

# Evidence Roadmap: Transitional Care Models to Prevent Hospital Readmissions



AcademyHealth's Evidence Roadmap series presents selected, key research studies, systematic reviews, and other rigorous evidence to help policy analysts and others explore the current state of knowledge about a topic relevant to health policy or the delivery of health services.

This Evidence Roadmap catalogs recent evidence on the impact of transitional care strategies on hospital readmissions following a patient's initial hospital discharge.<sup>1</sup> In AcademyHealth's 2016 Listening Project report,<sup>2</sup> "Improving the Evidence Base for Safety Net Health Care Delivery," health systems leaders and other experts identified this topic as an area needing additional attention from researchers. As mandated by the Affordable Care Act, in 2013, the Centers for Medicare and Medicaid Services (CMS) created the Hospital Readmissions Reduction Program (HRRP), which penalizes hospitals for high rates of readmissions that occur within 30 days of initial hospital discharge for patients with conditions including myocardial infarction, heart failure, pneumonia, total hip arthroplasty, and total knee arthroplasty. In response, hospitals have pursued new models of transitional care and care coordination to limit patients' risk of readmission.

While primarily focused on the past six years, this Roadmap includes older resources when they represent the most recent available evidence on a topic or a seminal contribution to the evidence base. This Roadmap does not address the strength or quality of the evidence on this topic.

## Systematic Reviews

### **Transitional Care Interventions Prevent Hospital Readmissions for Adults with Chronic Illnesses**

Verhaegh KJ, MacNeil-Vroomen JL, Eslami S, Geerlings SE, de Rooij SE, Buurman BM. *Health Aff (Millwood)*. 2014 Sept; 33(9): 1531-1539.

This systematic review analyzed 26 randomized controlled trials on different transitional care interventions. The review looked at how different interventions of varying intensity levels impacted the length of the period before a patient's readmission.

### **Preventing 30-Day Hospital Readmissions: A Systematic Review and Meta-analysis of Randomized Trials**

Leppin AL, Gionfriddo MR, Kessler M, Brito JP, Mair FS, Gallacher K, Wang Z, Erwin PJ, Sylvester T, Boehmer K, Ting HH, Murad MH, Shippee ND, Montori VM. *JAMA Intern Med*. 2014 Jul; 174(7): 1095-1107.

This systematic review grouped available evidence on the efficacy of interventions focused on reducing 30-day hospital readmissions. It also provided additional information on the interventions' features, such as patients' capacity to enact post-discharge self-care and the impact of treatment burden on patients' capacity.

### **Transitional Care Interventions to Prevent Readmissions for Persons with Heart Failure: A Systematic Review and Meta-analysis**

Feltner C, Jones CD, Cené CW, Zheng ZJ, Sueta CA, Coker-Schwimmer EJJ, Arvanitis M, Lohr KN, Middleton JC, Jonas DE. *Ann Intern Med*. 2014 Jun; 160(11): 774-784.

This systematic review examined 47 randomized controlled trials of transitional care programs that sought to reduce readmission and mortality rates for adults with heart failure. The authors assessed the programs' comparative effectiveness, efficacy, and harms.

### **Hospital-initiated Transitional Care Interventions as a Patient Safety Strategy: A Systematic Review**

Rennke S, Nguyen OK, Shoeb MH, Magan Y, Wachter RM, Ranji SR. *Ann Intern Med*. 2013 Mar; 158(5 Pt 2): 433-440.

This review assessed 47 controlled studies to evaluate the effectiveness of hospital-led transition initiatives aimed at reducing emergency department visits, hospital readmissions, and clinically adverse events after discharge.

### **Transitional Care after Hospitalization for Acute Stroke or Myocardial Infarction: A Systematic Review**

Prvu Bettger J, Alexander KP, Dolor RJ, Olson DM, Kendrick AS, Wing L, Coeytaux RR, Graffagnino C, Duncan PW. *Ann Intern Med*. 2012 Sep; 157(6): 407-416.

This systematic review explored transitional care interventions and their positive and negative effects on patients who had strokes or myocardial infarctions.

### **The Importance of Transitional Care in Achieving Health Reform**

Naylor MD, Aiken LH, Kurtzman ET, Olds DM, Hirschman KB. *Health Aff (Millwood)*. 2011 Apr; 30(4): 746-754.

This systematic review looked at 21 randomized clinical trials of transitional care programs focused on chronically ill adults, and evaluated their effects on readmissions during the 30 days post-discharge.

