Effectiveness of Post-Discharge Contacts on Health Care Utilization and Patient Satisfaction

March 2024

U.S. Department of Veterans Affairs
Veterans Health Administration
Health Systems Research

Recommended citation: Boggan JC, Sankineni S, Gordon AM, et al. Effectiveness of Post-Discharge Contacts on Health Care Utilization and Patient Satisfaction: A Systematic Review. Washington, DC: Evidence Synthesis Program, Health Systems Research, Office of Research and Development, Department of Veterans Affairs. VA ESP Project #09-010; 2024.

AUTHORS

Author roles, affiliations, and contributions (using the CRediT taxonomy) are listed below.

Author	Role and Affiliation	Report Contribution
Joel C. Boggan, MD, MPH	Associate Professor, Division of General Internal Medicine, Duke University School of Medicine, Hospital Medicine, Durham VA Health Care System Durham, NC	Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing
Spoorthi Sankineni, MD	Medical Director, Hospital Follow-Up Clinic, Duke Primary Care, Riverview Durham, NC	Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing
Adelaide M. Gordon, MPH	Program Coordinator, Durham Evidence Synthesis Program (ESP) Center, Durham VA Health Care System Durham, NC	Conceptualization, Data curation, Methodology, Investigation, Project administration, Writing – original draft, Writing – review & editing
Morgan Jacobs, MPH	Research Associate, Durham ESP Center, Durham VA Health Care System Durham, NC	Conceptualization, Data curation, Methodology, Project administration, Visualization
Tatyana Der, MD, MHSc	Assistant Professor, Division General Internal Medicine, Duke University School of Medicine Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Sharron Rushton, DNP, MS, RN, CCM, CNE	Assistant Clinical Professor, Duke University School of Nursing Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Dazhe Chen, PhD	Postdoctoral Fellow, Epidemiology Branch, National Institute of Environmental Health Sciences Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
John W. Williams, MD, MHS	Professor of Medicine, Department of Medicine, Duke University School of Medicine Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Tina Wong Sledge, RN, BSN	Nurse Consultant/Project Manager Transplantation Branch Division of Allergy, Immunology, and Transplantation NIAID/NIH/DHHS Bethesda, MD	Conceptualization, Methodology, Investigation, Writing – review & editing
Amir Alishahi Tabriz MD, PhD, MPH	Assistant Member, Department of Health Outcomes and Behavior, Moffitt Cancer Center Tampa, FL	Conceptualization, Methodology, Investigation, Writing – review & editing

Author	Role and Affiliation	Report Contribution
Joanne Roman Jones JD, PhD, RN	VA Quality Scholars (VAQS) Fellow, Durham, NC Fellow, Durham Center of Innovation to Accelerate Discovery and Practice Transformation, Durham VA Health Care System, Durham, NC Assistant Professor, UMass Boston, Boston, MA	Conceptualization, Methodology, Investigation, Writing – review & editing
David Halpern MD, MPH	Senior Medical Director for Quality and Population Health, Duke Primary Care, Duke University Medical Center Durham, NC Associate Professor of Medicine, Division of General Internal Medicine, Department of Medicine, Duke University School of Medicine Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Anastasia Alexopoulos, MBBS, MHS	Assistant Professor of Medicine, Division of Endocrinology, Diabetes and Metabolism, Duke University School of Medicine, Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Maria Colandrea DNP, NP-C, CORLN, FAANP	VA Quality Scholars (VAQS) Fellow, Durham, NC Nurse Practitioner, Department of Otolaryngology-Head and Neck Surgery Durham Veterans Affairs Medical Center, Durham NC Chair of the National APRN Council, Office of Nursing Service, Washington, DC Adjunct Professor, UNC and Duke Schools of Nursing Chapel Hill, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Nathan A. Boucher DrPH, PA, MS, MPA, CPHQ	Research Health Scientist, Durham Center of Innovation to Accelerate Discovery and Practice Transformation, Durham VA Health Care System Durham, NC Associate Research Professor, Sanford School of Public Policy, Duke University Durham, NC Associate Professor, Division of Geriatric Medicine, Duke University School of Medicine Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing

Author	Role and Affiliation	Report Contribution
Nina Leflore-Lloyd, DSW(c), MSW	Supervisory Social Worker, Social Work Service/Medicine Section Chief, Durham VA Medical Center Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Julee Snyder, MPH	Research Associate, Durham ESP Center, Durham VA Health Care System Durham, NC	Conceptualization, Data curation, Methodology, Project administration, Visualization
Sarah Cantrell, MLIS, AHIP	Associate Director for Research & Education, Duke University Medical Center Library & Archives, Duke University School of Medicine Durham, NC	Conceptualization, Methodology, Writing – review & editing
Paul Dennis, PhD	Statistician/Investigator, Durham Center of Innovation to Accelerate Discovery and Practice Transformation, Durham VA Health Care System Associate Professor Department of Population Health Sciences, Duke University School of Medicine Durham, NC	Data curation, Methodology, Formal analysis, Visualization, Writing – review & editing
Karen M. Goldstein, MD, MSPH	Co-Director, Durham ESP Center Core Investigator, Durham Center of Innovation to Accelerate Discovery and Practice Transformation, Durham VA Health Care System Staff Physician, Durham VA Medical Center Associate Professor, Department of Medicine, Division of General Internal Medicine, Duke University Durham, NC	Conceptualization, Methodology, Investigation, Writing – review & editing
Jennifer M. Gierisch, PhD, MPH	Co-Director, Durham ESP Center Core Investigator, Durham Center of Innovation to Accelerate Discovery and Practice Transformation, Durham VA Health Care System Associate Professor, Department of Population Health Sciences, Duke University School of Medicine Durham, NC	Conceptualization, Data curation, Methodology, Supervision, Investigation, Formal analysis, Visualization, Writing – original draft, Writing – review & editing

PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to conduct timely, rigorous, and independent systematic reviews to support VA clinicians, program leadership, and policymakers improve the health of Veterans. ESP reviews have been used to develop evidence-informed clinical policies, practice guidelines, and performance measures; to guide implementation of programs and services that improve Veterans' health and wellbeing; and to set the direction of research to close important evidence gaps. Four ESP Centers are located across the US. Centers are led by recognized experts in evidence synthesis, often with roles as practicing VA clinicians. The Coordinating Center, located in Portland, Oregon, manages program operations, ensures methodological consistency and quality of products, engages with stakeholders, and addresses urgent evidence synthesis needs.

Nominations of review topics are solicited several times each year and submitted via the ESP website. Topics are selected based on the availability of relevant evidence and the likelihood that a review on the topic would be feasible and have broad utility across the VA system. If selected, topics are refined with input from Operational Partners (below), ESP staff, and additional subject matter experts. Draft ESP reviews undergo external peer review to ensure they are methodologically sound, unbiased, and include all important evidence on the topic. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. In seeking broad expertise and perspectives during review development, conflicting viewpoints are common and often result in productive scientific discourse that improves the relevance and rigor of the review. The ESP works to balance divergent views and to manage or mitigate potential conflicts of interest.

ACKNOWLEDGMENTS

The authors are grateful to Liz Wing for editorial support, Matthew Luedke for reference screening efforts, external peer reviewers, and the following individuals for their contributions to this project:

Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

Laura Coyle, DNP, RN, CNL, CPHQ, CLSSBB
Quality Manager
VHACO Office of Primary Care

Traci Solt, DNP, FACHE, NEA-BC, CRRN, CCM, AMC-BC
Director, Clinical Services
VHACO Office of Primary Care

Technical Expert Panel

To ensure scientifically relevant work, the technical expert panel (TEP) guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress. TEP members included:

Anuj Dalal, MD
Hospital Medicine
Brigham and Women's Hospital

Brianna Gass, MPH
Senior Manager, Health Management
Telligen Corporation

Sharon Kleinhans, RN
Nurse Manager
VA Medical Center Tomah

Disclosures

This report was prepared by the Evidence Synthesis Program Center located at the **Durham VA Medical Center,** directed by Jennifer M. Gierisch, PhD, MPH, and Karen M. Goldstein, MD, MSPH and funded by the Department of Veterans Affairs, Veterans Health Administration, Health Systems Research.

