management strategies, specifically variation in these strategies, outcomes measured by studies of management strategies, and resources required to ensure their optimal use.

Variations in practice, in summary, concern differences in State and local policies; resources such as beds; payment systems and financial incentives; infrastructure; and definition, application, and implementation of management strategies.

Regarding outcomes measured by studies of management strategies, evidence suggests that the most commonly measured outcome, psychiatric readmissions, is likely to undercount true readmission rates. In addition to concerns about the reliability and validity of this outcome, studies and KIs note the value of measuring other indicators of well-being, such as psychiatric symptomatology, functional status, quality of life, social adjustment, self-efficacy, service satisfaction, life skills, medication adherence, and ability to live independently, and process measures, such as continuity of outpatient care, housing stability, and employment. In essence, readmissions may be a small piece of the puzzle, and other measures of well-being and functioning need to be measured.

No identified studies directly tested the effect of training, certification, staffing, and resources to improve management strategies used to prevent psychiatric readmission. Several studies, however, implicated deficiencies in training, staffing, or resources as a factor in the failure of management strategies.

Variation in Management Strategies Across the United States

Current Management Strategies

Management strategies to reduce psychiatric readmissions vary across the United States. Few published studies detail and compare strategies across geographic locations. Nonetheless, information from individual States or regions or factors known to influence strategies that may differ by location can begin to shed light on these differences. State and local policies that influence payment mechanisms and the impact of a community's mental health infrastructure on access to care may lead to varying ways of managing adults with frequent psychiatric hospitalizations.⁴¹ For example, some State parity laws cover all people with mental illness, whereas others require that the disorder have a biological basis or be classified as a serious mental illness for coverage eligibility.⁹² One study found differences in rehospitalization rates by urban-rural setting,⁹³ which may suggest the need for different strategies based on surrounding location.

The literature describes some variation in the availability of effective ACT. A high-fidelity ACT team has well-defined components, and several validated scales can be used to measure such fidelity: originally the Dartmouth Assertive Community Treatment Scale⁸⁹ and, more recently, the Tool for the Measurement of Assertive Community Treatment,⁹⁰ which adds emphasis to the inclusion of recovery-oriented practices. Given the highly prescribed components and processes of an ACT team, there should be little variation in implementation or practice despite varying locales. However, the availability of high-fidelity ACT varies greatly across the United States and internationally, and outcomes can vary based on the fidelity of the team.⁹⁴

Variation in other types of case management results from the constantly evolving definition and applications of mental health case management services.⁹⁵⁻⁹⁷ Although most case management definitions include the notion of a collaborative, coordinated process of helping a person with mental illness receive high-quality services in a cost-effective manner, the process of doing so is not uniform across programs. Some case managers may help with the assessment, planning, facilitation, and/or advocacy of needed services; others also become involved with the

monitoring and evaluation of the care received. Other variations stem from differences in following practice standards; use of an individual or team approach; and levels of frequency, intensity, and duration of the case management services. The range of services overseen by a case manager may include medical, social, educational, vocational, and other services as needed by each individual patient.

KIs discussed several ways that strategies vary across the United States and factors to explain this variation. Some variation may be due to payment strategies that may encourage new ways to help people avoid psychiatric hospitalization. For example, financial incentives to keep people out of the hospital are greater in areas where prospective payment systems are in place, and hospitals are paid on a per-case, per-episode basis. In contrast, less financial incentive exists in areas where hospitals are reimbursed based on volume (i.e., by each day patients stay in the hospital, even with utilization review).

In addition to payment strategies, KIs discussed an example of a State policy influencing strategies currently used. Texas's State-run mental health system strongly resembles the 190-day lifetime approach to managing hospital readmissions, which requires discharged patients to remain out of the hospital for a certain amount of time before they can be readmitted. KIs acknowledged that the success of this approach depends greatly on individual States' regulation and the interest of the legislature in addressing the issue of repeated psychiatric hospitalizations.

A majority of States have addressed this issue with OPC or assisted outpatient treatment programs.^{98,99} The goal of these programs is to ensure that individuals with mental illness with a history of repeated hospitalizations participate in community-based mental health services with the ultimate objective of keeping them out of inpatient settings. States with these programs vary in program design and implementation.⁹⁸ In Iowa, the State code allows a person who had been committed to inpatient treatment to be transferred to OPC upon written petition documenting the absence of being "gravely disabled." Compliance with a set schedule of followup treatment visits determines whether the patient can remain out of the hospital.⁸⁷ Massachusetts has a similar involuntary outpatient treatment procedure with distinct eligibility criteria and treatment plan ordered by the court.¹⁰⁰ These programs improve adherence with outpatient treatment⁸⁷ and have been shown to lead to significantly fewer emergency commitments,⁹⁸ hospital admissions,⁸⁷ and hospital days¹⁰⁰ as well as a reduction in arrests and violent behavior.^{86,101} Finally, KIs acknowledged that unintentional alternatives to hospitalization such as extended emergency department (ED) stays might be used when psychiatric beds are not available. Several prior studies have shown that the LOS for psychiatric patients is prolonged because of the lack of available psychiatric beds as well as payment-related factors.¹⁰²⁻¹⁰⁶ After a patient has spent several days in the ED, a physician might deem the patient ready for discharge, even when the patient is likely to still be experiencing extended distress. These situations have received national attention and sparked political debate, particularly when the discharged patient commits a highly violent act.

Recent Developments in Management Strategies

KIs noted several new developments in management strategies. Strategies with a self-monitoring component have been increasingly used and tested, especially with the increasing proliferation of new information technologies. Many of these strategies are being delivered over the Internet using technology such as Skype and other types of self-reporting strategies to increase the role of self-monitoring and improve connectedness with providers. National Institute of Mental Health research also is evaluating interventions that use the ideas of self-monitoring

and potential passive sensing of functional status, as well as warm handoffs of care to identify acute crisis States. These ideas are still in development, rather than in current use but are likely to be implemented if found to be effective.

Outcomes Measured by Management Strategy Studies

Reliability and Validity of Psychiatric Readmissions Data

The reliability and validity of psychiatric readmission data are questionable.^{81,107} Although we found no published literature addressing this issue directly, many studies discuss study design and data limitations such as small sample sizes, short followup periods, and the absence of a comparison group.¹⁰⁸ Use of administrative data to examine readmissions is subject to several caveats. The KIs noted that the accuracy of administrative data systems tracking hospital admissions varies by region. Sometimes data on readmissions are limited to a single unit, facility, organization, State, or insurer. For example, the KIs noted that even when the Medicare Program for Evaluating Payment Patterns Electronic Report program¹⁰⁹ accurately captures readmissions data for Medicare beneficiaries, individual hospitals currently do not have a means of determining when patients they have discharged are readmitted to a different hospital. One KI's hospital's psychiatric ED tracks where patients are referred following discharge; the number of patients who are readmitted to the same hospital represents a very small proportion of readmissions.

Even if all readmissions can be identified, rates may appear lower than they are because people may experience other undetectable adverse events such as incarceration or death. Some patients also may experience an extended ED stay rather than a readmission when beds are not available. The use of administrative data to study psychiatric rehospitalizations, however, provides the benefit of examining many different variables for a large number of people at a lower cost than randomized controlled trials (RCTs). KIs noted that the National Institute of Mental Health has been investing in a project that is formally called the Mental Health Research Network, which uses large datasets to answer questions such as what the frequency and correlates of repeated psychiatric readmissions are.

One related issue involves how the data are analyzed. For example, data on readmissions and ED visits are likely to be skewed. Thus, using statistics such as means may not accurately represent the extent of the problem. This is particularly true when a small part of the population in the “skewed” region uses a disproportionate amount of resources. In this case, a management strategy may be determined effective because it helped the many less severe patients but not the more complex patients, or it greatly helped the few more complex patients but not the less severe patients at all. Knowing the effectiveness for both of these groups could help tailor the strategies to those mostly likely to benefit.

Other Key Outcomes to Consider (e.g., Successful Return to Community, Suicide, Incarceration)

An analysis of the comparative effectiveness of management strategies to reduce readmissions should consider outcomes other than readmissions. Management strategies to reduce readmissions may influence indicators of well-being such as psychiatric symptomatology, functional status, quality of life, social adjustment, self-efficacy, service satisfaction, life skills, medication adherence, and ability to live independently.⁴¹ These strategies also may decrease the

risk of adverse outcomes like incarceration or death (including suicide), and may reduce various types of health care utilization, such as ED visits (nonpsychiatric), rehospitalizations, and outpatient visits.^{29,41,69,74,79}

KIs stressed the importance of also studying process measures that affect ultimate outcomes. For example, they suggested examining continuity of outpatient care and specific indicators of functioning such as housing stability and employment, as well as the presence of a supportive environment. Although readmission is seen as an adverse outcome, the number of days of successful living in the community and the length of stay of readmissions provide context for readmission data.¹¹⁰ Failing to examine these measures may lead to false conclusions that a management strategy had no positive influences on outcomes.

Training, Certification, Staffing, and Other Resources Required to Ensure Optimal Use of These Management Strategies

Several resources may help ensure optimal use of management strategies. Although no identified studies directly tested the effect of training, certification, staffing, and resources to improve on management strategies used to prevent psychiatric readmission, several studies suggest that inadequate training may be responsible for at least part of a particular strategy's ineffectiveness²⁹ and that enhanced knowledge through training may improve outcomes.³³

One study points to the benefits of coordinated care from a team of providers, including case managers, physicians, nurses, social workers, and occupational therapists with shared caseloads, low staff-to-client ratios, time-unlimited services, and 24-hour availability of staffing, as well as the use of electronic medical records to improve outcomes.³⁵ Another study determined that including a consumer provider who is recovering or has recovered from a mental illness (i.e., peer support) can add additional empathy and insight to a case management team and yield similar outcomes when compared with case management teams without such providers.⁶²

For labor-intensive strategies, constraints on these resources can affect their successful implementation. For example, as noted earlier, the availability of high-fidelity ACT can vary greatly across the United States and internationally, which can limit the feasibility of its effective implementation⁹⁴ and raise questions about its sustainability if those resources become further constrained.

Greater efficiencies in outpatient care and community services also may place less strain on the mental health care system and ultimately optimize inpatient care. For example, having community supports, such as day centers or partial hospitalization and outpatient services, assessments from an occupational therapist, coordination of medication management, and assurance of high levels of patient contact after discharge, are important.³⁶ In addition, other improvements crucial to optimizing care include enhancing the efficiencies of the outpatient and community services systems themselves by reducing the administrative burden on case managers in applying for insurance or supported housing for those in need, providing incentives for treating patients with more complex needs rather than rejecting the more serious patients, and reducing gaps in treatment or medication adherence because of insurers requiring preauthorization for care or few participating providers accepting new treatments.

Evidence Map: Current Evidence about the Effectiveness of These Management Strategies (GQ 3)

We identified 64 studies reported in 78 publications that assessed the link between a management strategy and readmission in those at risk of readmission to a psychiatric unit. Two studies involved LOS approaches,^{19,20} five (seven articles) studies assessed the use of transition support services,^{21,23-26,28} four studies (five publications) addressed short-term alternatives to psychiatric rehospitalization,^{30-33,85} and 53 considered long-term approaches for reducing psychiatric rehospitalization.^{28,34-36,38-53,55-62,64,66,67,69-72,74,76-80,84,88,98,100,108,111-117} in 64 publications^{21,23,25,27,28,34-36,38-53,55-67,69-74,76-80,84,86,88,98,100,108,111-123} We include a summary of potentially relevant ongoing and unpublished studies in Appendix D.

We identified three systematic reviews evaluating the effectiveness of OPC/CTO for reducing psychiatric hospital readmissions in those at high risk of psychiatric readmission.¹²⁴⁻¹²⁶ The reviews synthesized information from individual studies our literature review had already captured,^{66,69,70,72,84,88,98,115,117,120,121,127-137} Their findings are consistent with what we reported for included studies.

In the sections below, we first provide a general overview of the Evidence Map for each strategy, then a summary of key findings, and finally a detailed description of the current evidence addressing the effectiveness of each management strategy. For the detailed description, we first review the study design of the available research and then address key points of each study's population, intervention(s), comparator(s), and outcomes (PICOs). For the outcomes, we identify the studies' consideration of our primary outcomes (LOS, number of readmissions, and readmission rate) and report which secondary outcomes are measured. Because a Technical Brief does not evaluate study findings, including assessing risk of bias and strength of evidence, we do not report statistical significance in our findings. Instead, if a study's outcome was statistically significant, we report the finding without statistical language (e.g., the intervention decreased the number of readmissions). If study authors report a finding that they identify as near statistical significance, we describe a trend. If the study authors describe an outcome that suggests an effect but do not statistically test, we describe the appearance of an effect. If the study authors analytically test for an effect and find no difference, we report the finding of no difference. Tables that provide a detailed breakdown by PICOs are provided in Appendix E.

Overview of Evidence Map

The evidence map in Table 8 graphically represents the universe of available studies that address the three primary readmission outcomes in GQ 3. The evidence base includes RCTs, cohort studies, single group pre-post studies, and case-control studies; we highlight those with RCT evidence in our discussion of key findings. LOS studies are substantially limited in number, while case management studies and ACT have the greatest number of studies available, many of which are RCTs.

Table 8. Evidence map of management strategies

Management Strategy	Intervention Subtype	Number of Readmission(s)	Readmission Rate	Length of Stay of Readmission(s)
Length of stay	Shorter stays	1 cohort	1 cohort	
Transition support services	Aftercare services	2 RCTs	1 RCT	1 RCT
	Decision-support tool	1 cohort	1 cohort	1 cohort
	Supervised discharge	1 single group pre-post		1 single group pre-post
	Needs-oriented discharge		1 RCT	1 RCT
Short-term alternatives to psychiatric rehospitalization	Crisis residential care	1 RCT	1 RCT 1 case-control	1 RCT
	Scheduled intermittent hospitalization	1 RCT 1 single group pre-post	1 single group pre-post	1 RCT 1 single group pre-post
Long-term approaches for reducing psychiatric rehospitalization	ACT	4 RCTs	2 RCTs	5 RCTs
		2 cohort	3 cohort	2 cohort
		1 single group pre-post	2 single group pre-post	4 single group pre-post
	Case management	5 RCTs	2 RCTs	7 RCTs
		3 cohort	4 cohort	5 cohort
		1 single group pre-post	1 single group pre-post	2 single group pre-post
	Collaborative care		1 RCT	
	OPC/CTO	2 RCTs	2 RCTs	3 RCTs
		3 cohort	2 cohort	2 cohort
		10 single group pre-post	3 single group pre-post	2 case-control 8 single group pre-post
	Peer support	1 RCT		1 RCT
	Psychoeducation	1 RCT	2 RCTs	1 RCT
		1 cohort		1 cohort
	Various outpatient services		1 cohort	

ACT = Assertive Community Treatment; CTO = compulsory treatment order; OPC = involuntary outpatient commitment; RCT = randomized controlled trial.

Table 9 lists the secondary outcomes reported in the eligible articles addressing management strategies. The specific outcomes listed indicate those that we had identified a priori as the most important secondary outcomes for patients, providers, family members, and policymakers. The “other” column includes additional outcomes reported in studies that are of likely interest to stakeholders. Although a variety of patient-centered outcomes are commonly reported in these studies, very few provide any data on adverse events.

Table 9. Secondary outcomes reported in management strategy studies

Management Strategy	Intervention Subtype	Total Number of Studies	Studies Reporting Adherence/Engagement ^a	Studies Reporting Mental Health ^b	Studies Reporting Satisfaction ^c	Studies Reporting Quality of Life ^d	Studies Reporting Adverse Events	Studies Reporting Cost and Resource Utilization ^e	Studies Reporting Other Outcomes ^f
Length of stay	Shorter stays	2	None	None	None	None	None	None	None
Transition support services	Aftercare services	2	1	1	1	1	1	None	1
	Decision support tool	1	1	None	1	1	None	1	None
	Needs-oriented discharge	1	1	1	None	1	None	None	1
	Supervised discharge	1	None	None	None	None	None	None	None
Short-term alternatives to psychiatric rehospitalization	Crisis residential care	2	None	2	2	2	1	2	1
	Scheduled intermittent hospitalization	2	1	1	1	None	None	1	1
Long-term approaches for reducing psychiatric rehospitalization	ACT	12	4	4	3	5	1	7	4
	Collaborative care	1	None	1	1	1	None	1	None
	OPC/CTO	18	8	4	1	4	1	5	7
	Case management	16	8	4	4	6	None	10	5
	Peer support	1	1	None	None	None	None	None	None
	Psychoeducation	3	1	1	1	1	None	None	None
	Various outpatient services	1	None	None	None	None	None	None	None

^a Treatment adherence, Clinical engagement (outpatient contacts, continuity, intensity).

^b Psychiatric symptom scores; Suicide, suicide attempts, other self-injurious behaviors; Homicide and other aggressive behaviors.

^c Satisfaction with care, Individual and family feelings about adequately addressing factors prompting the admission, Individual and family felt the stay was sufficient to address safety and dangerousness concerns.

^d Social and occupational functioning, other psychosocial scores, GAF, etc.

^e Cost, ED visits for psychiatric reasons.

^f Housing stability, social support, physical health outcomes, relapse into substance abuse, criminal justice encounters, mortality, personal care or self-care skills, community living skills, number of met and unmet needs, treatment failure rates, successful return to community, day hospital attendance, sheltered workshop attendance, combined rates of inpatient treatment and criminal justice encounters, referrals to other health services providers, side effects from antipsychotic medication usage.

ACT = Assertive Community Treatment; CTO = compulsory treatment order; ED = emergency department; GAF = Global Assessment of Functioning scale; OPC = involuntary outpatient commitment.

Key Findings

Length of Stay

We found no RCTs, but two retrospective cohort studies addressed this strategy.^{19,20}

Transition Support Services

We also found a small evidence base on transition support services. Studies generally support the provision of such services, but we found little consensus on the optimal approach. Also, we found that categories of transition support strategies might not be discrete; rather, they might make up an array of overlapping and interdependent components which, themselves, may overlap with short-term alternatives to psychiatric rehospitalization or long-term approaches for reducing psychiatric rehospitalization used for high-risk individuals. Furthermore, few studies address advantages, disadvantages, and harms of these strategies.

Two RCTs of aftercare services found that aftercare and psychoeducation led to a lower number of readmissions when compared with usual care in one study²¹ and a lower average rate of compulsory readmission than those receiving treatment as usual in the other trial.²³ A single RCT of needs-oriented discharge planning reported in two articles^{25,26} indicated no difference in either readmission rates or LOS.