### **Interventions to Reduce 30-day Rehospitalization: A Systematic Review**

Hansen LO, Young RS, Hinami K, Leung A, Williams MV. *Ann Intern Med*. 2011 Oct; 155(8): 520-528.

This systematic review evaluated 12 different programs and strategies aimed at reducing hospital readmissions 30 days after discharge. Examples included discharge planning, medication reconciliation, and planning a follow-up appointment before discharge, among others.

## **Individual Studies**

### **Transitional Care in Skilled Nursing Facilities: A Multiple Case Study**

Toles M, Colon-Emeric C, Naylor MD, Barroso J, Anderson RA. *BMC Health Services Research*. 2016; 16:186.

This study evaluated the transitional care delivery in different skilled nursing facilities. It sought to determine variations in organizational structure and quality of care-team interactions, and the similarities and differences in the transitional care provided at the facilities.

### **STAAR: Improving the Reliability of Care Coordination and Reducing Hospital Readmissions in an Academic Medical Centre**

Carter JA, Carr LS, Collins J, Doyle Petronglo JD, Hall K, Murray J, Smith J, Tata LA. *BMJ Innov*. 2015 Jul; 1(3): 75-80.

This study evaluated STARR, a four-year program carried out at Massachusetts General Hospital focused on coordinating the care of patients by providing them with a discharge nurse and a transitional care pharmacist.

### **Effectiveness of a National Transitional Care Program in Reducing Acute Care Use**

Wee SL, Loke CK, Liang C, Ganesan G, Wong LM, Cheah J. *J Am Geriatr Soc*. 2014 Apr; 62(4): 747-753.

This study assessed Aged Care Transition (ACTION) program. This program aimed to improve care coordination and continuity for the elderly and to reduce hospital and emergency department readmissions.

### **Comparison of Evidence-based Interventions on Outcomes of Hospitalized, Cognitively Impaired Older Adults**

Naylor MD, Hirschman KB, Hanlon AL, Bowles KH, Bradway C, McCauley KM, Pauly MV. *J Compar Effect Res*. 2014; 3(3): 245-257.

This study described the effects of three evidence-based interventions of varying intensity aimed at improving outcomes of hospitalized, cognitively impaired adults.

### **The Influence of a Post-Discharge Intervention on Reducing Hospital Readmissions in a Medicare Population**

Constantino ME, Frey B, Hall B, Painter P. *Popul Health Manag*. 2013 Oct; 16(5): 310-316.

This study assessed a post-discharge phone intervention and whether or not it reduced 30-day hospital readmissions among those who received the intervention when compared to the control group.

### **Transitional Care Cut Hospital Readmissions for North Carolina Medicaid Patients with Complex Chronic Conditions**

Jackson CT, Trygstad TK, DeWalt DA, DuBard CA. *Health Aff (Millwood)*. 2013 Aug; 32(8): 1407-1415.

This paper looked at a North Carolina population-based transitional care initiative that sought to prevent recurrent hospitalizations among high-risk Medicaid recipients with complex chronic medical conditions.

### **Disseminating Evidence-based Care into Practice**

Coleman EA, Rosenbeck SA, Roman SP. *Popul Health Manag*. 2013 Aug; 16(4): 227-234.

This article described the four defining features of the Care Transitions Intervention: model execution, support to sustain the model, model fidelity, and the selection of transitions coach and the reinforcement of the role. The article also provided an argument for the success of the program's dissemination and utility.

### **Potentially Avoidable 30-day Hospital Readmissions in Medical Patients: Derivation and Validation of a Prediction Model**

Donzé J, Aujesky D, Williams D, Schnipper JL. *JAMA Intern Med*. 2013 Apr; 173(8): 632-638.

This paper analyzed clinical and administrative data to develop a model that predicts patients' risk of 30-day readmissions, thus helping identify which patients could benefit from more intensive transitional care.

### **Association Between Quality Improvement for Care Transitions in Communities and Rehospitalizations among Medicare Beneficiaries**

Brock J, Mitchell J, Irby K, Stevens B, Archibald T, Goroski A, Lynn J. *JAMA*. 2013 Jan; 309(4): 381-391.

This research study assessed whether or not improved care transitions for patients with fee-for-service Medicare contributed to the reduction of rehospitalizations and geographically defined hospitalizations.

### **How Changes in Washington University's Medicare Coordinated Care Demonstration Pilot Ultimately Achieved Savings**

Peikes D, Peterson G, Brown RS, Graff S, Lynch JP. *Health Aff (Millwood)*. 2012 Jun; 31(6): 1216-1226.