The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. The final research questions, methodology, and/or conclusions may not necessarily represent the views of contributing operational and content experts. No investigators have affiliations or financial involvement (*eg*, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

Executive Summary

KEY FINDINGS

- We identified 13 studies that assessed the impact of post-discharge interventions.
  - Studies included adults with an acute medical hospitalization. None of the included studies focused on populations with an acute psychiatric hospitalization.
  - A total of 8 studies focused on patients identified as higher risk based on a variety of factors such as a combination of age (*ie,* 65 and older) and medical comorbidities (*eg*, COPD, heart failure).
  - Most studies (*N* = 11) were randomized controlled trials with only 1 rated as high risk of bias.
  - Most (*N* = 11) post-discharge approaches consisted of a single telephone contact conducted in the first 3 days after hospital discharge.
- In a meta-analysis, post-discharge interventions within 7 days after leaving the hospital were not associated with a reduction in 30-day hospital readmissions or emergency department utilization when compared with usual care. Certainty of evidence supporting this conclusion was considered moderate, based primarily on the consistency of results across randomized studies.
- This review found little evidence that such brief, often 1-call follow-ups have an impact on patient satisfaction.
- Findings should be tempered by a lack of information on intervention implementation across included studies.

The transition from hospital to home is a vulnerable period with many patients experiencing preventable and unpreventable adverse events and unplanned health care utilizations. Over the past decade, there has been an increased focus on transitional care from hospital to home. In an effort to reduce rebound hospital admissions, lower health care costs, and improve patient satisfaction, various multifaceted transitional care models have been developed. These pre-discharge models have resulted in small but meaningful reductions in hospital readmissions. Once back at home, however, patients may experience uncertainty about how to best care for themselves, in turn leading to complications. Post-discharge complications commonly stem from poor communication of unresolved medical problems, lack of patient education regarding medications and treatments, limited monitoring of medication adherence, and delayed monitoring of patient status soon after discharge. Although some transitional care models have included a post-discharge component, there is limited information available to assess the direct impact of post-discharge patient contacts on key patient and health system outcomes.

To mitigate transition-related issues, follow-up contacts to patients in the week after hospital discharge has been a widely adopted strategy over the last decade. These post-discharge contacts usually consist of a single telephone contact in the first 2 to 3 days after leaving the hospital. Prior studies have produced mixed results on the effectiveness of these transition-focused post-discharge approaches on key health system outcomes of hospital readmission, emergency department use, and patient satisfaction with care.

CURRENT REVIEW

The Veterans Health Administration (VHA) is the largest integrated health system in the nation. Veterans seeking care through the VHA experience a broad variety of medical and psychiatric illnesses that lead to hospital admissions. Currently, there is no standard post-discharge practice for Veteran patients transitioning back home from VHA hospitals. To assist the VHA in standardizing post-discharges procedures, the VA Office of Primary Care requested this review to assess the impact of post-discharge patient contacts in the first 7 days after leaving the hospital on emergency care use, hospital readmission rates, and patient satisfaction with care to ensure that effective transitional care is provided to Veterans seeking care through the VHA. In partnership with VHA operational partners, the following questions were developed for this review:

Key Question 1a	Among adults with acute medical hospital admissions, what are the effects of post-discharge contacts on hospital readmission, emergency care use, and patient satisfaction?
Key Question 1b	Do the effects of post-discharge contacts for acute medical hospital admissions vary by intervention characteristics (*ie*, mode, clinical staff initiating contact, timing, assessments used during contact, content)?
Key Question 2a	Among adults with acute psychiatric hospital admissions, what are the effects of post-discharge contacts on hospital readmission, emergency care use, and patient satisfaction?
Key Question 2b	Do the effects of post-discharge contacts for acute psychiatric hospital admissions vary by intervention characteristics (*ie*, mode, clinical staff initiating contact, timing, assessments used during contact, content)?

Data Sources and Searches

We searched MEDLINE (via Ovid), Embase (via Elsevier), and CINAHL Complete for relevant studies published from database inception to May 25, 2023. We used database-specific controlled vocabulary as well as relevant keywords to search titles and abstracts. Additional citations were identified from hand-searching reference lists and consultation with content experts. Titles, abstracts, and full-text articles were independently reviewed by 2 investigators, and disagreements were resolved by consensus.

Study Selection

In brief, the major study eligibility criteria were as follows: studies assessed the impact of bidirectional post-discharge contact (PDC) interventions from a nonspecialist clinical service provider to an adult that occurred up to 7 days from a hospital discharge; studies measured 30-day hospital readmission, 30-day ED use, or patient satisfaction; and studies were randomized trials, controlled before-after studies, or interrupted time-series or repeated-measures studies.