Short-Term Alternatives to Psychiatric Rehospitalization

For crisis residential care, one RCT (reported in two articles)^{30,31} indicated no clear benefit for residential crisis care in comparison with admission to a psychiatric hospital. Alternative-treated patients did not differ in readmissions but did experience longer average LOS when readmitted. A single RCT of planned intermittent hospitalization reported no difference in the number of readmissions or the length of stay.³³

Long-Term Approaches for Reducing Psychiatric Rehospitalization

Long-term approaches for reducing psychiatric rehospitalization have a moderate evidence base that most consistently supports the use of one strategy: ACT. Again, we found limited information on the advantages, disadvantages, and variations in use as a function of demographics, diagnosis, and coexisting conditions. Six of the seven long-term approaches for reducing psychiatric rehospitalization had RCT data.

Of the 12 ACT studies we identified, 5 were RCTs. Results were inconsistent but generally supported ACT. Three studies^{36,38,40} found a reduction in the number of readmissions, and one⁴³ did not. Readmission rates decreased in 2 studies,^{36,38} although these improvements may be seen with patients in State hospital settings rather than in private psychiatric hospitals.³⁸ Reductions in the LOS were greater for ACT patients than those in control groups in 4 of the studies^{36,38,40,111} and not different in one.⁴³

Of the 18 studies assessing OPC/CTO interventions, 3 had RCT data. No difference was found in any of the primary outcomes,^{66,72,117} but in subsequent repeated measures analyses examining the role of outpatient treatment specifically among psychotically disordered individuals, results indicated that sustained outpatient commitment reduced hospital readmissions when combined with a higher intensity of outpatient treatment.⁷² This finding suggests a role for the interdependence of the various strategies, and it hints that the benefit of

OPC/CTO may be attributed to the intensity of service rather than the coerciveness of the intervention.

Case management has been the most studied (16 studies, 7 of which are RCTs).^{46-53,55-62} Six of the 7 RCTs showed no difference in the number of hospital readmissions or patients readmitted; one showed a decrease in the number of readmissions.⁶¹ RCT evidence provided inconsistent data for decreasing the length of hospital stays (2 showing decrease^{50,58} and 4 showing no difference^{47,51,55,60}).

For collaborative care, a single RCT (reported in three articles⁶³⁻⁶⁵) reported a trend toward decreased readmission rates following the second and third years of implementation.

Peer support studies consisted of one single RCT⁷⁶ reporting fewer readmissions and decreased LOS for the peer mentor group in comparison with usual care.

Finally, the psychoeducation evidence base included two RCTs (reported in three studies). Two RCTs indicated that psychoeducation produced lower rates of readmission,^{78,119} while one RCT reported that psychoeducation produced fewer readmissions and decreased LOS.^{78,119}

In addition to the primary readmission outcomes measured, studies measured a large variety of secondary outcomes that reflected important, patient-centered outcomes, including quality of life, patient engagement, patient satisfaction, clinical engagement, legal involvement, treatment adherence, and health services use and cost (Table 8).

Current Detailed Evidence for Length-of-Stay Interventions

Data addressing LOS in this population was very limited (see Appendix E, Table E-1). In the two studies addressing this strategy,^{19,20} the populations consisted solely of patients with psychotic illness who were assessed for periods of at least 12 months. No consistent LOS category was used; one compared a longer hospital-stay unit (mean LOS, 69 days) with short-stay units (mean LOS, 32 to 35 days),²⁰ and the other compared increasing LOS with a stay of 1 week or less.¹⁹ Outcomes studied included number of readmissions²⁰ and readmission rates.¹⁹ Both studies used retrospective cohort designs. Results indicated that the number of readmissions did not vary by LOS,²⁰ but the readmission rate was greater in patients with shorter hospital stays.^{19,20}

Current Detailed Evidence for Transition Support Services

Information on transition support services are provided in Tables E-2. In this section, we review the literature addressing each strategy in more detail.

Aftercare Services

Two RCTs evaluated the combination of psychoeducation and monitoring after discharge (Table E-2). Planning for services began in the hospital just prior to discharge to interface with subsequent outpatient care. One trial focused on psychoeducation for family members and aftercare services (telephone followup and home visits) compared with usual care.²¹ Aftercare services led to a lower number of readmissions at 1 year compared with usual care. Secondary outcomes focused on measures of mental health, satisfaction, and quality of life. The second trial involved individualized psychoeducation and long-term preventive monitoring compared with usual care.²³ Patients receiving the psychoeducation and long-term preventive monitoring intervention had a lower average rate of compulsory readmission than those receiving treatment

as usual. Secondary outcomes included clinical engagement and adherence, adverse events, unemployment risk, and duration of illness.²³

Computerized Decision Support Tool for Coordination of Inpatient and Outpatient Services

One nonrandomized controlled study compared a complex computerized decision support tool with treatment as usual in a population with psychotic disorders over a 12-month followup period (Table E-2).²⁴ Outcomes included number of readmissions, readmission rates, and LOS. Secondary outcomes included adherence with treatment, satisfaction with care, global assessment of functioning, and cost and health services utilization. The study used a matched control group. Readmission appears to have been assessed by self-report except in cases of absence or withdrawal from treatment, in which case it was abstracted from hospital files. The number of readmissions, the readmission rate, and the LOS were all decreased in the intervention group.

Supervised Discharge

One single group pre-post design study (two articles)^{27,28} involving only 22 patients compared supervised discharge with unsupervised discharge (Table E-2). Approximately 90 percent of the patients had a psychotic disorder and 10 percent a mood disorder, and followup was 3 years. Outcomes included number of readmissions and LOS. After supervised discharge, patients appeared to have a decreased number of readmissions and LOS.

Needs-Oriented Discharge Planning

One RCT (two articles)^{25,26} compared a needs-oriented discharge planning and monitoring strategy with treatment as usual over an 18-month period (Table E-2). Approximately 60 percent of the patients had a psychotic disorder, and 40 percent a mood disorder. Outcomes included readmission rates and LOS. Secondary outcomes included adherence, clinical engagement, global assessment of functioning, mental health outcomes (e.g., psychiatric symptom scores), and quality of life measures. The study found no differences between the two groups on readmission rates and LOS.

Current Detailed Evidence for Short-Term Alternatives to Psychiatric Rehospitalization

Crisis Residential Care

One RCT (two articles^{30,31}) compared a community residential alternative with a psychiatric admission (Table E-3). Approximately half had a psychotic disorder, and the remainder had a mood or personality disorder. Outcomes included readmission rate and LOS. Secondary outcomes included measures of mental health, patient satisfaction, quality of life, cost and health services use, and criminal justice encounters. During the 6-month post-treatment period, the readmission rate for alternative-treated patients did not differ from those who were hospitalized at baseline. Further, alternative-treated patients experienced significantly *longer* average LOS when readmitted than the hospitalized group.

A 12-month case-control study examined whether access to residential care service plus usual services was better than usual service alone in patients with a DSM-III-R diagnosis and found it reduced readmission rates (Table E-3).⁸⁵ Secondary outcomes included measures of mental health, patient satisfaction, quality of life, adverse events, and cost and health services use.

Scheduled Intermittent Hospitalization

A single small RCT compared planned intermittent hospitalization with unplanned emergency hospitalizations or standard care and reported that the number of readmissions decreased within the planned hospitalization group, but no difference was seen with LOS (Table E-3).³³ Subjects were primarily psychotic, mood, and anxiety disorder patients with comorbid polysubstance use disorders. Secondary outcomes included measures of adherence to planned readmissions, psychiatric symptoms, physical symptoms, quality of life, self-esteem, substance abuse, and community adjustment.

One pre-post analysis assessed the effect of planned hospital admissions for a Veterans Administration patient population (Table E-3).³² One-quarter had a psychotic disorder, one-fifth had a mood disorder, and the remainder had posttraumatic stress disorder. Outcomes included number of hospitalizations, number of unplanned hospitalizations, and average LOS and involved the 44 patients remaining from the 81 originally enrolled. Following this program, the total number of hospitalizations increased, but there was a substantial decline in the number of unplanned hospitalizations, the average LOS per hospitalization, and the cost per patient. Secondary outcomes included measures of cost.

Current Detailed Evidence for Long-Term Approaches for Reducing Psychiatric Rehospitalization

Information on long-term approaches for reducing psychiatric rehospitalization are provided in Tables E-4 (ACT studies), E-5 (OPC/CTO studies), E-6 (case management), E-7 (psychoeducation), and E-8 (collaborative care, peer support, and various other services).

Assertive Community Treatment

Twelve studies assessed the effectiveness of ACT in reducing psychiatric readmissions^{34-36,38-45,111} (Table E-4). Five studies were RCTs,^{36,38,40,43,111} three studies were cohort studies,^{35,39,42} three were pre-post comparisons of the same group,^{34,44,45} and one was a secondary analysis of study data comparing different ACT programs.⁴¹ Again, in all cases, the population was either entirely or predominantly patients with primary psychotic disorders.

For RCTs, comparators included usual care^{36,40,43,111} or a drop-in center supplemented by aftercare services.³⁸ Outcomes included number of readmissions,^{36,38,40,43} readmission rates,^{36,38} and lengths of stay.^{36,38,40,43,111} Secondary outcomes included measures of clinical engagement,^{38,111} mental health (e.g., psychiatric symptom scores),^{36,38,43} quality of life,^{36,38,43} satisfaction with care,^{38,43} health services utilization,³⁸ housing stability,^{38,43,111} and criminal justice encounters.⁴⁰ Results indicated decreased readmission rates with ACT interventions^{36,38} but suggested this improvement may be seen with patients in State hospital settings rather than private psychiatric hospitals.³⁸ For the remaining primary outcomes, results were inconsistent. Reductions in the number of readmissions were greater for ACT patients than control group patients in three of the four studies with that outcome measure,^{36,38,40} and LOS was reduced in

four of the five studies measuring that outcome.^{36,38,40,111} In each case, there was no difference for those outcomes in the other study that measured them.⁴³

Cohort studies provided inconsistent results. Comparators included usual care^{35,42} and individual ICM (to contrast with the group approach used by ACT teams).³⁹ Outcomes included readmission rates,^{35,39,42} number of readmissions,³⁵ and LOS.^{35,39,42} Secondary outcomes included clinical engagement,³⁵ mental health measures,⁴² quality of life measures,⁴² and health services measures.^{35,39} Results were mixed. Findings from one study indicated that readmission rates in the ACT group had a greater decrease than the control group³⁵ but not in the other,⁴² and that group case management used with ACT produced more consistent results than individual ICM.³⁹ The number of readmissions decreased more in the ACT group³⁵ and did so more consistently than in ICM.³⁹ One study suggested a greater decrease in LOS with ACT,³⁵ whereas two did not.^{39,42}

Pre-post comparisons suggested benefit for ACT. Outcomes included readmission rates and lengths of stay.^{34,44,45} Secondary outcomes included quality of life measures³⁴ and cost and health services utilization measures.^{34,44,45} All three studies showed reductions in the primary outcomes.

The secondary data analysis compared seven ACT programs that varied in intensity of service, and it suggested that higher intensity services produced more robust outcomes.⁴¹ Secondary outcomes included satisfaction with care. The data indicated no significant differences between services and change in hospital use among the different ACT programs. In a secondary analysis, four programs with moderate or substantial impact in reducing hospital days also had moderate to high levels of service intensity. Three programs with minimal impact on hospital use had moderate to low service intensities.

Involuntary Outpatient Commitment and Compulsory Treatment Orders

OPC, as it is known in the United States, and CTO, as it is known in the United Kingdom, Canada, New Zealand, and Australia, are based on the principle that people with severe mental disorders who are at risk of becoming dangerous or gravely disabled without treatment and reluctant or unable to follow through with community-based treatment, can be required to engage in outpatient treatment as the less restrictive long-term approach for reducing inpatient rehospitalization.

Eighteen studies assessed its effectiveness (Table E-5): 10 were labeled as an OPC^{67,72,84,88,98,100,112,113,116,117} and 8 (in 11 articles) were labeled CTOs.^{66,69-71,74,108,114,115,120-122} Of the 18 studies, 3 were RCTs,^{66,72,117} 3 (reported in 6 articles) were a retrospective cohort design,^{74,84,114,115,120-122} 3 were a case control design,^{69,71,100} and 9 were pre-post testing of the same group.^{67,70,88,98,108,112-114,116} In all cases, the population was predominantly patients with psychotic disorders; the remainder were patients with mood disorders or to a small degree, other diagnosis types, such as personality disorder, organic mental disorder, or patients with Axis II traits. Intensity of the OPC and CTOs varied from 30 days to 10 years.

For the three RCTs, the comparators were a rehabilitation practice used during a period of involuntary hospital treatment,⁶⁶ those who were released from OPC,⁷² or an enhanced service package.¹¹⁷ Outcomes included readmission rate,^{66,72,117} number of readmissions,⁷² and LOS.^{66,72,117} Secondary outcomes assessed quality of life;^{66,117} incidence of homelessness;⁷³ mental health;^{66,117} health services measures;⁶⁶ and other outcomes, such as arrests, treatment nonadherence, and perceived level of coercion.¹¹⁷ No difference was found in any of the primary outcomes.^{66,72,117} However, in subsequent repeated measures analyses examining the role of outpatient treatment among psychotically disordered individuals, results indicated that sustained

OPC reduced hospital readmissions when combined with a higher intensity of outpatient treatment.⁷²

Four retrospective cohorts (in seven articles)^{74,84,100,115,120-122} examined readmissions. Only one looked at hospital days.¹⁰⁰ One employed a matched control group as a comparator.⁷⁴ Outcomes included readmission rates. Secondary outcome measures included clinical engagement,^{74,84,120,122} disturbed behaviors,⁷⁴ medications prescribed,⁷⁴ and medications. CTO was not beneficial given that more CTO patients were readmitted than the matched cohort without CTO.⁷⁴ One study was a large retrospective cohort analysis of about 25,000 patients over a 10-year period that compared those on required CTO as a requirement for conditional release with those not on CTO.^{115,120-122} CTO patients had more readmissions but had a decrease in the average LOS. CTOs initiated in the community had shorter LOS compared with those initiated in the hospital or those initiated in both settings.¹²¹ Patients with extended CTOs (i.e., ≥ 180 days) had fewer readmissions and shorter LOS than those on extended (i.e., ≥ 180 days) voluntary outpatient treatment.¹²² Another study compared OPC in combination with intensive case management or ACT to ACT alone and reported a decrease in readmission rates.⁸⁴ A separate analysis within this study found that both short- and long-term OPC led to reduced readmission rates and hospital bed-days compared with the pre-OPC period.⁸⁴ The fourth study reported significantly fewer admissions and hospital days after court order.¹⁰⁰

Two case-control studies used control groups as comparators.^{69,71} Outcomes included LOSs.^{69,71} Secondary outcome measures included clinical engagement,⁷¹ quality of life,⁶⁹ and cost and health services utilization measures.^{69,71} For those with CTOs, both studies showed reductions in LOS.^{69,71}

For the nine pre-post design studies, outcomes included number of readmissions,^{67,88,98,108,112-114,116} readmission rates,^{70,88,114} and LOS or hospital days.^{67,88,108,112-114,116} Secondary outcomes included clinical engagement and adherence,^{87,113,114} mental health,⁸⁷ patient satisfaction,¹¹² quality of life,¹¹³ cost and resource utilization,¹¹³ housing status,^{113,114} comorbid substance abuse,¹¹³ criminal justice encounters,¹¹³ seclusion episodes and hours when readmitted,⁸⁸ restraint episodes and hours when readmitted,⁸⁸ number of patients appealing their CTOs,^{112,114} number of CTOs reissued,¹¹⁴ patient awareness of their rights under OPC,¹¹² and patients' and therapists' views of OPC's impact on the therapeutic relationship.¹¹² After being placed under an OPC, patients experienced reductions in numbers of readmissions,^{67,98,108,112-114,116} readmission rates,^{70,114} and LOS.^{67,108,112,113,114,116}

Case Management

Case management, especially ICM in some form has been the most studied approach: 16 (in 17 articles) studies have assessed its effectiveness^{46-53,55-62,118} (Table E-6). What distinguishes intensive case management from case management often is not clearly defined in studies. In this section, we categorize an intervention as ICM if the authors refer to it using that term or if the authors describe a specific program that provides an intensity of service beyond standard case management (in which the case manager's primary role is limited to connecting the patient to needed services and to coordinating between different service providers).⁸² Appreciating the varying interpretation of what constitutes ICM, we also list in Table E-6 any specific name a strategy was given.

Seven of the studies were RCTs,^{47,50,51,55,58,60,61} seven were cohort studies of varying designs,^{46,48,49,52,56,57,62} and two were pre-post testing of the same group.^{53,59} In seven of the studies, the population was predominantly or entirely patients with psychotic disorders; the

remainder were patients with mood disorders (predominantly bipolar disorder when identified). Studies used varying degrees and types of ICM.

For RCTs, comparators were versions of standard or usual care. Outcomes included number of readmissions,^{47,51,55,60,61} readmission rates,^{47,58} and LOS or hospital bed days.^{47,50,51,55,58,60,61} Each study included secondary outcomes that assessed a variety of satisfaction and quality-of-life measures, four studies assessed clinical engagement and adherence,^{51,55,58,61} four assessed mental health outcomes (e.g., psychiatric symptom severity),^{51,55,58,60} one assessed quality of life,⁶¹ two studies included cost and health services utilization measures,^{58,61} and one study assessed housing status.⁶¹ Four of the five RCTs reporting the number of readmissions^{47,51,55,60} found no difference, whereas one found reduced readmissions for those receiving case management.⁶¹ Neither of the two studies reporting on readmission rates found differences⁴⁷ between the two groups. LOS outcomes were inconsistent; two studies showed reduced hospitalization in the ICM group,^{50,58} and four showed no difference.^{47,51,55,60,118} In a subgroup analysis, among patients with borderline intelligence, ICM led to reduction in the number of readmissions and hospital bed days.¹¹⁸

For cohort studies, the comparator was standard care or a form of followup care that did not entail ICM. Outcomes included number of readmissions,^{52,57,62} readmission rates,^{46,48,49,52,57} and LOS.^{46,52,56,57,62} Secondary outcome measures included measures of clinical engagement and adherence^{46,56,62} and cost and health services utilization measures,^{46,48,56,62} comorbid substance abuse,⁶² and housing status.⁶² All three studies evaluating the number of readmissions showed no benefit for the case management group,^{52,57,62} and one of these showed that the number of readmissions actually increased following case management.⁵² There was no clear pattern for readmission rates: three studies suggested no benefit^{49,52,57} and two suggested benefit for the case management group.^{46,48} Similarly, LOS outcomes were inconsistent: two of the five studies measuring LOS showed decreased LOS for those receiving ICM.^{46,56} One study showed an increase in LOS.⁵²

For pre-post design studies, outcomes included readmission rates,⁵⁹ LOS,^{53,59} and number of readmissions.⁵³ Secondary outcomes included clinical engagement, incarceration, and cost and health services utilization.⁵³ In these two studies, all primary outcomes improved.

Collaborative Care

One RCT (three articles)⁶³⁻⁶⁵ compared a collaborative chronic care model for patients with bipolar-spectrum disorder versus usual care in a Veterans Administration patient population (Table E-8). Care teams consisting of a psychiatrist and a nurse care coordinator strove to maintain continuity of care with these patients. The study reported readmission rates. Secondary outcomes included measures of mental health, satisfaction, quality of life, and cost and resource utilization. In years 2 and 3, readmission rates tended to be lower among patients receiving collaborative care than for those receiving usual care.