This study evaluated the redesign of Washington University's Medicare Coordinated Care Demonstration. Some of the changes studied included transitioning from telephone care management to in-person care management, and providing enhanced transition planning and medication reconciliation to those with the highest need.

### **An Early Look at a Four-State Initiative to Reduce Avoidable Hospital Readmissions**

Boutwell AE, Johnson MB, Rutherford P, Watson SR, Vecchioni N, Auerbach BS, Griswold P, Noga P, Wagner C. *Health Aff (Millwood)*. 2011 Jul; 30(7): 1272-1280.

This paper described the State Action on Avoidable Rehospitalizations (STARR) initiative, which emphasized the role of state-level leadership in improving health care transitions to reduce rates of avoidable rehospitalization in Ohio, Michigan, Massachusetts, and Washington.

### **Effectiveness and Cost of a Transitional Care Program for Heart Failure: A Prospective Study with Concurrent Controls**

Stauffer BD, Fullerton C, Fleming N, Ogola G, Herrin J, Stafford PM, Ballard DJ. *Arch Intern Med*. 2011 Jul; 171(14): 1238-1243.

This study evaluated the advanced practice nurse-led transitional care programs for patients with heart failure discharged from Baylor Medical Center Garland. It compared the program's effect on 30-day readmissions, 60-day direct cost, and length of stay.

### **High-value Transitional Care: Translation of Research into Practice**

Naylor MD, Bowles KH, McCauley KM, Maccoby MC, Maslin G, Pauly MV, Krakauer R. *J Eval Clin Pract*. 2013 Oct;19(5):727-33.

This study evaluated the translation of the Transitional Care Model (TCM) into a large U.S. health insurance plan, Aetna Medicare Advantage. The researchers assessed the impact of the TCM on health status, quality of life, and patient and physician satisfaction.

### **Standardizing Hospital Discharge Planning at the Mayo Clinic**

Holland D, Hemann MA. *Jt Comm J Qual Patient Saf*. 2011 Jan; 37(1): 29-36.

This paper examined a Mayo Clinic discharge-planning (DP) program that merged the use of DP specialist roles with an early screening DP tool.

### **Relationship Between Early Physician Follow-up and 30-day Readmission Among Medicare Beneficiaries Hospitalized for Heart Failure**

Hernández AF, Greiner MA, Fonarow GC, Hammill BG, Heidenreich PA, Yancy CW, Peterson ED, Curtis LH. *JAMA*. 2010 May; 303(17): 1716-1722.

This study evaluated the relationship between 30-day readmissions and seven-day outpatient follow-up after hospitalization for heart failure.

### **A Reengineered Hospital Discharge Program to Decrease Rehospitalization**

Jack BW, Chetty VK, Anthony D, Greenwald JL, Sanchez GM, Johnson AE, Forsythe SR, O'Donnell JK, Paasche-Orlow MK, Manasseh C, Martin S, Culpepper L. *Ann Intern Med*. 2009 Feb; 150(3): 178-187.

This paper presented the results from a randomized trial testing the effects of a transition discharge program on hospital readmissions.

### **The Care Transitions Intervention: Results of a Randomized Controlled Trial**

Coleman EA, Parry C, Chalmers S, Min SJ. *Arch Intern Med*. 2006 Sep; 166(17): 1822-1828.

This study evaluated a care transitions intervention that sought to reduce hospitalizations by promoting greater communication between patients and providers, encouraging patients and their caregivers to take a more active role in their care, and providing patients with guidance from a transition coach.

## Grey Literature

### **Reducing Hospital Readmissions: Lessons from Top-performing Hospitals**

The Commonwealth Fund; April 2011.

This brief presented case studies of four hospitals with exceptionally low readmission rates and provided a discussion of care transition strategies such as care coordination and discharge planning, patient engagement and patient-centered education, post-discharge follow-up, and collaboration promoting the continuum of care, among others.

### **Evidence Summary for the Transitional Care Model**

Coalition for Evidence-Based Policy; October 2010.

This paper described two randomized controlled trials that sought to assess the impact of the Transitional Care Model on elderly hospital patients in Philadelphia.

### **Medicare Hospital Readmissions: Issues, Policy Options and PPACA**

Congressional Research Service; September 2010.

This document discussed several issues related to Medicare payment, hospital readmissions among Medicare beneficiaries, and related changes under the ACA. It also presented strategies to reduce hospital readmissions, such as the Community-Based Care Transitions Program for High-Risk Medicare Beneficiaries.