All citations that were classified for possible inclusion based on title and abstract by 2 investigators underwent full-text review. All articles reviewed at full-text were also evaluated independently by 2 investigators; all articles meeting eligibility criteria at full-text review were included for data abstraction. Disagreement was resolved via group consensus or by a senior investigator with content or methodological expertise.

Data Abstraction and Risk of Bias Assessment

Data elements included descriptors of the study populations, quality elements, interventions, and outcome details. To better characterize interventions, and in keeping with emerging standards in systematic reviews with intervention complexity, we mapped each included study to a common set of core functions (*ie*, purpose of the change process) of post-discharge interventions: medication review; symptom monitoring; and coordination of social or health services. Study risk of bias (ROB) was assessed by the revised Cochrane risk of bias for randomized trials and cluster-randomized trials (RoB2) and the Risk of Bias in Nonrandomized Studies of Interventions (ROBINS-I) for nonrandomized studies. Quality assessment was completed in duplicate by 2 investigators. Disagreements were resolved by consensus between those 2 investigators or, as needed, with arbitration by a third.

Synthesis

We summarized key study characteristics of the included studies. Key characteristics abstracted included participant descriptors, intervention characteristics (*eg*, timing, dose, content, interventionist), comparator, and outcomes. To better characterize interventions, and in keeping with emerging standards in systematic reviews with intervention complexity, we mapped each included study to a common set of core functional components (*ie*, purpose of the change process) of post-discharge interventions: medication review, symptom monitoring, and coordination of social or health service. We considered the feasibility of completing quantitative synthesis (*ie*, meta-analysis) to estimate summary effects given the volume of relevant literature, conceptual homogeneity of the studies, and completeness of results reporting. For outcome and intervention categories for which meta-analysis was not feasible, we synthesized data narratively by focusing on identifying patterns in efficacy across included studies.

The certainty of evidence (COE) was assessed using the approach described by the Grading of Recommendations Assessment, Development, and Evaluation working group. These domains were considered qualitatively, and a summary rating was assigned after discussion between 4 investigators with either methodologic or content expertise and rated as high, moderate, low, or very low COE.

RESULTS

Results of Literature Search

Our search identified 104 potentially relevant articles after deduplication and title-and-abstract screening. Of these, 13 primary studies (in 13 publications) met eligibility criteria. None of the identified studies were relevant to KQ2 (patients with a psychiatric hospitalization). Six studies were conducted in the USA, 5 in Europe, 1 in New Zealand, and 1 in Canada. The most common core intervention function was medication review ($N = 10$). Nine studies used coordination of care core function, and 7 included symptom monitoring. Eleven studies reported hospitalization outcomes, 7 reported ED utilization, 4 reported composite outcomes of unplanned health care use, and 4 reported on patient satisfaction. The median sample size of included studies was 311 (range: 25-3,054). Eight studies focused on patient populations at elevated medical risk. We did not identify studies that focused on patients discharged from an acute psychiatric hospitalization.

Summary of Results for Key Questions

KQ1: Effects of Post-Discharge Contacts Among Adults With Medical Hospitalizations

- We identified 13 studies that assessed the impact of PDC interventions on outcomes of interest. Most studies ($N = 11$) were randomized trials with only 1 rated as high risk of bias (ROB).
    - All but 1 intervention used telephone-delivered PDC; most ($N = 11$) PDC approaches consisted of a single contact conducted in the first 3 days after hospital discharge.
    - The most common component of PDC was medication review; only 3 studies included all 3 hypothesized core PDC functional components.
- Eleven studies measured all-cause hospital readmissions at about 30 days. Of these, 8 randomized trials were sufficiently comparable to perform meta-analysis. Pooled analysis of 7,336 patients demonstrated no impact of PDC on 30-day hospital readmissions (OR = 0.94, 95% CI [0.83,1.07]; 95% prediction interval [PI] [0.83, 1.07]).
- Seven studies measured all-cause ED use at approximately 30 days since discharge from index hospitalization. Based on the meta-analysis of the 5 RCTs encompassing 3,054 patients, there was no significant difference in the odds of 30-day ED utilization (OR = 1.03, 95% CI [0.84, 1.27]; 95% PI [0.84, 1.27]).
- Four studies measured a composite outcome of 30-day unplanned health care utilizations (*eg*, 30-day hospital readmissions plus ED use, unscheduled office visit). Individually, these studies showed no impact of PDC on a reduction in 30-day unplanned health care use relative to usual care control. Based on the meta-analysis of 3 randomized trials encompassing 1,456 patients, there was no significant difference in the odds of 30-day unplanned utilizations (OR = 1.00, [95% CI 0.76, 1.31]; 95% PI [0.76, 1.31]).
- Only 4 studies assessed the impact of PDC on patient satisfaction, and only 1 small study reported higher patient satisfaction among patients exposed to post-discharge contacts.
- Results were highly consistent across included studies for the outcomes of hospital readmission and ED use (moderate COE based on information from randomized studies only).
- Exploration of subgroup differences by intervention characteristics (*ie*, timing, interventionist, functional components of PDC) also demonstrated no differential impact on PDC effectiveness on 30-day hospital readmissions or ED use.