Peer Support

One RCT⁷⁶ compared peer-mentor support plus usual care from those who were themselves in recovery from a mental illness versus usual care (Table E-8). Outcomes included numbers of readmissions and LOS. Secondary outcomes included measures of clinical engagement. Those receiving the peer-mentor support had fewer readmissions and shorter LOS than the usual care group.

Psychoeducation

Three studies reported in four manuscripts (Table E-7) assessed effectiveness of inpatient psychoeducation in decreasing psychiatric readmissions for patients with a primary psychotic disorder.^{77-79,119} Two studies reported in three articles were RCTs,^{77,78,119} and the other was a retrospective cohort study.⁷⁹ In each case the psychoeducational intervention was provided for patient and family; two studies compared single family psychoeducation versus routine care,^{77,79,119} and one study compared psychoeducation in a multiple family group versus single family psychoeducation.⁷⁸ The followup periods ranged from 4 to 7 years. Outcomes included number of readmissions,^{77,79,119} readmission rates,^{77,78,119} and LOS.^{77,79,119} Secondary outcomes measured included satisfaction with care,⁷⁹ and both adherence and global assessment of functioning/quality of life.^{77,119}

The two RCTs produced positive findings. The single family psychoeducation intervention produced fewer readmissions, lower readmission rates, and shorter lengths of stay for each year reported throughout the 7-year duration,^{77,119} and multiple family group psychoeducation appears to produce lower rates of readmission compared with single family educational training.⁷⁸ In contrast, the single retrospective cohort study found no difference in number of readmissions or length of stay between the two groups.⁷⁹

Various Outpatient Services

One nonrandomized cohort study⁸⁰ compared patients who could receive any number of services (e.g., medication education, symptom education, service continuity, social relations training, and daily structure) with those who did not receive the services (Table E-8). The population was a cohort of patients with schizophrenia who recently had been admitted to a psychiatric hospital who either did or did not receive the services over a 2-year period. Outcomes included readmission rates. Overall, those receiving symptom education, service continuity, or daily structure had a decreased readmission rate. However, this positive finding was limited to those with 4 or more prior psychiatric hospitalizations; for the subgroup with zero to three prior admissions, no clear benefit was seen with any of the services.

Summary and Implications (GQ 4)

The focus of this Technical Brief is those with a history of repeated psychiatric admissions or who are identified as being at high risk of psychiatric rehospitalization. This approach excluded much literature that tested these strategies but did not target our population of interest. Accordingly, this brief cannot be considered a comprehensive review of any of the individual management strategies discussed, but it does ensure that our findings are applicable to those at risk of repeated psychiatric hospitalization.

At the same time, there has been a substantial effort to research this area because the amount of relevant literature identified by this focused search was surprisingly large—63 studies reported in 76 articles for GQ 3 alone, with the most data on Assertive Community Treatment (ACT), involuntary outpatient commitment (OPC)/compulsory treatment orders (CTOs), and intensive case management (ICM)—suggesting that important gaps in the evidence base remain.

Key Issues That May Affect Diffusion of Strategies

Ethics and Privacy

Ethical considerations may influence the frequency of use of OPC/CTO. Mental health consumers and providers of services hold varying beliefs as to when and if the benefits of OPC/CTO are substantial enough to restrict an individual's civil liberties by compelling treatment, perhaps for extended periods in the community.^{66,69,70,72,88,138} Of note, we found no articles directly addressing privacy issues, and Key Informants (KIs) did not stress this as a theme.

Equity

Not all the potentially beneficial management strategies discussed in this brief are universally available, and they often exist in somewhat different forms depending on setting (including both geography and type of insurer). For example, ACT is resource intensive and not uniformly available across the United States or internationally. In the United States, only one insurer, Medicaid,¹³⁹ typically pays for the intervention, and the potential impact of the increasing shift from conventional Medicaid plans to managed Medicaid programs is unknown. Further, varying laws can limit how certain strategies are applied and may limit their effectiveness. OPC and CTOs exist in different forms based on individual State and/or country-specific laws. For example, Canada and Australia allow forced medication as part of an outpatient order, whereas the United Kingdom and the United States do not; these legal variations may explain differing findings about the effectiveness of CTOs.^{66,70,72} Further, these challenges can hamper sustainability.

Also, effectiveness of strategies can be strongly dependent on the availability of local resources. In the case of CTOs, mandated treatment alone is not sufficient, given that the strategy is effective only if supporting mental health services are actually available in the community.⁷² Effectiveness can also require appropriate application. Clinicians may need to initiate legal renewals of CTOs to allow them to produce a clinically meaningful reduction in readmissions.^{71,72}

Costs

A key issue for costs is how to determine when psychiatric readmission is indicated and when not. Sometimes psychiatric readmissions are appropriate. In such instances, cost concerns risk limiting proper psychiatric admissions. The literature^{53,69} and KIs suggested that financial incentives are more likely to compete with ethical concerns when prospective payment systems are in place. Each noted that, from a clinical perspective, readmission is not necessarily something to avoid and, although potentially costly, may be justified for individuals because of the severity of their chronic and recurrent illnesses. Hence, a key consideration for reimbursement systems and for good quality of care delivery is to be able to account for when readmission is the *correct* outcome, one that should not be penalized.

At other times, intensive outpatient efforts may be able to successfully avoid rehospitalization, and here cost comparisons may be more reasonably compared. Studies assessing the costs associated with the various management strategies generally reported a reduction in cost, primarily due to the expense of inpatient care.^{24,40,46,50} One intensive case management study noted that even when taking into account the additional costs of intensive case management, the overall costs assumed by those individuals receiving care are decreased.⁵⁰ Furthermore, although ACT is considered an expensive intervention, the savings from reduced inpatient costs are typically far greater, except when the standard service comparator is comprehensive and well resourced.⁴⁰ Additionally, when comparing two different transition support services, one study found that although case management was more expensive than the standard community psychiatric nursing service approach, the improvement in other patient outcomes focused on patient well-being may be worth the additional cost.⁵⁸

KIs highlighted a concern that the criteria for discharge are now overly reliant on legal and insurance systems rather than on the patient's readiness for discharge. In other words, as soon as a psychiatrically hospitalized person is no longer considered an imminent risk to self or others, he or she is discharged, whether or not there is evidence that the individual can live successfully in the community. One KI suggested that a historical analysis of how postdischarge suicide rates have changed over time would be informative, given the general trend for shorter hospital stays over the past few decades. KIs also mentioned emerging strategies that are currently under investigation, such as Critical Time Interventions (a time-limited case management model designed to prevent recurrent homelessness in the serious mentally ill population) and alternative payment strategies that focus on quality of care rather than on the amount of service delivered.

Gaps in Evidence Base and Future Areas of Research

Our literature review and KI discussions highlighted key gaps in the evidence base. First, while there may be enough evidence to support a systematic review on the effectiveness of ACT in this population, in general, further research is needed to sort out the inconsistency of findings implied by the evidence map. Second, we found no studies that assessed the comparative effectiveness of the management strategies in addressing psychiatric readmissions, including a comparison of their relative advantages and disadvantages.

Third, we did not identify any studies that attempted to evaluate how the effectiveness of various strategies might vary by patient characteristics, such as degree of severity or intractability of mental illness or the presence of coexisting medical conditions; by provider characteristics, such as a community mental health provider versus a tertiary care mental health provider; or by system variables, such as the availability of specific resources.

Fourth, we did not identify studies that assessed what factors might affect successful dissemination and implementation of these strategies. This information is important given the variability in available resources for putting these strategies into practice.

Fifth, our eligibility criteria required that the population have a history of at least two prior psychiatric hospitalizations or be clearly identified as a population at high risk of psychiatric readmission. This restriction allowed us to target our population of interest, but it also may have resulted in excluding potentially relevant studies of our included strategies that were applied to a broader population. Also, promising short-term alternatives to psychiatric rehospitalization (e.g., home-based services or Critical Time Intervention) not meeting our eligibility criteria would also not have been included.

Finally, none of the available studies assessed which particular components were most effective in improving outcomes, a key consideration when components of management strategies overlap and are interdependent and when resources are limited. Some studies noted that even when interventions are successful in reducing readmissions, the outcomes associated with specific factors or components,^{77,79} the length and duration of the intervention,^{45,56} and the effect of switching⁵⁶ or stopping the intervention all remain unclear.^{45,56} Interventions should be clearly defined⁴⁷ and take into account characteristics of the intervention and the setting in which it is being applied (e.g., caseloads, environmental and resource factors, location) that may affect outcomes.^{30,38,39,42,46}

Other Considerations for Future Research

Several authors questioned whether their own research had targeted a specific and sufficiently stable population. Frequently readmitted patients may not always continue to be high users of inpatient hospitalization services, even without specific interventions;⁵² thus, more research is needed to identify specific variables associated with readmission.⁵⁷ Such studies would require larger sample sizes to allow enough power to examine subpopulations.⁸⁰ Some authors suggested separating out the treatment-resistant patients, especially those who are noncompliant and, thus, may respond differently to treatment.^{20,68}

Research may need to broaden the population for whom these strategies are tested. The literature we identified focused nearly exclusively on those with primary psychotic disorders, with some involvement of those with bipolar illness, so most of the evidence is relevant for that population and less clearly for those with major depressive disorder, personality disorders, or substance use disorders. However, our background literature and KI interviews would suggest that the overall population of those at risk of repeated psychiatric hospitalization includes these other diagnoses.¹⁴⁰

In concert with the limited evidence we found in the literature, KIs universally noted the lack of research systematically identifying or studying the definitive LOS necessary to ensure readiness for discharge and successful transition to the community. As a corollary to this significant evidence gap, several KIs pointed out the lack of information about how LOS affects risk of harm or safety issues (e.g., unintended consequences such as housing loss, job loss, school disruption, and financial costs leading to bankruptcy) as well as the lack of information on the potential benefits of increased LOS (increased ability to provide education regarding symptoms of illness, signs of recurrent episodes, and education about medications and the need for treatment adherence; education of family regarding the illness; more successful arrangement of housing; greater stabilization of suicidal ideation). Evidence-based decisions about LOS need to weigh these points.

Implications

Effective management of as heterogeneous a population as those at high risk of readmission is effort intensive and challenging. The available information suggests that, beyond ACT for those individuals with serious mental illness, little data identify which strategies effectively reduce psychiatric readmission or LOS. As a consequence, the field needs more primary studies with direct comparisons of the potential strategies when possible.

Selecting a meaningful and accurate outcome is critical. Of the primary outcomes we considered for this brief, LOS in a hospital appears to more consistently identify an effective management strategy compared with standard care. Furthermore, LOS appears more meaningful than the number of readmissions or readmission rate, because for individuals with a diagnosis of serious mental illness who have a persistent and recurrent illness, in some cases hospitalization is a good outcome. As with medical illness, exacerbations can occur even in the presence of good and adequate care. Strategies can still be applied to minimize LOS and to effectively prepare for sustained outpatient care, but the occurrence of a repeated psychiatric hospitalization is not always an adverse event: it may be appropriate care. Hence, an important consideration for future research is to continue to measure LOS while also distinguishing between appropriate and inappropriate admissions.

The accuracy of these related psychiatric readmission outcomes (including LOS), however, is of concern. Although published literature did not address this issue directly, many studies discuss data limitations in light of the study design used and data collected. Use of administrative data to examine readmissions is subject to several caveats. Consistent with this view, the KIs noted that the accuracy of administrative data systems tracking hospital admissions varies by region. Sometimes only readmissions to the same unit (medical/surgical unit vs. psychiatric unit), same facility, a facility within the same organization/State, or paid by the same insurer are able to be tracked. Incomplete data on outcomes may bias results.

At the same time, outcomes not related directly to hospital readmissions or LOS might be more meaningful in determining the effectiveness of these management strategies. A key point identified by the KIs (and reflected in the literature) considered whether successful functioning in the community (reflected by adequate arrangement and continuity of outpatient care, housing stability, employment, being in a supportive climate), which indicates a readiness for discharge and return to the community, might comprise a more meaningful outcome measure.

The literature and KIs both indicate that the availability and implementation of these management strategies can vary substantially across the country, because of differences in State and local payment strategies, State policy, access to care, and resource availability. This variation can make it challenging to provide a consistent intervention (e.g., intensive case management in one locale may differ from that applied in another) and know how best to apply the strategy in a particular setting (e.g., resources available in one setting necessary for providing high-fidelity ACT may differ from those available in another). Dissemination and implementation research for evidence-based strategies could helpfully inform how a particular strategy might be best administered in a real world setting. Such information could inform policymakers who seek to optimize the benefits and tradeoffs of fidelity versus adaptation when planning for wide dissemination and uptake of evidence-based strategies.

Finally, these management strategies can be challenging to study. One key variable in this difficulty is that these strategies are not clearly mutually exclusive, and they do not exist in a vacuum from the community in which they are administered. These strategies appear to overlap and are likely to be interdependent. Our attempts to categorize them into exclusive categories

(e.g., transition support service vs. short-term alternative to psychiatric rehospitalization) were somewhat artificial given their interdependence. Attempts at comparing the effectiveness of various combinations of these components (e.g., different packages of services) and how the implementation of those packages of selected components may be affected by locally available resources, could be informative.

Next Steps

Based on the literature review and interviews with Key Informants, we identified certain questions that need to be explored to identify the most effective management strategies to reduce psychiatric hospital readmissions.

Several studies address this topic, and the bulk of them address two interventions: intensive case management, which has a variety of definitions, and Assertive Community Treatment (ACT), which has more clearly defined standard of care. These strategies are not mutually exclusive, and they can involve overlapping components. Determining the most effective strategy requires knowing which components or packages of components are most effective in improving outcomes, and how to deliver an effective outcome in a given location (which can have variability in available resources). Addressing this issue entails several important next steps.

1. Determine the Key Components, or Packages of Components, That Are Most Effective To Keep Those at High Risk of Psychiatric Hospitalization Functioning in the Community as Much as Possible

Our review identified a substantial amount of literature focusing on complex interventions. However, outside of ACT, we did not identify an overall theoretical model that identified what components may be important and why, nor did our review of the literature provide an empirical basis for identifying what components may be most effective. To address this issue, a first step would be the development of a theoretical model that attempts to identify the key components from the available literature, followed by primary data collection to test the most effective combination of these components. Prospectively collected data would allow the most careful comparative testing of these components, which might include randomized controlled trial or prospective cohort studies. The subsequent study would need to be able to clearly define the population at risk, operationalize an intervention that can be applied in a variety of settings, include an informative control group, measure meaningful outcomes, and implement the intervention with fidelity over a time frame that can allow one to see meaningful change. An important consideration here is determining the effectiveness of these strategies outside of psychotic disorders and bipolar disorder. Nearly all of the evidence addressing the use of these strategies in those at risk of rehospitalization involves these diagnoses; the effectiveness of these strategies in other populations that may receive this intervention (major depressive disorder, posttraumatic stress disorder, personality disorders) is less well understood.

2. Determine How To Accurately Measure the Most Meaningful Outcomes

Accurate collection of outcome data has been problematic for this area of study; the reliability and validity of psychiatric readmission data are uncertain because datasets may not be comprehensive, a limitation that may bias an effect negatively or positively. Consequently, having high-quality data that can comprehensively capture the relevant outcomes is key. Further, the number of psychiatric readmissions or the psychiatric readmission rates may not be the most important outcomes to study; indeed, in some cases, psychiatric readmission can be the correct outcome. More relevant ones may include other measures such as length of hospital stay,

engagement while outside of hospital, and functioning in the community, each of which has been assessed in prior studies. A conference that involves relevant stakeholders, including patients, families, clinicians, researchers, payers (county, State, federal) and funders, could determine which appear to be the most meaningful outcomes to study and where they might fit into a theoretical model of how the interventions should work. Prospective trials could then include these measures.

3. Determine How To Most Efficiently Apply Effective Strategies to Areas With Varying Resources

Variability in resources, especially problematic for a chronically ill, resource-intensive population, can substantially affect successful implementation of effective interventions. Cost and resource availability may be key barriers. Dissemination and implementation research could help identify the most effective means of implementing evidence-based strategies in settings with variable resources, with important foci on economically feasible and sustainable interventions.

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Appendix A. Key Informant Interview and Literature Search Methodology

Key Informant Interview Methodology

We adhered to the Office of Management and Budget (OMB) requirements and limited standardized questions (the list of Guiding Questions [GQs]) to no more than 9 nongovernment-associated individuals. As a result, we did not need to obtain OMB clearance for the interviews.

After review and approval of the completed Disclosure Forms for Conflicts of Interest for the proposed Key Informants (KIs) by the Agency for Healthcare and Quality (AHRQ), we conducted interviews with eight selected KIs, five on one call and three on another. The interviews were a combination of individual KIs based on availability and concordance of perspectives. The Principal Investigator from the Evidence-based Practice Center (EPC) team for this Technical Brief led each of the KI interviews, and the Task Order Officer (TOO) was in attendance for both discussions, along with other EPC team members who would be authors on the Technical Brief. The recorded KI interviews were 1.5 hours each. Following each interview, we summarized the interviews in writing by incorporating summary notes prepared by team members; professional transcriptions of the interview; and if necessary referring back to the actual recordings. We then submitted summary notes to the TOO for documentation. We generated a summary of findings from both KI discussions, organized by subquestion for authors' use in the integrated analysis for each guiding question section in the report. Authors identified any unique perspectives from KIs that were not part of the literature review findings.

Literature Search Methodology

Sources for the gray literature include the following:

- HAPI: Health and Psychosocial Instruments provides bibliographic access and descriptions of tests, manuals, rating scales, and other instruments used to assess health and behavior. They assist researchers and others in locating instruments used in the health fields, psychosocial sciences, occupational sciences, library and information science, and education.
- OpenSIGLE: Operated by GreyNet, the OpenSIGLE Repository preserves and makes openly accessible research results originating in the International Conference Series on Grey Literature. GreyNet together with the Institute for Scientific and Technical Information-National Center for Scientific Research designed the format for a metadata record, which encompasses standardized PDF attachments for full-text conference preprints, PowerPoint presentations, abstracts, and biographical notes. All 11 volumes (1993–2009) of the GL Conference Proceedings are available in the OpenSIGLE Repository.
- ClinicalTrials.gov: ClinicalTrials.gov offers up-to-date information for locating federally and privately supported clinical trials for a wide range of diseases and conditions. The site currently contains approximately 12,400 clinical studies sponsored by the National Institutes of Health, other federal agencies, and private industry. Studies listed in the database are conducted in all 50 States and in more than 100 countries.