## Ongoing Research

### **Studying Local Adaptations of the Transitional Care Model**

Naylor, M and Pauly, M (University of Pennsylvania). The Robert Wood Johnson Foundation.

This study is identifying, describing, and examining adaptations of the Transitional Care Model using a quantitative and qualitative approach. Phase I consists of a national survey to identify providers and expert clinicians implementing transitional care services and programs in their local communities across the U.S. During Phase II, additional in-depth interviews are being conducted with key informants from Phase I. The study team will also examine the prevalence of opportunities and barriers to implementation of transitional care, and the types of adaptations to evidence-based interventions during implementation.

### **Early Supported Discharge for Improving Functional Outcomes after Stroke**

Duncan, P (Wake Forest University, Winston-Salem, NC). Patient-Centered Outcomes Research Institute.

This study is looking at 50 North Carolina hospitals to evaluate a transitional and early discharge program called Comprehensive Post-Acute Stroke Services. The study is assessing whether or not the program has an effect on patients' daily function, readmission rates, mortality, consistency of physician care, and use of transitional care services.

### **Project ACHIEVE (Achieving Patient-centered Care and Optimized Health in Care Transitions by Evaluating the Value of Evidence)**

Williams, MV (University of Kentucky, Lexington, KY). Patient-Centered Outcomes Research Institute.

This study is evaluating different transitional care interventions to assess their effects on the patient experience, reported health outcomes, 30-day readmissions, 30-day emergency room visits, adverse drug events, and caregiver experiences.

### **Improving Transitional Care for Veterans Discharged to Post-Acute Care Facilities**

Burke, R (VA Eastern Colorado Health Care System, Denver VA Medical Center, Denver, CO). Department of Veterans Affairs.

This study is assessing transitions of care from VA hospitals to post-acute care facilities and piloting an intervention to improve transitions of care for veterans moving forward.

## Search Strategy:

Staff used key words to search various databases and journals for relevant articles and then examined the bibliographies of these articles to identify additional studies. Staff identified grey literature by searching Google with the key words identified below and by reviewing the websites of health care, health policy, trade group, government, and academic organizations mentioned in the individual studies listed in this Roadmap or known to produce analysis and publications related to readmissions and transitional care after hospital discharge. The grey literature list in this Roadmap represents resources most relevant to post-hospital patient care coordination and hospital readmissions. Because the Roadmap seeks to inform current policy, we focused the search on the period 2010 through 2016, with older resources included when appropriate. AcademyHealth revised an initial draft to incorporate suggestions and comments from three external reviewers with relevant expertise.

**Databases Searched:** PubMed/MEDLINE; JSTOR; Wiley Online Library; Web of Science; SAGE Publications; EBSCO HOST—Academic Search Complete, Academic Search Alumni Edition, MEDLINE, E-Journals, CINAHL, Business Source Complete, Abstracts in Social Gerontology; Google Scholar; Health Services Research Projects in Progress (HSRProj) ; McMaster Health Forum—Health Systems Evidence; Medical Care Research and Review; Cochrane Library.

**Key words:** The list below outlines the key word combinations included in the search strategy.

“care coordination” **AND** (“patient discharge” **OR** readmissions **OR** “hospital readmissions”)  
 “patient discharge” **AND** readmissions  
 “transitional care” **AND** (readmissions **OR** “hospital readmissions” **OR** “Medicare”)  
 “hospital readmission reduction program” **AND** Medicare  
 “hospital readmissions” **AND** program

**Inclusion criteria:** Research studies and other resources related to programs focusing on the impact of transitional care post-hospital discharge and readmission rates.

## Key to Cited Resources

- Systematic reviews** synthesize findings from a body of research literature.
- Individual studies** provide findings from key pieces of research published in the peer-reviewed literature.
- Grey literature** provides relevant evidence that may or may not be peer reviewed and is published by organizations whose primary activity is not publishing.
- Ongoing research** includes studies currently underway that address the topic area.

## Endnotes

1. Transitional care programs and care coordination strategies emerged in the 1990’s as patient-centered, nurse-led initiatives facilitating patients’ hospital discharge and supporting follow-up treatment. Transitional care refers to a set of actions designed to ensure continuous coordination. Retrieved from: [National Transitions of Care Coalition](#). These transitional care models may include activities such as medication management, a transitional care nurse providing follow-up, physician follow-up, or phone outreach, among other strategies. Retrieved from: [Transitional Care Strategies From Hospital to Home](#).
2. The Listening Project interviews policymakers, delivery system leaders, and other users of health services and policy research to identify the most pressing health services research needs looking three to five years into the future.