KQ2: Effects of Post-Discharge Contacts Among Adults With Acute Psychiatric Hospitalizations

We identified no eligible studies that addressed KQ2a or KQ2b.

Discussion and Future Directions

Based on a modest but consistent body of evidence, post-discharge follow-up contacts delivered in the first 7 days after leaving the hospital likely have no impact on 30-day hospital readmissions (moderate COE for RCTs), 30-day ED use (moderate COE for RCTs), or patient satisfaction with care. Yet our results should be contextualized. First, pre-discharge planning is now a routine procedure in most

health systems and generally includes medication review and counseling, patient and/or family caregiver education, and coordinating care with community healthcare providers. In the studies included in our review, about half described some type of pre-discharge planning protocol. It is likely that similar procedures occurred in some fashion in most studies, as this is now considered standard of care. Adding a single post-discharge contact would be a minor component with little potential for impact on outcomes like hospital readmission or ED use. Second, none of the included studies rigorously assessed intervention adherence or fidelity, which are factors that could influence intervention effectiveness. Most of the PDC interventions included in this review were delivered by telephone, which may not be the optimal modality to deliver all critical post-discharge functions. Last, most studies included in this review focused on patients identified as higher risk based on a variety of factors such as a combination of age (*ie,* 65 and older) and medical comorbidities (*eg*, COPD, heart failure). It is likely that these patients may need more intensive approaches in the transition from hospital to home that cannot be delivered in a single-contact approach.

This comprehensive review of the literature identified several gaps in the current evidence that warrant future investigation. Nearly all studies lacked important information to characterize intervention fidelity. Only 1 study reported subgroups by patient characteristics. Additional research that enrolls sufficient numbers of patients from important subgroups is needed in future studies to explore how patient characteristics—including social determinants of health (*eg*, age, race and ethnicity, sex, work environment, income)—may affect risk of readmissions and could clarify whether there are patients likely to benefit from single-contact approaches versus more intensive post-discharge approaches. We identified no studies that assessed PDC for patients with acute psychiatric hospitalization, a priority of the nominating VHA operational partners. Exploring the utility of PDC among patients with psychiatric hospitalizations is a key area for future study. We sought to explore treatment effectiveness based on key intervention characteristics identified by VHA operational partners (*eg*, content, interventionists, timing of intervention); none of these yielded any consistent pattern, but there were few studies in each subgroup to afford firm conclusions by intervention subgroups. Future studies may want to consider direct comparisons between PDC modality (*eg*, video vs phone), timing and dose of post-discharge approaches, and functional components of post-discharge interventions.

CONCLUSIONS

Post-discharge follow-up calls are widely used in the United States and elsewhere. Yet our review demonstrated little supporting evidence that such brief, often 1-call follow-ups have an impact on key health care outcomes of hospital readmissions or ED use at 30 days or patient satisfaction with care. Our findings should be contextualized further as there are (1) many unaddressed questions on the utility of post-discharge approaches and (2) some limitations of the literature and our review. While our review did not find evidence of significant impacts of brief PDC approaches, health care systems like the VHA should consider the cost effectiveness of these relatively light-touch PDC approaches on costly outcomes such as rebound hospital admissions and ED use. Such considerations of widespread, universal, brief post-discharge contacts should be balanced with the potential to target investments in more intensive post-discharge approaches focused on patients most likely to benefit from these interventions.