- WHO International Clinical Trials Registry Platform: This platform is a network of international clinical trials registers to ensure a single point of access and the unambiguous identification of trials.
- Academic Search Complete: This source provides information from a wide range of academic areas, including business, social sciences, humanities, general academic, general science, education, and multicultural topics. This multidisciplinary database features full text for more than 4,000 journals with many dating back to 1975, abstracts and indexing for more than 8,200 scholarly journals, and coverage of selected newspapers and other news sources.
- NIH RePORTER: The information found in RePORTER is drawn from several extant databases (eRA databases, Medline®, PubMed Central, the NIH Intramural Database, and iEdison), using newly formed linkages among these disparate data sources.

We also searched Web sites of the relevant professional associations such as the American Psychiatric Association, the National Alliance on Mental Illness, the National Association of Psychiatric Health Systems, and the National Institute of Mental Health.

Appendix B. Literature Strategy and Yields

PubMed Update Search with Revisions, 12/12/14. Limited to date range of 6/12/14 – present. Corrected search to add in the facilities terms, add “assertive community” keyword, broaden “Community Mental Health Services” term to not limit to “utilization” subheading, and adding in separate search for “home care services”. No study design limits. **One record imported before de-duplication with existing records in database.**

Search	Query	Items found
#1	Search "Patient Admission"[Mesh] OR "Patient Discharge"[Mesh] OR "patient discharge"[All Fields] OR "discharge service"[All Fields] OR "discharge services"[All Fields] OR "Patient Readmission"[Mesh] OR "brief admission"[All Fields] OR "patient admission"[All Fields] OR readmission*[All Fields] OR "Commitment of Mentally Ill"[Mesh]	56180
#2	Search ("Length of Stay"[Mesh] OR "length of stay"[All Fields] OR "Advance Directives"[Mesh] OR "advance directives"[All Fields] OR "Behavioral Medicine"[Mesh] OR "behavioral health"[All Fields] OR "Observation"[Mesh] OR "Case Management"[Mesh] OR "case management"[All Fields] OR "Crisis Intervention"[Mesh] OR "crisis intervention"[All Fields] OR "crisis residential service"[All Fields] OR "crisis residential services"[All Fields] OR psychoeducation[All Fields] OR "bridge visit"[All Fields] OR "bridge visits"[All Fields] OR "follow up call"[All Fields] OR "follow up calls"[All Fields] OR "conditional release"[All Fields] OR conservatorship[All Fields] OR "transitional services"[All Fields] OR "transitional care"[All Fields] OR "transition support services"[All Fields] OR "community treatment orders"[All Fields] OR "assertive community"[All Fields] OR "outpatient treatment"[All Fields] OR "out-patient treatment"[All Fields] OR "extended leave"[All Fields] OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR "Jurisprudence"[Mesh] OR "Mandatory Programs"[Mesh] OR "mandatory program"[All Fields] OR "mandatory programs"[All Fields] OR "supervised discharge"[All Fields] OR "mandated treatment"[All Fields] OR "forced treatment"[All Fields] OR "compulsory community treatment"[All Fields] OR "compulsory treatment"[All Fields] OR "extended leave"[All Fields] OR "community treatment order"[All Fields] OR "involuntary outpatient treatment"[All Fields] OR "involuntary medication"[All Fields] OR "forced medication"[All Fields] OR ("court-ordered"[All Fields] AND medication[All Fields]) OR "assisted outpatient treatment"[All Fields] OR "Aftercare"[Mesh] OR "predischarge intervention"[All Fields] OR "predischarge interventions"[All Fields] OR "assertive community"[All Fields] OR "home care services"[Mesh])	327926
#3	Search (#1 and #2)	21389
#4	Search (("Hospitals, Psychiatric"[Mesh] OR "Psychiatric Department, Hospital"[Mesh]) OR "Community Mental Health Services"[Majr] OR "psychiatric hospitalization"[All Fields] OR (psych* AND hospital*))	144736
#5	Search (#3 and #4)	4468
#6	Search (("Mentally Ill Persons"[Mesh] OR "Mental Disorders"[Mesh] OR "Diagnosis, Dual (Psychiatry)"[Mesh] OR "Psychotic Disorders"[Mesh] OR OR "Mentally ill"[All Fields] OR "seriously mentally ill"[All Fields] OR SMI[All Fields] OR SPMI[All Fields] OR "serious mental illness"[All Fields] OR "seriously and persistently mental ill"[All Fields] OR "severe mental illness"[All Fields] OR "mental disorders"[All Fields] OR "mental problems"[All Fields] OR "mental illness"[All Fields]))	969038
#7	Search (#3 and #6)	8460
#8	Search (#5 or #7)	8757
#9	Search (#4 AND #6 AND ("home care services"[Mesh]))	561
#10	Search (#8 or #9)	9246
#11	Search (#8 or #9) Filters: Humans	9040
#12	Search (#8 or #9) Filters: Humans; Adult: 19+ years	4033

Search	Query	Items found
#13	Search (#8 or #9) Filters: Publication date from 2014/06/12; Humans; Adult: 19+ years	1
#14	Search (#8 or #9) Filters: Publication date from 2014/06/12; Humans; English; Adult: 19+ years	1

PubMed Update Search with Revisions, 11/7/14. Limited to date range of 1/24/14 – present. Same revisions made to this search as to 12/12/14 search (see above). Corrected search to add in the facilities terms, add “assertive community” keyword, broaden “Community Mental Health Services” term to not limit to “utilization” subheading, and adding in separate search for “home care services”. No study design limits. **23 records imported before de-duplication with existing records in database.**

Search	Query	Items found
#1	Search (((“Patient Admission”[Mesh] OR “Patient Discharge”[Mesh] OR “patient discharge”[All Fields] OR “discharge service”[All Fields] OR “discharge services”[All Fields] OR “Patient Readmission”[Mesh] OR “brief admission”[All Fields] OR “patient admission”[All Fields] OR readmission*[All Fields] OR “Commitment of Mentally Ill”[Mesh]))	55912
#2	Search (“Length of Stay”[Mesh] OR “length of stay”[All Fields] OR “Advance Directives”[Mesh] OR “advance directives”[All Fields] OR “Behavioral Medicine”[Mesh] OR “behavioral health”[All Fields] OR “Observation”[Mesh] OR “Case Management”[Mesh] OR “case management”[All Fields] OR “Crisis Intervention”[Mesh] OR “crisis intervention”[All Fields] OR “crisis residential service”[All Fields] OR “crisis residential services”[All Fields] OR psychoeducation[All Fields] OR “bridge visit”[All Fields] OR “bridge visits”[All Fields] OR “follow up call”[All Fields] OR “follow up calls”[All Fields] OR “conditional release”[All Fields] OR conservatorship[All Fields] OR “transitional services”[All Fields] OR “transitional care”[All Fields] OR “transition support services”[All Fields] OR “community treatment orders”[All Fields] OR “assertive community”[All Fields] OR “outpatient treatment”[All Fields] OR “out-patient treatment”[All Fields] OR “extended leave”[All Fields] OR (“commitment of mentally ill” AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR “Jurisprudence”[Mesh] OR “Mandatory Programs”[Mesh] OR “mandatory program”[All Fields] OR “mandatory programs”[All Fields] OR “supervised discharge”[All Fields] OR “mandated treatment”[All Fields] OR “forced treatment”[All Fields] OR “compulsory community treatment”[All Fields] OR “compulsory treatment”[All Fields] OR “extended leave”[All Fields] OR “community treatment order”[All Fields] OR “involuntary outpatient treatment”[All Fields] OR “involuntary medication”[All Fields] OR “forced medication”[All Fields] OR (“court-ordered”[All Fields] AND medication[All Fields]) OR “assisted outpatient treatment”[All Fields] OR “Aftercare”[Mesh] OR “predischage intervention”[All Fields] OR “predischage interventions”[All Fields] OR “assertive community”[All Fields] OR “home care services”[Mesh])	327064
#3	Search (#1 and #2)	21300
#4	Search (((“Hospitals, Psychiatric”[Mesh] OR “Psychiatric Department, Hospital”[Mesh]) OR “Community Mental Health Services”[Majr] OR “psychiatric hospitalization”[All Fields] OR (psych* AND hospital*)))	143390
#5	Search (#3 and #4)	4461
#6	Search (“Mentally Ill Persons”[Mesh] OR “Mental Disorders”[Mesh] OR “Diagnosis, Dual (Psychiatry)”[Mesh] OR “Psychotic Disorders”[Mesh] OR OR “Mentally ill”[All Fields] OR “seriously mentally ill”[All Fields] OR SMI[All Fields] OR SPMI[All Fields] OR “serious mental illness”[All Fields] OR “seriously and persistently mental ill”[All Fields] OR “severe mental illness”[All Fields] OR “mental disorders”[All Fields] OR “mental problems”[All Fields] OR	967060

Search	Query	Items found
	"mental illness"[All Fields]))	
#7	Search (#3 and #6)	8451
#8	Search (#5 or #7)	8748
#9	Search (#4 AND #6 AND ("home care services"[Mesh]))	560
#10	Search (#8 or #9)	9236
#11	Search (#8 or #9) Filters: Humans	9032
#12	Search (#8 or #9) Filters: Humans; Adult: 19+ years	4028
#13	Search (#8 or #9) Filters: Publication date from 2014/01/24; Humans; Adult: 19+ years	31
#14	Search (#8 or #9) Filters: Publication date from 2014/01/24; Humans; English; Adult: 19+ years	23
#15	Search (#13 NOT #14)	8

Additions (part 2) to PubMed Original Search, 11/7/14. Corrected search to include facilities terms that were accidentally not included in the final search from 6/24/14. **947 records imported before de-duplication with existing records in database.**

Search	Query	Items found
#1	Search (("Patient Admission"[Mesh] OR "Patient Discharge"[Mesh] OR "patient discharge"[All Fields] OR "discharge service"[All Fields] OR "discharge services"[All Fields] OR "Patient Readmission"[Mesh] OR "brief admission"[All Fields] OR "patient admission"[All Fields] OR readmission*[All Fields] OR "Commitment of Mentally Ill"[Mesh])	55912
#2	Search (((("Length of Stay"[Mesh] OR "length of stay"[All Fields] OR "Advance Directives"[Mesh] OR "advance directives"[All Fields] OR "Behavioral Medicine"[Mesh] OR "behavioral health"[All Fields] OR "Observation"[Mesh] OR "Case Management"[Mesh] OR "case management"[All Fields] OR "Crisis Intervention"[Mesh] OR "crisis intervention"[All Fields] OR "crisis residential service"[All Fields] OR "crisis residential services"[All Fields] OR psychoeducation[All Fields] OR "bridge visit"[All Fields] OR "bridge visits"[All Fields] OR "follow up call"[All Fields] OR "follow up calls"[All Fields] OR "conditional release"[All Fields] OR conservatorship[All Fields] OR "transitional services"[All Fields] OR "transitional care"[All Fields] OR "transition support services"[All Fields] OR "community treatment orders"[All Fields] OR "assertive community treatment"[All Fields] OR "outpatient treatment"[All Fields] OR "out-patient treatment"[All Fields] OR "extended leave"[All Fields] OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR "Jurisprudence"[Mesh] OR "Mandatory Programs"[Mesh] OR "mandatory program"[All Fields] OR "mandatory programs"[All Fields] OR "supervised discharge"[All Fields] OR "mandated treatment"[All Fields] OR "forced treatment"[All Fields] OR "compulsory community treatment"[All Fields] OR "compulsory treatment"[All Fields] OR "extended leave"[All Fields] OR "community treatment order"[All Fields] OR "involuntary outpatient treatment"[All Fields] OR "involuntary medication"[All Fields] OR "forced medication"[All Fields] OR ("court-ordered"[All Fields] AND medication[All Fields]) OR "assisted outpatient treatment"[All Fields] OR "Aftercare"[Mesh] OR "predischage intervention"[All Fields] OR "predischage interventions"[All Fields] OR "assertive community"[All Fields] OR "home care services"[Mesh]))))	327064
#3	Search (#1 and #2)	21300
#4	Search (((("Hospitals, Psychiatric"[Mesh] OR "Psychiatric Department, Hospital"[Mesh]) OR "Community Mental Health Services/utilization"[Majr] OR "psychiatric hospitalization"[All Fields] OR (psych* and hospital*))))	29604

Search	Query	Items found
#5	Search (#3 and #4)	2143
#6	Search ("Mentally Ill Persons"[Mesh] OR "Mental Disorders"[Mesh] OR "Diagnosis, Dual (Psychiatry)"[Mesh] OR "Psychotic Disorders"[Mesh] OR OR "Mentally ill"[All Fields] OR "seriously mentally ill"[All Fields] OR SMI[All Fields] OR SPMI[All Fields] OR "serious mental illness"[All Fields] OR "seriously and persistently mental ill"[All Fields] OR "severe mental illness"[All Fields] OR "mental disorders"[All Fields] OR "mental problems"[All Fields] OR "mental illness"[All Fields])	967060
#7	Search (#3 and #6)	8451
#8	Search (#5 or #7)	8581
#9	Search (#5 or #7) Filters: Humans	8412
#10	Search (#5 or #7) Filters: Humans; Adult: 19+ years	3639
#11	Search (#5 or #7) Filters: Publication date from 1990/01/01; Humans; Adult: 19+ years	2790
#12	Search (("review"[Publication Type] AND "systematic"[tiab]) OR "systematic review"[All Fields] OR ("review literature as topic"[MeSH] AND "systematic"[tiab]) OR "meta-analysis"[Publication Type] OR "meta-analysis as topic"[MeSH Terms] OR "meta-analysis"[All Fields]))	136955
#13	Search (#11 and #12)	9
#14	Search (("Randomized Controlled Trial"[Publication Type] OR "Single-Blind Method"[MeSH] OR "Double-Blind Method"[MeSH] OR "Random Allocation"[MeSH]))	468314
#15	Search (#11 and #14)	141
#16	Search (#5 or #7) Filters: Clinical Trial; Publication date from 1990/01/01; Humans; Adult: 19+ years	241
#17	Search (#11 AND ("prospective cohort" OR "prospective studies"[MeSH] OR (prospective*[All Fields] AND cohort[All Fields] AND (study[All Fields] OR studies[All Fields])))	165
#18	Search (#11 and ("Case-Control Studies"[MeSH] OR "Cohort Studies"[MeSH] OR "Organizational Case Studies"[MeSH] OR "Cross-Over Studies"[MeSH]))	917
#19	Search (#13 or #15 or #16 or #17 or #18)	1058
#20	Search (#13 or #15 or #16 or #17 or #18) Filters: English	947
#21	Search (#19 not #20)	111

Additions (part 1) to PubMed Original Search, 11/7/14. Corrected search, adding facilities terms and then only searching specifically for comments, editorials, letters and news, which were also supposed to be included in the original search from 6/24/14 but were not. **57 records imported before de-duplication with existing records in database.**

Search	Query	Items found
#1	Search (("Patient Admission"[Mesh] OR "Patient Discharge"[Mesh] OR "patient discharge"[All Fields] OR "discharge service"[All Fields] OR "discharge services"[All Fields] OR "Patient Readmission"[Mesh] OR "brief admission"[All Fields] OR "patient admission"[All Fields] OR readmission*[All Fields] OR "Commitment of Mentally Ill"[Mesh])	55912
#2	Search (((("Length of Stay"[Mesh] OR "length of stay"[All Fields] OR "Advance Directives"[Mesh] OR "advance directives"[All Fields] OR "Behavioral Medicine"[Mesh] OR "behavioral health"[All Fields] OR "Observation"[Mesh] OR "Case Management"[Mesh] OR "case management"[All Fields] OR "Crisis Intervention"[Mesh] OR "crisis intervention"[All Fields] OR "crisis residential service"[All Fields] OR "crisis residential services"[All Fields] OR psychoeducation[All Fields] OR "bridge visit"[All Fields] OR "bridge visits"[All Fields] OR "follow up call"[All Fields] OR "follow up calls"[All Fields] OR "conditional release"[All Fields] OR conservatorship[All Fields] OR "transitional services"[All Fields] OR "transitional care"[All Fields] OR "transition support services"[All Fields] OR "community treatment orders"[All Fields] OR "assertive community treatment"[All Fields] OR "outpatient treatment"[All Fields] OR "out-patient treatment"[All Fields] OR "extended leave"[All Fields] OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR "Jurisprudence"[Mesh] OR "Mandatory Programs"[Mesh] OR "mandatory program"[All Fields] OR "mandatory programs"[All Fields] OR "supervised discharge"[All Fields] OR "mandated treatment"[All Fields] OR "forced treatment"[All Fields] OR "compulsory community treatment"[All Fields] OR "compulsory treatment"[All Fields] OR "extended leave"[All Fields] OR "community treatment order"[All Fields] OR "involuntary outpatient treatment"[All Fields] OR "involuntary medication"[All Fields] OR "forced medication"[All Fields] OR ("court-ordered"[All Fields] AND medication[All Fields]) OR "assisted outpatient treatment"[All Fields] OR "Aftercare"[Mesh] OR "predischarge intervention"[All Fields] OR "predischarge interventions"[All Fields] OR "assertive community"[All Fields] OR "home care services"[Mesh])))	327064
#3	Search (#1 and #2)	21300
#4	Search (((("Hospitals, Psychiatric"[Mesh] OR "Psychiatric Department, Hospital"[Mesh]) OR "Community Mental Health Services/utilization"[Majr] OR "psychiatric hospitalization"[All Fields] OR (psych* and hospital*))))	29604
#5	Search (#3 and #4)	2143
#6	Search ("Mentally Ill Persons"[Mesh] OR "Mental Disorders"[Mesh] OR "Diagnosis, Dual (Psychiatry)"[Mesh] OR "Psychotic Disorders"[Mesh] OR OR "Mentally ill"[All Fields] OR "seriously mentally ill"[All Fields] OR SMI[All Fields] OR SPMI[All Fields] OR "serious mental illness"[All Fields] OR "seriously and persistently mental ill"[All Fields] OR "severe mental illness"[All Fields] OR "mental disorders"[All Fields] OR "mental problems"[All Fields] OR "mental illness"[All Fields])	967060
#7	Search (#3 and #6)	8451
#8	Search (#5 or #7)	8581
#9	Search (#5 or #7) Filters: Humans	8412
#10	Search (#5 or #7) Filters: Humans; Adult: 19+ years	3639
#11	Search (#5 or #7) Filters: Publication date from 1990/01/01; Humans; Adult: 19+ years	2790
#12	Search (("review"[Publication Type] AND "systematic"[tiab]) OR "systematic review"[All Fields] OR ("review literature as topic"[MeSH] AND "systematic"[tiab]) OR "meta-analysis"[Publication Type] OR "meta-analysis as topic"[MeSH Terms] OR "meta-analysis"[All Fields])	136955
#13	Search (#11 and #12)	9

Search	Query	Items found
#14	Search (("Randomized Controlled Trial"[Publication Type] OR "Single-Blind Method"[MeSH] OR "Double-Blind Method"[MeSH] OR "Random Allocation"[MeSH]))	468314
#15	Search (#11 and #14)	141
#16	Search (#5 or #7) Filters: Clinical Trial; Publication date from 1990/01/01; Humans; Adult: 19+ years	241
#17	Search (#11 AND ("prospective cohort" OR "prospective studies"[MeSH] OR (prospective*[All Fields] AND cohort[All Fields] AND (study[All Fields] OR studies[All Fields])))	165
#18	Search (#11 and ("Case-Control Studies"[MeSH] OR "Cohort Studies"[MeSH] OR "Organizational Case Studies"[MeSH] OR "Cross-Over Studies"[MeSH]))	917
#19	Search (#13 or #15 or #16 or #17 or #18)	1058
#20	Search (#13 or #15 or #16 or #17 or #18) Filters: English	947
#21	Search (#19 not #20)	111
#22	Search (#11 AND (comment[pt] OR editorial[pt] OR letter[pt] OR news[pt]))	70
#23	Search (#11 AND (comment[pt] OR editorial[pt] OR letter[pt] OR news[pt])) Filters: English	57
#24	Search (#22 not #23)	13

PubMed Original Search, 6/24/14:

Search	Query	Items found
#1	Search ("Patient Admission"[Mesh] OR "Patient Discharge"[Mesh] OR "patient discharge"[All Fields] OR "discharge service"[All Fields] OR "discharge services"[All Fields] OR "Patient Readmission"[Mesh] OR "brief admission"[All Fields] OR "patient admission"[All Fields] OR readmission*[All Fields])	49074
#2	Search ("Length of Stay"[Mesh] OR "length of stay"[All Fields] OR "Advance Directives"[Mesh] OR "advance directives"[All Fields] OR "Behavioral Medicine"[Mesh] OR "behavioral health"[All Fields] OR "Observation"[Mesh] OR "Case Management"[Mesh] OR "case management"[All Fields] OR "Crisis Intervention"[Mesh] OR "crisis intervention"[All Fields] OR "crisis residential service"[All Fields] OR "crisis residential services"[All Fields] OR psychoeducation[All Fields] OR "bridge visit"[All Fields] OR "bridge visits"[All Fields] OR "follow up call"[All Fields] OR "follow up calls"[All Fields] OR "conditional release"[All Fields] OR conservatorship[All Fields] OR "transitional services"[All Fields] OR "transitional care"[All Fields] OR "transition support services"[All Fields] OR "community treatment orders"[All Fields] OR "assertive community treatment"[All Fields] OR "outpatient treatment"[All Fields] OR "out-patient treatment"[All Fields] OR "extended leave"[All Fields] OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR "Jurisprudence"[Mesh] OR "Mandatory Programs"[Mesh] OR "mandatory program"[All Fields] OR "mandatory programs"[All Fields] OR "supervised discharge"[All Fields] OR "mandated treatment"[All Fields] OR "forced treatment"[All Fields] OR "compulsory community treatment"[All Fields] OR "compulsory treatment"[All Fields] OR "extended leave"[All Fields] OR "community treatment order"[All Fields] OR "involuntary outpatient treatment"[All Fields] OR "involuntary medication"[All Fields] OR "forced medication"[All Fields] OR ("court-ordered"[All Fields] AND medication[All Fields]) OR "assisted outpatient treatment"[All Fields])	279160
#3	Search (#1 and #2)	13058
#4	Search ("Hospitals, Psychiatric"[Mesh] OR "Psychiatric Department, Hospital"[Mesh]) OR "Community Mental Health Services/utilization"[Majr] OR "psychiatric hospitalization"[All Fields] OR (psych* and hospital*)	29410
#5	Search (#3 and #4)	1018

Search	Query	Items found
#6	Search ("Mentally Ill Persons"[Mesh] OR "Mental Disorders"[Mesh] OR "Diagnosis, Dual (Psychiatry)"[Mesh] OR "Substance-Related Disorders"[Mesh:NoExp] OR "Psychotic Disorders"[Mesh] OR "Behavior, Addictive"[Mesh] OR "Alcohol-Related Disorders"[Mesh] OR "Amphetamine-Related Disorders"[Mesh] OR "Cocaine-Related Disorders"[Mesh] OR "Inhalant Abuse"[Mesh] OR "Marijuana Abuse"[Mesh] OR "Opioid-Related Disorders"[Mesh] OR "Phencyclidine Abuse"[Mesh] OR "Substance Abuse, Intravenous"[Mesh] OR "Mentally ill"[All Fields] OR "seriously mentally ill"[All Fields] OR SMI[All Fields] OR SPMI[All Fields] OR "serious mental illness"[All Fields] OR "seriously and persistently mental ill"[All Fields] OR "severe mental illness"[All Fields] OR "mental disorders"[All Fields] OR "mental problems"[All Fields] OR "mental illness"[All Fields])	965286
#7	Search (#3 and #6)	2663
#8	Search (#5 or #7)	2778
#9	Search (#3 and #6) Filters: Humans	2646
#10	Search (#3 and #6) Filters: Other Animals	1
#11	Search (#10 not #9)	0
#12	Search (#9 not #11)	2646
#13	Search (#9 not #11) Filters: Adult: 19+ years	1741
#14	Search (#9 not #11) Filters: Publication date from 1990/01/01 to 2014/12/31; Adult: 19+ years	1455
#15	Search (("review"[Publication Type] AND "systematic"[tiab]) OR "systematic review"[All Fields] OR ("review literature as topic"[MeSH] AND "systematic"[tiab]) OR "meta-analysis"[Publication Type] OR "meta-analysis as topic"[MeSH Terms] OR "meta-analysis"[All Fields])	129116
#16	Search (#14 and #15)	6
#17	Search ("Randomized Controlled Trial"[Publication Type] OR "Single-Blind Method"[MeSH] OR "Double-Blind Method"[MeSH] OR "Random Allocation"[MeSH])	458805
#18	Search #14 and #17	92
#19	Search (#9 not #11) Filters: Clinical Trial; Publication date from 1990/01/01 to 2014/12/31; Adult: 19+ years	152
#20	Search #14 AND ("prospective cohort" OR "prospective studies"[MeSH] OR (prospective*[All Fields] AND cohort[All Fields] AND (study[All Fields] OR studies[All Fields])))	106
#21	Search #14 and ("Case-Control Studies"[MeSH] OR "Cohort Studies"[MeSH] OR "Organizational Case Studies"[MeSH] OR "Cross-Over Studies"[MeSH])	619
#22	Search (#16 or #18 or #19 or #20 or #21)	702
#23	Search (#16 or #18 or #19 or #20 or #21) Filters: English	637
#24	Search (#22 NOT #23) Non-English	65

Cochrane Update Search with Revisions, 12/12/14. Limited to publication year of 2014. Corrected search to add the facilities terms, add an “assertive community” keyword, and add a separate search for “home care services”. No study design limits.
33 records imported before de-duplication with existing records in database.

ID	Search	Hits
#1	[mh "Patient Admission"] or [mh "Patient Discharge"] or "patient discharge" or "discharge service" or "discharge services" or [mh "Patient Readmission"] or "brief admission" or "patient admission" or readmission* or [mh "Commitment of Mentally Ill"]	4281
#2	[mh "Length of Stay"] or "length of stay" or [mh "Advance Directives"] or "advance directives" or [mh "Behavioral Medicine"] or "behavioral health" or [mh Observation] or [mh "Case Management"] or "case management" or [mh "Crisis Intervention"] or "crisis intervention" or "crisis residential service" or "crisis residential services" or psychoeducation or "bridge visit" or "bridge visits" or "follow up call" or "follow up calls" or "conditional release" or conservatorship or "transitional services" or "transitional care" or "transition support services" or "community treatment orders" or "assertive community" or "outpatient treatment" or "out-patient treatment" or "extended leave" or ("commitment of mentally ill" and outpatient*) or (outpatient and commitment) or (involuntary and commitment) or [mh Jurisprudence] or [mh "Mandatory Programs"] or "mandatory program" or "mandatory programs" or "supervised discharge" or "mandated treatment" or "forced treatment" or "compulsory community treatment" or "compulsory treatment" or "extended leave" or "community treatment order" or "involuntary outpatient treatment" or "involuntary medication" or "forced medication" or ("court-ordered" and medication) or "assisted outpatient treatment" or [mh "home care services"]	18563
#3	#1 and #2	1821
#4	[mh "Hospitals, Psychiatric"] or [mh "Psychiatric Department, Hospital"] or [mh "Community Mental Health Services" [mjj]] or "psychiatric hospitalization" or (psych* and hospital*)	20597
#5	#3 and #4	462
#6	[mh "Mentally Ill Persons"] or [mh "Mental Disorders"] or [mh "Diagnosis, Dual (Psychiatry)"] or [mh "Psychotic Disorders"] or "Mentally ill" or "seriously mentally ill" or SMI or SPMI or "serious mental illness" or "seriously and persistently mental ill" or "severe mental illness" or "mental disorders" or "mental problems" or "mental illness"	45877
#7	#3 and #6	291
#8	#5 or #7	520
#9	#5 or #7 Publication Year from 2014 to 2014	33

Cochrane Update Search with Revisions, 11/10/14. Limited to publication year of 2014. Same revisions made to this search strategy as to 12/12/14 search (see above). Corrected search to add the facilities terms, add an “assertive community” keyword, and add a separate search for “home care services”. No study design limits. **32 records imported before de-duplication with existing records in database.**

ID	Search	Hits
#1	[mh "Patient Admission"] or [mh "Patient Discharge"] or "patient discharge" or "discharge service" or "discharge services" or [mh "Patient Readmission"] or "brief admission" or "patient admission" or readmission* or [mh "Commitment of Mentally Ill"]	4268
#2	[mh "Length of Stay"] or "length of stay" or [mh "Advance Directives"] or "advance directives" or [mh "Behavioral Medicine"] or "behavioral health" or [mh Observation] or [mh "Case Management"] or "case management" or [mh "Crisis Intervention"] or "crisis intervention" or "crisis residential service" or "crisis residential services" or psychoeducation or "bridge visit" or "bridge visits" or "follow up call" or "follow up calls" or "conditional release" or conservatorship or "transitional services" or "transitional care" or "transition support services" or "community treatment orders" or "assertive community" or "outpatient treatment" or "out-patient treatment" or "extended leave" or ("commitment of mentally ill" and outpatient*) or (outpatient and commitment) or (involuntary and commitment) or [mh Jurisprudence] or [mh "Mandatory Programs"] or "mandatory program" or "mandatory programs" or "supervised discharge" or "mandated treatment" or "forced treatment" or "compulsory community treatment" or "compulsory treatment" or "extended leave" or "community treatment order" or "involuntary outpatient treatment" or "involuntary medication" or "forced medication" or ("court-ordered" and medication) or "assisted outpatient treatment"	16648
#3	#1 and #2	1652
#4	[mh "Hospitals, Psychiatric"] or [mh "Psychiatric Department, Hospital"] or [mh "Community Mental Health Services" [mj]] or "psychiatric hospitalization" or (psych* and hospital*)	20532
#5	#3 and #4	436
#6	[mh "Mentally Ill Persons"] or [mh "Mental Disorders"] or [mh "Diagnosis, Dual (Psychiatry)"] or [mh "Psychotic Disorders"] or "Mentally ill" or "seriously mentally ill" or SMI or SPMI or "serious mental illness" or "seriously and persistently mental ill" or "severe mental illness" or "mental disorders" or "mental problems" or "mental illness"	45776
#7	#3 and #6	282
#8	#5 or #7	493
#9	#5 or #7 Publication Year from 2014 to 2014	32
#10	[mh "home care services"]	2186
#11	#1 and #10	314
#12	#11 and (#4 or #6)	77
#13	#11 and (#4 or #6) Publication Year from 2014 to 2014	0

Cochrane Library Original Search, 6/23/14:

ID	Search	Hits
#1	[mh "Patient Admission"] or [mh "Patient Discharge"] or "patient discharge" or "discharge service" or "discharge services" or [mh "Patient Readmission"] or "brief admission" or "patient admission" or readmission*	4027
#2	[mh "Length of Stay"] or "length of stay" or [mh "Advance Directives"] or "advance directives" or [mh "Behavioral Medicine"] or "behavioral health" or [mh Observation] or [mh "Case Management"] or "case management" or [mh "Crisis Intervention"] or "crisis intervention" or "crisis residential service" or "crisis residential services" or psychoeducation or "bridge visit" or "bridge visits" or "follow up call" or "follow up calls" or "conditional release" or conservatorship or "transitional services" or "transitional care" or "transition support services" or "community treatment orders" or "assertive community treatment" or "outpatient treatment" or "out-patient treatment" or "extended leave" or ("commitment of mentally ill" and outpatient*) or (outpatient and commitment) or (involuntary and commitment) or [mh Jurisprudence] or [mh "Mandatory Programs"] or "mandatory program" or "mandatory programs" or "supervised discharge" or "mandated treatment" or "forced treatment" or "compulsory community treatment" or "compulsory treatment" or "extended leave" or "community treatment order" or "involuntary outpatient treatment" or "involuntary medication" or "forced medication" or ("court-ordered" and medication) or "assisted outpatient treatment"	15915
#3	#1 and #2	1526
#4	[mh "Hospitals, Psychiatric"] or [mh "Psychiatric Department, Hospital"] or [mh "Community Mental Health Services" [mj]/UT] or "psychiatric hospitalization" or (psych* and hospital*)	19509
#5	#3 and #4	381
#6	[mh "Mentally Ill Persons"] or [mh "Mental Disorders"] or [mh "Diagnosis, Dual (Psychiatry)"] or [mh ^"Substance-Related Disorders"] or [mh "Psychotic Disorders"] or [mh "Behavior, Addictive"] or [mh "Alcohol-Related Disorders"] or [mh "Amphetamine-Related Disorders"] or [mh "Cocaine-Related Disorders"] or [mh "Inhalant Abuse"] or [mh "Marijuana Abuse"] or [mh "Opioid-Related Disorders"] or [mh "Phencyclidine Abuse"] or [mh "Substance Abuse, Intravenous"] or "Mentally ill" or "seriously mentally ill" or SMI or SPMI or "serious mental illness" or "seriously and persistently mental ill" or "severe mental illness" or "mental disorders" or "mental problems" or "mental illness"	45526
#7	#3 and #6	228
#8	#5 or #7	432

PsycInfo (EBSCO is vendor) **Update Search, 12/12/14.** Limited to 6/01/2014 – present. **12 of 13 results imported before de-duplication with existing records in database.**

#	Query	Limiters/Expanders	Last Run Via	Results
S9 S8		Limiters - Published Date: 20140601-20141231; English; Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	13
S8 S5 OR S7		Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	672
S7 S3 AND S6		Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	211
S6	DE "Homeless Mentally Ill" OR DE "Mentally Ill Offenders" OR DE "Mentally Ill Persons" OR DE "Mental Disorders" OR DE "Adjustment Disorders" OR DE "Affective Disorders" OR DE "Alexithymia" OR DE "Anxiety Disorders" OR DE "Autism" OR DE "Chronic Mental Illness" OR DE "Dementia" OR DE "Dissociative Disorders" OR DE "Eating Disorders" OR DE "Elective Mutism" OR DE "Factitious Disorders" OR DE "Gender Identity Disorder" OR DE "Hysteria" OR DE "Impulse Control Disorders" OR DE "Koro" OR DE "Mental Disorders due to General Medical Conditions" OR DE "Neurosis" OR DE "Paraphilias" OR DE "Personality Disorders" OR DE "Pervasive Developmental Disorders" OR DE "Pseudodementia" OR DE "Psychosis" OR DE "Schizoaffective Disorder" OR DE "Acute Psychosis" OR DE "Acute Schizophrenia" OR "Mentally ill" OR "seriously mentally ill" OR SMI OR SPMI OR "serious mental illness" OR "seriously and persistently mental ill" OR "severe mental illness" OR "mental disorders" OR "mental problems" OR "mental illness"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	242,529
S5 S3 AND S4		Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	651

#	Query	Limiters/Expanders	Last Run Via	Results
S4	DE "Psychiatric Hospitals" AND (psychiatric AND hospital AND department*) OR DE "Community Mental Health Services" OR DE "Community Counseling" OR "psychiatric hospitalization" OR (psych* and hospital*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	210,013
S3	S1 AND S2	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	931
S2	DE "Treatment Duration" OR "treatment duration" OR "length of stay" OR DE "Advance Directives" OR "advance directives" OR DE "Behavioral Medicine" OR "behavioral health" OR DE "Case Management" OR "case management" OR DE "Crisis Intervention" OR DE "Debriefing (Psychological)" OR DE "Suicide Prevention" OR DE "Crisis Intervention Services" OR DE "Hot Line Services" OR DE "Suicide Prevention Centers" OR "crisis intervention" OR "crisis residential service" OR "crisis residential services" OR psychoeducation OR "bridge visit" OR "bridge visits" OR "follow up call" OR "follow up calls" OR "conditional release" OR conservatorship OR "transitional services" OR "transitional care" OR "transition support services" OR "community treatment orders" OR "assertive community" OR "outpatient treatment" OR "outpatient treatment" OR "extended leave" OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR DE "Law (Government)" OR DE "Civil Law" OR DE "Criminal Law" OR "mandatory program" OR "mandatory programs" OR "supervised discharge" OR "mandated treatment" OR "forced treatment" OR "compulsory community treatment" OR "compulsory treatment" OR "extended leave" OR "community treatment order" OR "involuntary outpatient treatment" OR "involuntary medication" OR "forced medication" OR ("court-ordered" AND medication) OR "assisted outpatient treatment" OR DE "Commitment (Psychiatric)" OR DE "Outpatient Commitment" OR DE "Home Care"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	55,563
S1	(DE "Hospital Admission") OR (DE "Discharge Planning") OR "patient discharge" OR "discharge service" OR "discharge services" OR [mh "Patient Readmission"] OR "brief admission" OR "patient admission" OR readmission*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	4329

PsycInfo (EBSCO is vendor) **Update Search, 11/10/14.** Limited to 1/24/2014 – present. Same revisions made to this search as to 12/12/14 search (see above). **One result retrieved but not imported into database because it was a duplicate with the above search strategies.**

#	Query	Limiters/Expanders	Last Run Via	Results
S25	S11 or S13 or S14 or S15 or S17 or S19 or S20 or S21 or S22 or S23	Limiters - Published Date: 20140101-20141231 Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	1
S24	S11 or S13 or S14 or S15 or S17 or S19 or S20 or S21 or S22 or S23	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	46
S23	S9 AND (evaluation AND stud*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	42
S22	S9 AND (comparative AND stud*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	8
S21	S9 AND news	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	0
S20	S9	Limiters - Document Type: Comment/Reply, Editorial, Erratum/Correction, Letter Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	4
S19	S9 AND S18	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	0
S18	"Case-Control Studies" OR "Cohort Studies" OR "Organizational Case Studies" OR "Cross-Over Studies"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	1,851
S17	S9 AND S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	5
S16	"prospective cohort" OR "prospective studies" OR (prospective* AND cohort)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced	10,626

#	Query	Limiters/Expanders	Last Run Via	Results
			Search Database - PsycINFO	
S15 S9		Limiters - Methodology: - Systematic Review Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	0
S14 S9		Limiters - Methodology: TREATMENT OUTCOME/CLINICAL TRIAL Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	34
S13 S9 AND S12		Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	11
S12	"Randomized Controlled Trial"OR "Single-Blind Method" OR "Double-Blind Method" OR DE "Random Sampling" OR "Random Allocation"	Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	6,710
S11 S9 AND S10		Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	2
S10	("review" AND "systematic") OR "systematic review" OR ("review literature as topic" AND "systematic") OR "meta- analysis" OR "meta-analysis as topic"	Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	5,578
S9 S8		Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	446
S8 S5 OR S7		Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	666
S7 S3 AND S6		Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	208
S6	DE "Homeless Mentally Ill" OR DE "Mentally Ill Offenders" OR "Mentally Ill Persons" OR DE "Mental Disorders" OR DE "Adjustment Disorders" OR DE "Affective Disorders" OR DE "Alexithymia" OR DE "Anxiety Disorders" OR DE "Autism" OR DE "Chronic Mental	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	241,161

#	Query	Limiters/Expanders	Last Run Via	Results
	Illness" OR DE "Dementia" OR DE "Dissociative Disorders" OR DE "Eating Disorders" OR DE "Elective Mutism" OR DE "Factitious Disorders" OR DE "Gender Identity Disorder" OR DE "Hysteria" OR DE "Impulse Control Disorders" OR DE "Koro" OR DE "Mental Disorders due to General Medical Conditions" OR DE "Neurosis" OR DE "Paraphilias" OR DE "Personality Disorders" OR DE "Pervasive Developmental Disorders" OR DE "Pseudodementia" OR DE "Psychosis" OR DE "Schizoaffective Disorder" OR DE "Acute Psychosis" OR DE "Acute Schizophrenia" OR "Mentally ill" OR "seriously mentally ill" OR SMI OR SPMI OR "serious mental illness" OR "seriously and persistently mental ill" OR "severe mental illness" OR "mental disorders" OR "mental problems" OR "mental illness"			
S5	S3 AND S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	645
S4	DE "Psychiatric Hospitals" AND (psychiatric AND hospital AND department*) OR DE "Community Mental Health Services" OR DE "Community Counseling" OR "psychiatric hospitalization" OR (psych* and hospital*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	208,354
S3	S1 AND S2	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	924
S2	DE "Treatment Duration" OR "treatment duration" OR "length of stay" OR DE "Advance Directives" OR "advance directives" OR DE "Behavioral Medicine" OR "behavioral health" OR DE "Case Management" OR "case management" OR DE "Crisis Intervention" OR DE "Debriefing (Psychological)" OR DE "Suicide Prevention" OR DE "Crisis Intervention Services" OR DE "Hot Line Services" OR DE "Suicide Prevention Centers" OR "crisis intervention" OR "crisis residential service" OR "crisis residential services" OR psychoeducation OR "bridge visit" OR "bridge visits" OR "follow up call" OR "follow up calls" OR "conditional release" OR conservatorship OR "transitional services" OR "transitional care" OR "transition support services" OR "community treatment"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	55,205

#	Query	Limiters/Expanders	Last Run Via	Results
	orders" OR "assertive community" OR "outpatient treatment" OR "out-patient treatment" OR "extended leave" OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR DE "Law (Government)" OR DE "Civil Law" OR DE "Criminal Law" OR "mandatory program" OR "mandatory programs" OR "supervised discharge" OR "mandated treatment" OR "forced treatment" OR "compulsory community treatment" OR "compulsory treatment" OR "extended leave" OR "community treatment order" OR "involuntary outpatient treatment" OR "involuntary medication" OR "forced medication" OR ("court-ordered" AND medication) OR "assisted outpatient treatment" OR DE "Commitment (Psychiatric)" OR DE "Outpatient Commitment" OR DE "Home Care"			
S1	(DE "Hospital Admission") OR (DE "Discharge Planning") OR "patient discharge" OR "discharge service" OR "discharge services" OR [mh "Patient Readmission"] OR "brief admission" OR "patient admission" OR readmission*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	4,298

Additions (part 1) to PsycInfo (EBSCO is vendor) **Original Search.** Limited to 1990-present and search limited to editorials, letters, comments, news. **Three records imported before de-duplication with existing records in database.**

#	Query	Limiters/Expanders	Last Run Via	Results
S12	S9 AND (S10 OR S11)	Limiters - Document Type: Editorial, Erratum/Correction, Letter Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	3
S11	news OR comment	Limiters - Document Type: Editorial, Erratum/Correction, Letter Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	2,057
S10		Limiters - Document Type: Editorial, Erratum/Correction, Letter Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	57,534
S9	S8	Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	426
S8	S5 OR S7	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	639
S7	S3 AND S6	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	218
S6	DE "Homeless Mentally Ill" OR DE "Mentally Ill Offenders" OR "Mentally Ill Persons" OR DE "Mental Disorders" OR DE "Adjustment Disorders" OR DE "Affective Disorders" OR DE "Alexithymia" OR DE "Anxiety Disorders" OR DE "Autism" OR DE "Chronic Mental Illness" OR DE "Dementia" OR DE "Dissociative Disorders" OR DE "Eating Disorders" OR DE "Elective Mutism" OR DE "Factitious Disorders" OR DE "Gender Identity Disorder" OR DE "Hysteria" OR DE "Impulse Control Disorders" OR DE "Koro" OR DE "Mental Disorders due to General Medical Conditions" OR DE "Neurosis" OR DE "Paraphilias" OR DE "Personality Disorders" OR DE "Pervasive Developmental Disorders" OR DE "Pseudodementia" OR DE "Psychosis" OR DE "Schizoaffective Disorder" OR	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	289,549

#	Query	Limiters/Expanders	Last Run Via	Results
	"substance abuse disorders" OR DE "Drug Addiction" OR DE "Heroin Addiction" OR DE "Drug Dependency" OR DE "Acute Psychosis" OR DE "Acute Schizophrenia" OR DE "Addiction" OR DE "Alcoholism" OR DE "Drug Addiction" OR DE "Internet Addiction" OR DE "Sexual Addiction" OR "Amphetamine- Related Disorders" OR "Cocaine-Related Disorders" OR DE "Inhalant Abuse" OR DE "Glue Sniffing" OR "Marijuana Abuse" OR "Opioid-Related Disorders" OR "Phencyclidine Abuse" OR "intravenous substance abuse" OR "Mentally ill" OR "seriously mentally ill" OR SMI OR SPMI OR "serious mental illness" OR "seriously and persistently mental ill" OR "severe mental illness" OR "mental disorders" OR "mental problems" OR "mental illness"			
S5	S3 AND S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	615
S4	DE "Psychiatric Hospitals" AND (psychiatric AND hospital AND department*) OR DE "Community Mental Health Services" OR DE "Community Counseling" OR "psychiatric hospitalization" OR (psych* and hospital*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	208,354
S3	S1 AND S2	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	853
S2	DE "Treatment Duration" OR "treatment duration" OR "length of stay" OR DE "Advance Directives" OR "advance directives" OR DE "Behavioral Medicine" OR "behavioral health" OR DE "Case Management" OR "case management" OR DE "Crisis Intervention" OR DE "Debriefing (Psychological)" OR DE "Suicide Prevention" OR DE "Crisis Intervention Services" OR DE "Hot Line Services" OR DE "Suicide Prevention Centers" OR "crisis intervention" OR "crisis residential service" OR "crisis residential services" OR psychoeducation OR "bridge visit" OR "bridge visits" OR "follow up call" OR "follow up calls" OR "conditional release" OR conservatorship OR "transitional services" OR "transitional care" OR "transition support services" OR "community treatment orders" OR "assertive community treatment" OR	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	49,987

#	Query	Limiters/Expanders	Last Run Via	Results
	"outpatient treatment" OR "out-patient treatment" OR "extended leave" OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR DE "Law (Government)" OR DE "Civil Law" OR DE "Criminal Law" OR "mandatory program" OR "mandatory programs" OR "supervised discharge" OR "mandated treatment" OR "forced treatment" OR "compulsory community treatment" OR "compulsory treatment" OR "extended leave" OR "community treatment order" OR "involuntary outpatient treatment" OR "involuntary medication" OR "forced medication" OR ("court-ordered" AND medication) OR "assisted outpatient treatment"			
S1	(DE "Hospital Admission") OR (DE "Discharge Planning") OR "patient discharge" OR "discharge service" OR "discharge services" OR [mh "Patient Readmission"] OR "brief admission" OR "patient admission" OR readmission*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	4,298

PsycINFO (EBSCO is vendor) Original Search, 6/23/14

#	Query	Limiters/Expanders	Last Run Via	Results
S21	S11 OR S13 OR S15 OR S18	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	40
S20	S9 AND S19	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	0
S19	"Case-Control Studies" OR "Cohort Studies" OR "Organizational Case Studies" OR "Cross-Over Studies"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	1,729
S18	S9 AND S17	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	3
S17	"prospective cohort" OR "prospective studies" OR (prospective* AND cohort)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	10,073
S16	S9	Limiters - Methodology: - Systematic Review Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	0
S15	S9 AND S14	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	33
S14		Limiters - Methodology: TREATMENT OUTCOME/CLINIC AL TRIAL Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	27,136
S13	S9 AND S12	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	11
S12	"Randomized Controlled Trial"OR "Single-Blind Method" OR "Double-Blind Method" OR DE "Random Sampling" OR "Random Allocation"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	9,227

#	Query	Limiters/Expanders	Last Run Via	Results
S11	S9 AND S10	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	2
S10	("review" AND "systematic") OR "systematic review" OR ("review literature as topic" AND "systematic") OR "meta-analysis" OR "meta-analysis as topic"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	30,391
S9	S8	Limiters - Age Groups: Adulthood (18 yrs & older); Population Group: Human Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	413
S8	S5 OR S7	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	623
S7	S3 AND S6	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	213
S6	DE "Homeless Mentally Ill" OR DE "Mentally Ill Offenders" OR "Mentally Ill Persons" OR DE "Mental Disorders" OR DE "Adjustment Disorders" OR DE "Affective Disorders" OR DE "Alexithymia" OR DE "Anxiety Disorders" OR DE "Autism" OR DE "Chronic Mental Illness" OR DE "Dementia" OR DE "Dissociative Disorders" OR DE "Eating Disorders" OR DE "Elective Mutism" OR DE "Factitious Disorders" OR DE "Gender Identity Disorder" OR DE "Hysteria" OR DE "Impulse Control Disorders" OR DE "Koro" OR DE "Mental Disorders due to General Medical Conditions" OR DE "Neurosis" OR DE "Paraphilias" OR DE "Personality Disorders" OR DE "Pervasive Developmental Disorders" OR DE "Pseudodementia" OR DE "Psychosis" OR DE "Schizoaffective Disorder" OR "substance abuse disorders" OR DE "Drug Addiction" OR DE "Heroin Addiction" OR DE "Drug Dependency" OR DE "Acute Psychosis" OR DE "Acute Schizophrenia" OR DE "Addiction" OR DE "Alcoholism" OR DE "Drug Addiction" OR DE "Internet Addiction" OR DE "Sexual Addiction" OR "Amphetamine-Related Disorders" OR "Cocaine-Related Disorders" OR DE "Inhalant Abuse" OR	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	282,250

#	Query	Limiters/Expanders	Last Run Via	Results
	DE "Glue Sniffing" OR "Marijuana Abuse" OR "Opioid-Related Disorders" OR "Phencyclidine Abuse" OR "intravenous substance abuse" OR "Mentally ill" OR "seriously mentally ill" OR SMI OR SPMI OR "serious mental illness" OR "seriously and persistently mental ill" OR "severe mental illness" OR "mental disorders" OR "mental problems" OR "mental illness"			
S5	S3 AND S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	599
S4	DE "Psychiatric Hospitals" AND (psychiatric AND hospital AND department*) OR DE "Community Mental Health Services" OR DE "Community Counseling" OR "psychiatric hospitalization" OR (psych* and hospital*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	201,469
S3	S1 AND S2	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	829
S2	DE "Treatment Duration" OR "treatment duration" OR "length of stay" OR DE "Advance Directives" OR "advance directives" OR DE "Behavioral Medicine" OR "behavioral health" OR DE "Case Management" OR "case management" OR DE "Crisis Intervention" OR DE "Debriefing (Psychological)" OR DE "Suicide Prevention" OR DE "Crisis Intervention Services" OR DE "Hot Line Services" OR DE "Suicide Prevention Centers" OR "crisis intervention" OR "crisis residential service" OR "crisis residential services" OR psychoeducation OR "bridge visit" OR "bridge visits" OR "follow up call" OR "follow up calls" OR "conditional release" OR conservatorship OR "transitional services" OR "transitional care" OR "transition support services" OR "community treatment orders" OR "assertive community treatment" OR "outpatient treatment" OR "out-patient treatment" OR "extended leave" OR ("commitment of mentally ill" AND outpatient*) OR (outpatient AND commitment) OR (involuntary AND commitment) OR DE "Law (Government)" OR DE "Civil Law" OR DE "Criminal Law" OR "mandatory program" OR "mandatory programs" OR "supervised discharge" OR "mandated"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	48,608

#	Query	Limiters/Expanders	Last Run Via	Results
	treatment" OR "forced treatment" OR "compulsory community treatment" OR "compulsory treatment" OR "extended leave" OR "community treatment order" OR "involuntary outpatient treatment" OR "involuntary medication" OR "forced medication" OR ("court-ordered" AND medication) OR "assisted outpatient treatment"			
S1	(DE "Hospital Admission") OR (DE "Discharge Planning") OR "patient discharge" OR "discharge service" OR "discharge services" OR [mh "Patient Readmission"] OR "brief admission" OR "patient admission" OR readmission*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - PsycINFO	4,184
#16	Search ("Randomized Controlled Trial"[Publication Type] OR "Single-Blind Method"[MeSH] OR "Double-Blind Method"[MeSH] OR "Random Allocation"[MeSH])			458205
#17	Search (#13 and #16)			101
#18	Search (#9 not #11) Filters: Clinical Trial; Adult: 19+ years			162
#19	Search (#13 and ("prospective cohort" OR "prospective studies"[MeSH] OR (prospective*[All Fields] AND cohort[All Fields] AND (study[All Fields] OR studies[All Fields])))			111
#20	Search (#13 and ("Case-Control Studies"[MeSH] OR "Cohort Studies"[MeSH] OR "Organizational Case Studies"[MeSH] OR "Cross-Over Studies"[MeSH]))			702
#21	Search (#15 or #17 or #18 or #19 or #20)			790
#22	Search (#15 or #17 or #18 or #19)			258
#23	Search (#15 or #17 or #18 or #19) Filters: English			241
#24	Search (#15 or #17 or #18 or #19 or #20) Filters: English SAVED			717
#25	Search (#21 NOT #24) NON-ENGLISH SAVED SEPARATELY			73

Appendix C. Excluded Studies

Exclusion Codes

- X1 = Ineligible Publication Type or Wrong Language
- X2 = Ineligible Population(s)
- X3 = Ineligible/No Intervention(s)
- X4 = Ineligible Setting(s)
- X5 = Does not answer any GQ
- X6 = Ineligible Study Design
- X7 = Ineligible/No Comparator(s)
- X8 = Irretrievable – only abstract available

- | | |
|---|---|
| <p>1. Nursing Interventions to Improve Functional Outcome in Patients with Severe Mental Illness (NISMI). Exclusion Code: X2</p> <p>2. Comprehensive aftercare service for patients with severe mental illnesses. Exclusion Code: X2</p> <p>3. Recovery Guide Intervention for Recurrent Psychiatric Hospitalization. Exclusion Code: X1</p> <p>4. Supported discharge vs In-patient Treatment Evaluation (SITE) Exclusion Code: X2</p> <p>5. Longer stays, MH care lower SA readmissions. Mental Health Weekly. 1995;5(4):4. PMID: 9502064067. Exclusion Code: X1</p> <p>6. Home setting offers alternative for clients in crisis. Mental Health Weekly. 1996;6(22):1. PMID: 9606173957. Exclusion Code: X1</p> <p>7. The rise in emergency admissions project. Executive summary (Structured abstract). Database of Abstracts of Reviews of Effects: Coventry University, Coventry Business School; York; 1998. p. 1ff. Exclusion Code: X2</p> <p>8. Gold Award: the Wellspring of the clubhouse model for social and vocational adjustment of persons with serious mental illness. Psychiatr Serv. 1999 Nov;50(11):1473-6. PMID: 10543858. Exclusion Code: X2</p> <p>9. No benefit or harm in treatment orders. Community Care. 2007(1664):10-. PMID: 24693567. Exclusion Code: X1</p> | <p>10. Aberg-Wistedt A, Cressell T, Lidberg Y, et al. Two-year outcome of team-based intensive case management for patients with schizophrenia. Psychiatr Serv. 1995 Dec;46(12):1263-6. PMID: 8590112. Exclusion Code: X2</p> <p>11. Adams CL, El-Mallakh RS. Patient outcome after treatment in a community-based crisis stabilization unit. J Behav Health Serv Res. 2009 Jul;36(3):396-9. PMID: 18766444. Exclusion Code: X2</p> <p>12. Adams P, Nielson H. Evidence based practice: decreasing psychiatric revisits to the emergency department. Issues Ment Health Nurs. 2012 Aug;33(8):536-43. PMID: 22849781. Exclusion Code: X2</p> <p>13. Addington DE, McKenzie E, Wang J. Validity of hospital admission as an outcome measure of services for first-episode psychosis. Psychiatr Serv. 2012 Mar;63(3):280-2. PMID: 22267251. Exclusion Code: X2</p> <p>14. Adesanya A. Impact of a crisis assessment and treatment service on admissions into an acute psychiatric unit. Australas Psychiatry. 2005 Jun;13(2):135-9. PMID: 15948909. Exclusion Code: X2</p> <p>15. Audini B, Marks IM, Lawrence RE, et al. Home-based versus out-patient/in-patient care for people with serious mental illness. Phase II of a controlled study. Br J Psychiatry. 1994 Aug;165(2):204-10. PMID: 7953033. Exclusion Code: X2</p> <p>16. Banerjee S, O'Neill-Byrne K, Exworthy T, et al. The Belmarsh Scheme. A prospective study of the transfer of mentally disordered remand prisoners from prison to psychiatric units. Br J Psychiatry. 1995 Jun;166(6):802-5. PMID: 7663832. Exclusion Code: X2</p> |
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Appendix D. Potentially Relevant Ongoing and Unpublished Studies

Table D1. Ongoing studies

Study Name Location Trial Identifier	Sponsors and Collaborators Study Status	Population Disease/Condition Age	Interventions / Groups	Primary Outcome Measures
Peer support for schizophrenia Location NR CD010880	Cochrane Schizophrenia Group Ongoing, publication date NR	Majority of patients in included studies required to: <ul style="list-style-type: none"> • Be adults • Have diagnosis of schizophrenia, schizophrenia-like disorders, bipolar disorder, or serious affective disorders 	Long-term approach for reducing readmissions in high-risk individuals: Community-based peer support interventions Comparators: <ul style="list-style-type: none"> • Other psychosocial or supportive intervention not involving a “peer” individual or group • Standard care 	<ul style="list-style-type: none"> • Hospital admission • Time to hospitalization • Use of specialist community services (i.e., early interventions, assertive outreach and crisis teams) • Relapse • Time to relapse
Effectiveness and Cost Effectiveness of Peer Mentors in Reducing Hospital Use Connecticut, US NCT01566513	NIMH Ongoing, publication date NR	<ul style="list-style-type: none"> • Aged 18 years or older • ≥2 psychiatric hospitalizations in the past year • Diagnosis of SMI 	Long-term approaches for reducing readmissions in high-risk individuals: <ul style="list-style-type: none"> • Community-based peer support interventions delivered by peer case managers • Community-based peer support interventions delivered by non-peer recovery mentors 	<ul style="list-style-type: none"> • Service use
S22-01 - Preventive monitoring of psychiatric patients at risk for compulsory readmission: preliminary results of a multi-center RCT Mannheim, Germany Study identifier NR	Sponsors NR Ongoing; preliminary results available, but final analyses and publication unavailable	<ul style="list-style-type: none"> • Aged 18-65 years • Psychiatric inpatients with schizophrenia or affective disorder 	Comparator: Standard care Transitional support service: Comprehensive psychoeducational program consisting of: (1) Focus on warning signs; (2) Distribution of crisis cards; (3) 24-month preventive monitoring of patients’ mental health status and health care use Comparator: Standard care	<ul style="list-style-type: none"> • Psychiatric symptoms • Risk for violence • Treatment satisfaction • Empowerment • Quality of life • Health care use

Table D1. Ongoing studies (continued)

Study Name Location Trial Identifier	Sponsors and Collaborators Study Status	Population Disease/Condition Age	Interventions / Groups	Primary Outcome Measures
P-601 - Understanding the revolving door syndrome Coimbra, Portugal Study identifier NR	Sponsors NR Ongoing; preliminary results, but final analyses and publication both unavailable	<ul style="list-style-type: none"> Patients with high number of admissions to Coimbra University Hospitals 	Social network and clinical service use, but specific types being evaluated NR	<ul style="list-style-type: none"> Hospital readmission
Goal setting and activities to enhance goal pursuit for adults with acquired disabilities participating in rehabilitation Location NR CD009727	Cochrane Consumers and Communication Group Ongoing, publication date NR	<ul style="list-style-type: none"> People receiving rehabilitation for disability acquired in adulthood (i.e., after 16 years of age) Presence of cognitive or psychiatric impairments in study populations will comprise subgroup analysis if enough evidence available 	<p>Long-term approaches for reducing readmissions in high-risk individuals:</p> <ul style="list-style-type: none"> Goal setting interventions Interventions to enhance goal pursuit One approach to goal setting and/or activities to enhance goal pursuit <p>Comparators:</p> <ul style="list-style-type: none"> No goal setting No additional activities to enhance goal pursuit Other approaches to goal setting and/or activities to enhance goal pursuit 	<ul style="list-style-type: none"> Health-related quality of life Activity outcomes (e.g., activities of daily living, mobility) Participation outcomes (e.g., work, community integration, social relationships)
Enhanced crisis planning for serious mental illness Location NR CD009482	Cochrane Schizophrenia Group Ongoing, publication date NR	<ul style="list-style-type: none"> Adults between 18 and 65 years Diagnosed with schizophrenia, schizophrenia-like disorders, bipolar disorder, or depressive disorders using any criteria Any length of illness and treatment setting eligible 	<p>Long-term approach for reducing readmission: Crisis planning interventions (any type meant primarily to prevent relapse and hospital readmission)</p> <p>Comparator: Standard care</p>	<ul style="list-style-type: none"> Hospital readmission, relapse of mental illness, or both

Table D1. Ongoing studies (continued)

Study Name Location Trial Identifier	Sponsors and Collaborators Study Status	Population Disease/Condition Age	Interventions / Groups	Primary Outcome Measures
P02-292 - A randomized controlled trial on the efficacy of group psychoeducation family intervention for carers of persons with schizophrenia in Shanghai Shanghai Changning Mental Health Center, Shanghai Jiao Tong University, Shanghai, China Trial identifier NR	Sponsors NR Study status NR	<ul style="list-style-type: none"> Patients with schizophrenia and their relatives 	<p>Long-term approach for reducing readmissions in high-risk individuals: Community-based, group psychoeducational family intervention</p> <p>Comparator: Control group, details of care received NR</p>	<ul style="list-style-type: none"> Hospital readmission Knowledge related to mental illness Family attitudes toward patient Overall (not specified) Treatment compliance Rate of relapse Overall functioning Marital role Care of self Negative influence on society
27.5. The impact of community treatment orders on patients with assertive community treatment and without Ottawa, Canada Study identifier NR	Sponsors NR Preliminary findings available, but study status NR and manuscript unavailable	<ul style="list-style-type: none"> Patients with “the highest intensity of community based service available prior to a CTO being considered” Population characteristics NR 	<p>Long-term approach for reducing readmissions in high-risk individuals: CTO in combination with ACT</p> <p>Comparator: CTO without ACT</p>	<ul style="list-style-type: none"> Hospital bed days Diagnosis Concurrent substance abuse Criminal justice encounters

ACT = assertive community treatment; CTO = community treatment orders; NIMH = National Institutes of Mental Health; NR = not reported; RCT = randomized controlled trial; SMI = serious mental illness; US = United States

Table D2. Unpublished study

Study Name Location Trial Identifier	Sponsors and Collaborators Study Status	Population Disease/Condition Age	Interventions / Groups	Primary Outcome Measures
P-1177 - "Porta aberta" - a psychoeducational programme for bipolar disorders' patients Amadora, Portugal Study identifier NR	Sponsors NR Completed, but manuscript unavailable	<ul style="list-style-type: none"> • Patients with bipolar disorder discharged from inpatient psychiatric hospital • Age eligibility NR, but mean age 37.3 	Transition support service: Group psychoeducation program called "Porta Aberta" (Open Door) based in a day hospital Comparator: Single-group pre-post comparison	<ul style="list-style-type: none"> • Hospital readmission • Average LOS during readmission

LOS = length of stay; NR = not reported

Appendix E. Characteristics and Outcomes for Management Strategies

Table E-1. Characteristics and outcomes for length of stay (LOS) studies

Citation Design Sample Size Length of Followup	Population: Diagnosis types, mean prior hospitalizations country, setting	Intervention	Comparator(s)	Outcomes	Results
Appleby et al., 1993 ¹ Cohort (Retrospective) 1,500 18 months	All psychotic disorder patients 5.4 US, inpatient	≤7 days (n=316)	8-14 days (n=352); 15-30 days (n=343) 31-60 days (n=232); >60 days (n=257)	Readmission rate	Shorter hospital stay groups (≤14 days) produced higher readmission rates at 1 and 18 months
Appleby et al., 1996 ² Cohort (retrospective) 165 12 months	All psychotic disorder patients 11 US, inpatient	Long-stay unit (mean of 69 days) (n=55)	Shorter-stay units (means of 32 to 35 days); (n=55; n=55)	Number of readmissions	Number of readmissions did not differ by LOS

LOS = length of stay; US = United States.

Table E-2. Characteristics and outcomes for transitional support service studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Aftercare services Barekattain et al., 2014 ³ RCT 123 1 year	All psychotic or bipolar disorder patients (schizophrenia, schizoaffective disorder, or bipolar I disorder with mania or mixed subtype) ≥2 Iran, outpatient	Defined aftercare (follow-up phone calls and home visits to prompt adherence) and psychoeducation program for family members (n=61)	Usual care (n=62)	Number of readmissions	Aftercare services led to a lower number of readmissions at 12-month follow-up than usual care.
Aftercare services Lay et al., 2014 ⁷⁵ RCT 238 1 year (total duration is 2 years, but study in progress)	Patients with substance use, mood, psychotic, stress-related, and personality disorders 8.5 to 9.3 Switzerland, outpatient	Combined individualized transitional psychoeducation and long-term preventive monitoring (n=138)	Treatment as usual (n=138)	Number of readmissions (voluntary and compulsory) Readmission rates (voluntary and compulsory) LOS (voluntary and compulsory)	Patients receiving the psychoeducation and long-term preventive monitoring intervention had a lower rate of compulsory readmission than those receiving treatment as usual. The intervention group also trended toward lower rates and LOS of compulsory readmissions than the treatment as usual group.
Computerized decision support tool Schmidt-Kraepelin et al., 2009 ⁴ Non-randomized controlled study 93 12 months	All psychotic disorder patients 7.3 Germany, outpatient, MH/specialty care	Complex decision support intervention (n=46)	Treatment as usual (n=47)	Number of readmissions Readmission rate LOS (overall, voluntary, involuntary)	Decision support tool group had decreased number of readmissions and readmission rate. No differences in LOS when readmitted, although a trend toward decreased LOS seen in the decision support group.

Table E-2. Characteristics and outcomes for transitional support service studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Needs-oriented discharge planning Puschner et al., 2011 ⁵ Puschner et al., 2008 ⁶ RCT 491 18 months	All psychotic and mood disorder patients 2.9 Germany, inpatient, MH/specialty care	Needs-oriented discharge planning and monitoring (n=241)	Treatment as usual (n=250)	Readmission rate LOS	No between-group differences in readmission rates or LOS when readmitted.
Supervised discharge Davies et al., 2001 ⁷ Davies et al., 1999 ⁸ Single-group pre- post 22 3 years	Mostly psychotic disorder patients and some diagnosed with mood disorders 7.3 UK, outpatient	Supervised discharge (n=22)	Unsupervised discharge (n=22)	Number of readmissions LOS	Supervised discharge appeared to produce fewer readmissions and decreased LOS when readmitted

Table E-3. Characteristics and outcomes for short-term alternatives to psychiatric rehospitalization studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Dilonardo et al., 1998 ⁹ RCT 57 24 months	Primarily psychotic, mood, and anxiety disorder patients with co-morbid polysubstance use disorders 5.04 US, inpatient	Scheduled intermittent hospitalization (4 admissions per year, each lasting 9-11 days and scheduled 11-13 weeks apart) (n=26)	Unplanned emergency hospitalizations or standard care (n=31)	Number of unplanned readmissions Hospital bed-days	No between-group differences in number of unplanned readmissions or hospital bed-days.
Fenton et al., 1998 ¹⁰ Fenton et al., 2002 ¹¹ RCT 119 6 months	Psychotic, mood, personality, and other disorder patients 12 to 14 US, outpatient, MH/specialty care	Residential crisis care (n=69)	Admission to psychiatric hospital (n=50)	Readmission rate LOS	Readmission rates did not differ between groups. Partial hospitalization group experienced <i>longer</i> average LOS when readmitted.
Dumont et al., 2002 ¹² RCT 265 12 months	All patients with a DSM-III R diagnosis NR, but majority had ≥4 US, MH/specialty care	Access to crisis residential service plus usual service (n = NR) usual service (n = NR)	Usual service (n = NR)	Readmission rate	Lower readmission rate in crisis residential service group at 6 and 12 months than in the usual service group.
Merchant et al., 1994 ¹³ Single-group pre-post (retrospective) 44 2 to 5 years	PTSD, psychotic disorder, and mood disorder patients 0.9 overall and 1.9 unplanned admissions per year US, MH/specialty care	Tune Up Program (planned hospitalizations) (n=44)	Pre-Program (n=44)	Number of readmissions Number of unplanned readmissions LOS	After patients began planned hospitalizations (Tune Up), the number of planned readmissions increased, while both the number of unplanned readmissions and the LOS decreased.

LOS = length(s) of stay; MH = mental health; n = number of participants; NR = not reported; PTSD = posttraumatic stress disorder; RCT = randomized controlled trial; US = United States

Table E-4. Characteristics and outcomes for ACT studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Bond et al., 1990 ¹⁴ RCT 88 12 months	Primarily psychotic and mood disorder patients ≥5 US, outpatient	ACT (n=45)	Drop-in centers supplemented by aftercare services (n=43)	Number of readmissions Readmission rates LOS Hospital bed-days	For state hospitals, the ACT group had fewer 12- month hospital readmissions and hospital bed-days than drop-in center patients. However, the ACT group experienced no change in the average LOS when readmitted, and there was no difference in readmission rates. For private hospitals, no differences in the number of readmissions, readmission rates, or LOS.
Botha et al., 2010 ¹⁵ RCT 60 12 months	All psychotic disorder patients ≥2 South Africa, inpatient, outpatient, MH/Specialty Care	ACT (n=34)	Control group (n=26)	Number of readmissions Readmission rates Hospital bed-days	The ACT group had lower numbers of readmissions, smaller readmissions rates, and fewer hospital bed-days than the control group.
Botha et al., 2014 ¹⁶ RCT 60 12 months	All psychotic disorder patients ≥4 South Africa, inpatient, outpatient, MH/specialty care	Modified ACT (N=34)	Standard care (community mental health care) (n=26)	Number of readmissions Hospital bed-days	ACT group experienced fewer 36-month readmissions and decreased hospital bed- days than the standard care group.

Table E-4. Characteristics and outcomes for ACT studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Essock & Kontos, 1995 ¹⁷ RCT 262 12 months	Nearly all psychotic and mood disorder patients, some diagnosed with other Axis I disorders NR, but patients identified as high risk of readmission US, inpatient, outpatient, MH/specialty care	ACT (n=NR)	Standard case management (n=NR)	Proportion of days hospitalized (a variation of hospital bed-days)	The ACT group spent about half as much time hospitalized during 12 month followup as standard case management clients.
Sytema et al., 2007 ¹⁸ RCT 118 3 to 12 months	Primarily psychotic, mood, and delusional disorder patients 3.1 to 4.2 The Netherlands, outpatient	ACT (n=59)	Standard community mental health control (n=59)	Number of readmissions Hospital bed-days	No between-group differences in number of readmissions, hospital bed-days in a psychiatric hospital, or hospital bed- days in closed wards.
Bond et al., 1991 ¹⁹ Cohort (prospective) 31 2 years	Patients mostly diagnosed with psychotic disorders 2.6 to 2.7 US, outpatient	ACT (team ICM) (n=29)	Senior case management (individual ICM) (n=10)	Number of readmissions Readmission rate Hospital bed-days	No between-group differences overall in number of readmissions, but over time there was a trend for declining hospital readmissions for ACT clients vs. an alternating decreasing and increasing pattern for Senior Case Manager clients. ACT group had a lower readmission rate, but no difference in hospital bed-days, than the Senior Case Management group.

Table E-4. Characteristics and outcomes for ACT studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Hamernik et al., 1999 ²⁰ Non-randomized controlled trial 38 12 months	Nearly all psychotic and mood disorder patients 3.19 to 5 Australia, inpatient, outpatient, MH/specialty care	ACT (n=18)	Standard case management (n=20)	Readmission rates Hospital bed-days	No between-group differences in 12-month readmission rates or hospital bed-days during readmissions, although both groups experienced reductions.
Liem et al., 2013 ²¹ Cohort (prospective with historical control) 24 months	Primarily psychotic, mood or anxiety, or personality or substance use disorder patients 3.6 to 3.7 Hong Kong, outpatient	ACT (n=70)	Usual care (n=70)	Number of readmissions Readmission rate Hospital bed-days (overall, voluntary, involuntary)	ACT group had greater reduction in number of readmissions, readmission rates, and hospital bed-days than the usual care group
Dincin et al., 1993 ²² Single-group pre-post (prospective or ≥3 retrospective, type unclear) 66 12 months	Patients with mostly psychotic disorders and also major affective disorder US, outpatient, MH/specialty care	ACT (n=66)	Pre-ACT (n=66)	Readmission rate Hospital bed-days	After ACT, the sample demonstrated a reduction in state hospital readmissions and fewer hospital bed-days.
Tibbo et al., 1999 ²³ Single-group pre-post (retrospective) 295 12 months	Patients with mixture of psychotic, mood, personality, and other disorders 1.26 Canada, outpatient	ACT (n=295)	Pre-ACT (n=295)	Readmission rate Hospital bed-days	After ACT, the sample demonstrated lower readmission rate and lower average number of hospital bed-days.

Table E-4. Characteristics and outcomes for ACT studies (continued)

Citation	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Udechuku et al., 2005 ²⁴	Nearly all psychotic disorder patients with a single case of mood disorder and several comorbid personality and anxiety disorders	ACT (n=43)	Pre-ACT (n=43)	Readmission rate LOS	After ACT, readmission rate trended toward being lower, and the average LOS during readmissions decreased.
Single-group pre-post					
43					
12 months	0.8; identified at high risk of readmission				
	Australia, outpatient				
Dietzen et al., 1993 ²⁵	Sample of patients with more than half diagnosed with psychotic disorders (other diagnoses NR)	ACT, 7 unique programs in Chicago, Indiana, Philadelphia (n=155)	Pre-ACT (n=155)	Hospital bed-days	After ACT, no differences in hospital use across sites.
Secondary analysis of earlier study data	10.6				Four programs with moderate or substantial impact in reducing hospital days also had moderate to high levels of service intensity. Three programs with minimal impact on hospital use had moderate to low service intensities.
155	US, MH/specialty care				
Study duration NR					

ACT = assertive community treatment; ICM = intensive case management; LOS = length(s) of stay; MH = mental health; NR = not reported; RCT = randomized controlled trial; US = United States.

Table E-5. Characteristics and outcomes for OPC/CTO studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Burns et al., 2013 ²⁶ OCTET RCT 336 12 months	All psychotic disorder patients Median of 5-6 UK, outpatient	CTO (n=167)	Section 17 (a rehabilitation practice, used for brief periods to assess the stability of a patient's recovery after or during a period of involuntary hospital treatment) (n=169)	Readmission rate Hospital bed-days	No between-group differences in readmission rate or hospital bed-days.
Steadman et al., 2001 ²⁷ RCT 142 3 years	Primarily patients with psychotic disorders, many with co-occurring substance use disorders NR, but all patients identified as having high risk of multiple readmissions US, outpatient	OPC in addition to enhanced service package only (n=78)	Enhanced service package only (n=64)	Readmission rate Hospital bed-days	No between-group differences in readmission rates or hospital bed-days.
Swartz et al., 1999 ²⁸ Compton et al., 2003 ²⁹ RCT 264 12 months	Psychotic and mood disorder patients 1.4 to 1.5 US, outpatient	OPC (standard or extended, meaning ≥ 180 days) (n=129) ^a	Release from outpatient commitment (n=135) ^b	Number of readmissions Readmission rate Hospital bed-days	No between-group differences in number of readmissions, readmission rates, or hospital bed-days. However, among psychotically disordered individuals, extended outpatient commitment reduced hospital readmissions when combined with a higher intensity of outpatient treatment.

Table E-5. Characteristics and outcomes for OPC/CTO studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Segal et al., 2006 ³⁰⁻³³ Cohort (retrospective) 24,973 Up to 10 years	Patients diagnosed with psychotic, mood, dementia, and other disorders 3.0 Australia, outpatient	CTO (n=8,879)	Not placed on CTO (n=16,094)	Number of readmissions LOS Hospital bed-days	Patients on CTOs as a requirement for conditional release had more readmissions and hospital bed-days but also a decrease in the average LOS of inpatient stays. Fewer readmissions, fewer hospital bed-days, and shorter LOS when CTO initiated as part of conditional release during first hospitalization versus later hospitalization or not at all. Patients had fewer hospital bed-days when issued CTOs initiated in the community versus in the hospital or a combination of both. Following community treatment under extended CTOs (i.e., ≥180 days), patients had fewer readmissions and hospital bed-days than those on extended (i.e., ≥180 days) voluntary outpatient treatment.
Swartz et al., 2010 ³⁴ Cohort (retrospective) 3,576 1 year	Patients diagnosed with schizophrenia, mood disorders, and other disorders NR, but patients at high risk of readmission US, outpatient	OPC in combination with ICM (n=NR) OPC in combination with ACT (n=NR) Short-term OPC (0-6 months) (n=NR) Long-term OPC (7-12 months) (n=NR)	ACT alone (n=NR) Pre-OPC (n=NR)	Readmission rate Hospital bed-days	OPC in combination with ICM or ACT led to a lower rate of readmission than ACT alone. Both short- and long-term OPCs led to reduced readmission rates and hospital bed-days compared with the pre- OPC period.

Table E-5. Characteristics and outcomes for OPC/CTO studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Vaughan et al., 2000 ³⁵ Cohort (retrospective) 246 12-60 months	All psychotic disorder patients, 5.17 to 6.24 Australia, outpatient	CTO (n=123)	Matched control (n=123)	Readmission rate	Readmission rates for those on CTO tended to be higher than those of the control group.
Geller et al., 1998 ³⁶ Cohort (prospective or retrospective, type unclear) 38 6 months	Primarily patients with schizophrenia (other diagnoses NR) 1.53 to 1.63 US, outpatient	OPC (n=19)	Pre-OPC (19) Matched controls (n=19)	Number of readmissions Hospital bed-days	No between-group differences in the number of readmissions or hospital bed-days after OPC, although OPC and matched control groups experienced similar reductions in both outcomes.
Kisely et al., 2013 ³⁷ Case-control 5,916 1 year	Patients primarily diagnosed with psychotic disorders and less frequently with mood disorders 1.74 to 1.78 Australia, outpatient, MH/specialty care	CTO (n=2,958)	Control group (not on CTO) (n=2,958)	LOS	CTO patients and the control group experienced similar decreases in LOS when readmitted.

Table E-5. Characteristics and outcomes for OPC/CTO studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Segal et al., 2006 ³⁸ Case-control 1,182 2 years	Nearly all psychotic disorder patients with some also diagnosed with major affective and personality disorders 37.2 to 56.3 inpatient days per year before index admission Australia, outpatient	CTO (n=591)	Control (patients not placed on CTO) (n=591)	Number of readmissions LOS Hospital bed-days	Patients with CTOs had greater decreases in the number of readmissions, LOS, and hospital bed- days.
Christy et al., 2009 ³⁹ Single-group pre-post (retrospective) 50 2 years	Patient diagnoses NR NR, but patients at high risk of readmission US, outpatient	OPC (n=50)	Pre-OPC (n=50)	Number of readmissions (involuntary emergency and state hospital)	OPCs led to a decrease in involuntary emergency readmissions compared with the pre-OPC period. The effect of OPCs on state hospital readmissions was unclear.
Fernandez et al., 1990 ⁴⁰ Single-group pre-post 4,179	Psychotic, mood, personality, and other disorder patients 3.69 US, outpatient	OPC (n=4,179)	Pre-OPC (n=4,179)	Number of readmissions Hospital bed-days	After placement on CTO, number of readmissions and hospital bed-days decreased.
Greenberg et al., 2005 ⁴¹ Single-group pre-post (prospective) 26 3 to 5 years	Primarily patients with psychotic disorders, but also some with mood, personality, and comorbid substance use disorders 2.4 Israel, outpatient	OPC (n=26)	Pre-OPC (n=26)	Number of readmissions Hospital bed-days	After placement on CTO, number of readmissions and hospital bed-days decreased. Patients regularly attending treatment while on CTOs experienced a trend toward a greater reduction in hospital bed- days compared with non- adherent patients on CTOs.

Table E-5. Characteristics and outcomes for OPC/CTO studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Kallapiran et al., 2010 ⁴² Single-group pre-post (prospective) 28 1 year	Primarily patients with schizophrenia or related disorders 2.5 Australia, outpatient	CTO (n=26)	Pre-CTO (n=26)	Number of readmissions Hospital bed-days	Following use of CTOs, the number of readmissions per annum and hospital bed-days fell, when the index hospitalization was included. Excluding the index hospitalization, neither outcome differed after use of CTOs.
Munetz et al., 1996 ⁴³ Single-group pre-post (retrospective) 20 At least 12 months outpatient commitment	Primarily patients with schizophrenia, schizoaffective, and bipolar disorders, as well as some with co-morbid substance abuse histories 12.9 US, outpatient	OPC (n=20)	Pre-OPC (n=20)	Number of readmissions Hospital bed-days	Mean number of readmissions decreased with OPC in State hospitals, but not for those in General Hospitals. Mean number of hospital bed-days decreased with OPC in both hospital types.
Nakhost et al., 2012 ⁴⁴ Single-group pre-post (retrospective) 72 2 to 10 years	Primarily patients with psychotic disorders, but also some with mood disorders and co-morbid personality disorders 2.85 Canada, outpatient	CTO (n=72)	Pre-CTO (n=72)	Readmission rate	After placement on CTO, readmission rate decreased.
O'Brien et al., 2005 ⁴⁵ Single-group pre-post (retrospective) 25 12 months	Primarily patients with psychotic disorders, but also some with mood disorders and co-morbid anxiety, personality, and substance use disorders 1.96 (range: 1 to 4) Canada, outpatient	CTO (n=25)	Pre-CTO (n=25)	Number of readmissions Hospital bed-days	After placement on CTO, number of readmissions and hospital bed-days decreased.

Table E-5. Characteristics and outcomes for OPC/CTO studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Rohland et al., 1998 ⁴⁶ Single-group pre-post (retrospective) 81 12 months	Patients with psychotic disorders, bipolar affective disorders, MDD with psychosis, and psychotic disorders 1.3 US, Outpatient	OPC (n=81)	Pre-OPC (n=81)	Number of readmissions LOS Hospital bed-days	OPC significantly reduced the number of readmissions, LOS when readmitted, and hospital bed-days.
Zanni et al., 2007 ⁴⁷ Single-group pre-post (retrospective) 193 2 years	Patient diagnoses NR 4.25 US, outpatient	OPC (n=115)	Pre-OPC (n=115) ^c	Readmission rate LOS Hospital bed-days	After placement on OPC, readmission rates decreased, and LOS and hospital bed-days remained similar compared with the pre- CTO period.

^a In Elbogen et al., 2003,⁴⁸ available n = not reported, but overall N available for analysis of financial coercion = 258. In Swanson et al., 2001⁴⁹ available n = 148 and overall N available for analysis of patients with histories of both arrest and psychiatric hospitalization = 262.

^b In Elbogen et al., 2003,⁴⁸ available n = not reported, but overall N available for analysis of financial coercion = 258. In Swanson et al., 2001⁴⁹ available n = 114 and overall N available for analysis of patients with histories of both arrest and psychiatric hospitalization = 262.

^c This study⁴⁷ also included a control group of patients with at least one prior psychiatric admission between 1995 and 1997, like the OPC group. However, there was no indication that the control group was at high risk of multiple psychiatric admissions. We therefore could only use pre-post data for the OPC group.

CTO = compulsory treatment order(s); ICM = intensive case management; LOS = length(s) of stay; MDD = major depressive disorder; MH = mental health; n = number of participants; N = overall sample; OCTET = Community Treatment Orders for Patients with Psychosis Trial; OPC = involuntary outpatient commitment; RCT = randomized controlled trial; UK = United Kingdom; US = United States.

Table E-6. Characteristics and outcomes for case management studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Burns et al., 1999 ⁵⁰ Tyrer et al., 1999 ⁵¹ RCT 708 2 years	All psychotic disorder patients ≥2 UK, MH/specialty care	ICM (n=353)	Standard case management (n=355)	Number of readmissions Hospital bed- days	No between-group differences in number of readmissions or hospital bed-days in the overall sample. However, ICM led to reductions in number of readmissions and hospital bed-days among patients with borderline intelligence.
Bush et al., 1990 ⁵² RCT 28 12 months	All patients meeting criteria for severe psychiatric disability and diagnosed with schizophrenia, bipolar disorder, or personality disorders 2 to 18. US, various settings (home, jail, inpatient, community)	ICM (n=14)	Standard case management (n=14)	Number of readmissions Hospital bed- days	ICM resulted in a greater decrease in number of hospital admissions and hospital bed-days than standard case management.
Chan et al., 2000 ⁵³ RCT 62 11 months	All psychotic disorder patients ≥3 China, outpatient	Case management (n=31)	Traditional community psychiatric nursing (CPN) care (n=31)	Readmission rate (unplanned) Hospital bed- days (unplanned)	No between-group difference in unplanned readmission rates. However, case management led to fewer hospital bed- days (1 patient) than traditional care (1 patient).
Harrison-Read et al., 2002 ⁵⁴ RCT 193 2 years	Primarily psychotic and mood disorder patients, with some personality or other disorders 5.4 to 5.6 UK, outpatient	ICM (enhanced community management) (n=97)	Usual care (n=96)	Number of readmissions LOS Hospital bed- days	No between-group differences in number of readmissions hospital bed-days. However, ICM led to shorter LOS when readmitted than usual care.

Table E-6. Characteristics and outcomes for case management studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Lichtenberg et al., 2008 ⁵⁵ RCT, with a third nonrandomized group 370 12 months	Mostly patients with psychotic disorders, but also some with mood, personality, and other disorders 12 to 12.9 Israel, outpatient	ICM (clinical case management) (n=122)	Standard care (n=95) No treatment (nonrandomized) (n=153)	Number of readmissions Readmission rate Hospital bed- days	No between-group differences in number of readmissions, readmission rate, or hospital bed-days.
Muijen et al., 1994 ⁵⁶ RCT 82 18 months	All psychotic or affective psychotic disorder patients ≥2 UK, MH/specialty care, primary care	ICM (intensive aftercare) (n=41)	Generic aftercare (CPN) (n=41)	Number of readmissions LOS	No between-group differences in number of readmissions or LOS when readmitted.
Quinlivan et al., 1995 ⁵⁷ RCT 90 2 years	Nearly all psychotic and mood disorder patients ≥3 US, MH/specialty care	ICM (n=30)	Traditional case management (n=30) Standard care (n=30)	LOS	ICM group had shorter LOS compared with standard care. ICM group had a trend toward shorter LOS compared with traditional case management.

Table E-6. Characteristics and outcomes for case management studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Schmidt et al., 2008 ⁵⁸ Non-randomized controlled trial 142 Follow-up NR	Primarily patients with psychotic and affective disorders, as well as adjustment and personality disorders and co-morbid substance abuse disorders NR, but all patients identified as having history of multiple admissions US, setting NR	Case management with consumer provider (n=75)	Case management without consumer provider (n=67)	Number of readmissions Readmission rate Hospital bed- days	No between-group differences in readmission rates or numbers of readmissions. Results for hospital bed-days NR.
Hornstra et al., 1993 ⁵⁹ Cohort (retrospective) 224 24 months	All psychotic disorder patients 3.46 to 3.83 US, outpatient	ICM (n=112)	Traditional case management (n=112)	Number readmissions Readmission rate Hospital bed- days	No between-group differences in number of readmissions, readmission rate, or hospital bed-days.
Kolbasovsky et al., 2009 ⁶⁰ Cohort (retrospective) 652 1 month	Nearly all psychotic and mood disorder patients NR, all patients identified by predictive model ⁶¹ as having high risk of readmission in next year US, outpatient	ICM (n=305)	Historical control group (no ICM) (n=347)	Readmission rate Hospital bed- days	ICM group had a lower 30-day readmission rate and fewer hospital bed-days than the historical control group.
Kolbasovsky et al., 2010 ⁶² Non-randomized controlled trial (historical controls used) 596 6 months	Primarily psychotic and bipolar disorder patients identified by predictive model ⁶¹ as having high risk of readmission in next year US, outpatient	ICM (n=290)	Historical control group (no ICM) (n=306)	Readmission rate Hospital bed- days	ICM group had lower readmission rate than the historical control group. Results for hospital bed-days unclear.

Table E-6. Characteristics and outcomes for case management studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Parson et al., 1999 ⁶³ Cohort (prospective or retrospective, type unclear) 60 Study duration NR	Patients diagnosed primarily with psychotic, mood, and adjustment disorders NR, but patients identified as having high risk of multiple admissions US, outpatient	Case management (n=24)	No case management (n=36)	Readmission rate	No between-group difference in readmission rate.
Preston et al., 2000 ⁶⁴ Cohort (retrospective) 160 2 years	Primarily psychotic, mood, and affective disorder patients and some diagnosed with not otherwise specified conditions ≥2 Australia, outpatient	ICM (n=80)	Matched control (n=80)	Hospital bed-days	ICM group had fewer hospital bed-days at both 1 and 2 years post-treatment compared with controls.
Rothbard et al., 2012 ⁶⁵ Cohort (prospective) 176 12 months	Almost all patients diagnosed with psychotic and mood disorders 5.4 to 5.6 US, inpatient, outpatient, MH/specialty care	ICM (high end user enhanced transition support and case coordination program) (n=61)	Usual care (n=115)	Number of readmissions Readmission rate Hospital bed-days	ICM group had a <i>greater</i> number of readmissions, a <i>higher</i> readmission rate, and <i>more</i> hospital bed-days than the usual care group.

Table E-6. Characteristics and outcomes for case management studies (continued)

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Husted et al., 2000 ⁶⁶ Single-group pre- post (prospective) 59 11 months to 10.8 years	All patients with psychotic disorders, bipolar affective disorder, recurrent MDD, or borderline personality disorder and/or ≥2 inpatient hospitalizations in last 24 months 1.8 per year US, outpatient, MH/specialty care	ICM (community support program [CSP]) (n=59)	Pre-CSP (n=59)	Readmission rate Hospital bed- days	After participation in CSP program, readmission rate and hospital bed- days decreased.
Mahendran et al., 2006 ⁶⁷ Single-group pre- post (retrospective) 227 12 months	Patients diagnosed almost entirely with psychotic and mood disorders NR, but all patients at high risk of multiple admissions Singapore, inpatient, outpatient	Case management (hospital-based) (n=227)	Pre-case management (n=227)	Number of readmissions LOS Hospital bed- days	After participation in hospital-based case management group, number of readmissions, LOS, and hospital bed- days all decreased.

CPN = community psychiatric nurse(s); CSP = community support programs; HCPS = hospital-based community psychiatric service; ICM = intensive case management; LOS = length of stay(s); MDD = major depressive disorder; MH = mental health; n = number of participants; NR = not reported; RCT = randomized controlled trial; UK = United Kingdom; US = United States.

Table E-7. Characteristics and outcomes for psychoeducation studies

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
McFarlane et al., 1995 ⁶⁸ RCT 41 4 years	All psychotic disorder patients 3.9 US, MH/specialty care	Psychoeducational multiple-family group (n=16)	Psychoeduca- tional single- family treatment (n=18) Family-dynamic, multiple-family group (n=7)	Readmission rates Readmission rate Hospital bed- days	Multiple-family group more effective in decreasing readmission rates than single-family treatment, but similar to family- dynamic, multiple- family group.
Pitschel-Walz et al., 2006 ⁶⁹ Bauml et al., 2007 ⁷⁰ Munich Psychosis Information Project Study RCT 236 7 years	All psychotic disorder patients 4 Germany, inpatient, outpatient	Psychoeducational group meetings for patients and relatives + routine treatment (n=125)	Routine treatment (n=111)	Number of readmissions Readmission rate Hospital bed- days	Psychoeducation group had fewer readmissions, lower readmission rate, and fewer hospital bed-days than the routine treatment group.
de Groot et al., 2003 ⁷¹ Cohort (retrospective) 54 7 years	All psychotic disorder patients 2.5 to 2.8 Australia, outpatient	Psychoeducation program for families (n=27)	No program (matched control) (n=27)	Number of readmissions Hospital bed- days	No between-group differences in number of readmissions or hospital bed-days.

LOS, length of stay; MH, mental health; n = number of participants; RCT, randomized controlled trial; UK, United Kingdom; US, United States.

Table E-8. Characteristics and outcomes for other long-term approaches in high-risk individuals

Citation Design Sample Size Length of Followup	Population: Diagnosis Types, Mean Prior Hospitalizations Country, Setting	Intervention	Comparator(s)	Outcomes	Results
Collaborative care Bauer et al., 2006 ⁷² Bauer et al., 2006 ⁷³ Bauer et al., 2001 ⁷⁴ Cooperative Studies Program 430 Study	All bipolar disorder patients 5.3 US, MH/specialty care	Bipolar Disorder Program (n=166)	Usual care (n=164)	Readmission rates Hospital bed-days	Bipolar Disorder Program group's readmission rates in years 2 and 3 tended to be lower than those of the usual care group. There was no between-group difference in hospital bed-days.
RCT					
330					
3 years					
Peer support Sledge et al., 2011 ⁷⁶ RCT 74 9 months	NR for sample, but inclusion criteria required a diagnosis of schizophrenia, schizoaffective disorder, psychotic disorder not otherwise specified, bipolar disorder, or MDD 3.76 to 3.94 US, outpatient	Peer mentor support plus usual care (n=38)	Usual care (n=36)	Number of readmissions Hospital bed-days	Peer mentor support group had fewer readmissions and hospital bed-days than the group receiving usual care alone.
Various outpatient services Prince, 2006 ⁷⁷ Cohort (prospective or retrospective, type unclear) 315 3 months	All psychotic disorder patients NR, but nearly three-fourths of patients had ≥3 prior admissions US, outpatient	Various outpatient community treatment services (i.e., medication education, symptom education, care continuity, social relations training, daily structure, daily living training, or kin involvement) (n=NR)	Individual services not received (n=NR)	Readmission rate	Overall, those receiving symptom education, service continuity, or daily structure had a decreased readmission rate. However, for the subgroup with 0-3 prior admissions, no clear benefit was seen with any of the services.

LOS = length(s) of stay; MDD = major depressive disorder; MH = mental health; n = number of participants; NR = not reported;
RCT = randomized controlled trial; US = United States

Appendix E References

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