

# Transitional Care Interventions To Prevent Readmissions for People With Heart Failure

## Focus of This Summary

This is a summary of a systematic review evaluating the evidence regarding the efficacy, comparative effectiveness, and harms of transitional care interventions (defined in Table 1) that aim to reduce readmissions and mortality for adults hospitalized with heart failure (HF). The systematic review included 53 articles reporting on 47 eligible studies published from 1990 to October 29, 2013. The full report, listing all studies, is available at [www.effectivehealthcare.ahrq.gov/heart-failure](http://www.effectivehealthcare.ahrq.gov/heart-failure). This summary is provided to assist in informed clinical decisionmaking. However, reviews of evidence should not be construed to represent clinical recommendations or guidelines.

## Background

HF hospitalizations in the United States have declined by almost 30 percent during the past decade. However, national data show no evidence that readmission rates for patients with HF have fallen during the past 2 decades. Readmissions account for an estimated \$15 billion in annual Medicare spending. A preventable readmission is defined as one related to the previous admission if there was a reasonable clinical expectation that it could have been prevented by providing quality care during the initial hospitalization, adequate discharge planning, adequate postdischarge followup, or improved coordination between inpatient and outpatient health care teams.

Previous studies have suggested that the use of transitional care interventions might reduce the rate of preventable readmissions. Transitional care interventions are considered a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location. Examples of transitional care interventions include home visiting, telephone support, telemonitoring, and patient education.

Regarding recommendations for managing patients immediately after discharge for HF, the American College of Cardiology Foundation/American Heart Association (ACCF/AHA) developed a guideline in 2013. This guideline focuses on the importance of optimizing HF pharmacotherapy before discharge and providing HF education before discharge (including self-care management) and recommends a followup visit within 7 to 14 days of discharge or a telephone followup within 3 days of discharge (or both). The ACCF/AHA guideline also recommends initiating multidisciplinary-HF disease-management programs for patients at high risk for readmission.

However, current clinical practice in the care of adults with HF after hospitalization varies greatly. Uncertainty remains about effective strategies to reduce early readmission rates among adults with HF. The current systematic review and meta-analysis of the effectiveness of transitional care interventions for adults with HF aimed to address some of these issues.

## Conclusions

Home-visiting programs and multidisciplinary-HF clinic-based interventions for patients with HF reduced all-cause readmissions (high strength of evidence [SOE]<sup>\*</sup>) and mortality (moderate SOE) over 3 to 6 months. Structured telephone support reduced HF-specific readmissions (high SOE) and mortality (moderate SOE) over 3 to 6 months. However, structured telephone support did not reduce

all-cause readmissions over a similar time period (moderate SOE). Evidence regarding the efficacy of telemonitoring interventions, nurse-led HF clinic-based interventions, and primarily educational interventions was limited. Direct evidence was insufficient to permit conclusions about whether one type of intervention was more efficacious than any other.

<sup>\*</sup>Please see the SOE scale on page 2.



**Table 1: Categories and Definitions of Transitional Care Interventions**

Category	Definition
<b>Home-visiting programs</b>	Home visits by clinicians, such as nurses or physician assistants, who deliver education, reinforce self-care instructions, perform a physical examination, or provide other care (e.g., physical therapy, medication reconciliation).
<b>Structured telephone support</b>	Patient followup, education, or self-care training (or combinations thereof) after discharge using telephone technology in a structured format (e.g., scheduled telephone calls with structured questions).
<b>Telemonitoring</b>	Remote monitoring of physiological data (e.g., electrical activity of the heart, blood pressure, weight, pulse, respiratory rate) with digital, broadband, satellite, wireless, or Bluetooth® transmission to a monitoring center with or without remote clinical visits (e.g., video monitoring).
<b>Outpatient clinic-based interventions</b>	Services provided in an outpatient clinic—multidisciplinary-HF clinic, nurse-led HF clinic, or primary care clinic. Multidisciplinary-HF clinics involve more emphasis on physician contact and access to a multidisciplinary care team (cardiologists, nurses, dieticians, pharmacists). Nurse-led clinics are managed by a nurse and may also offer unstructured telephone support (e.g., a patient hotline) outside clinic hours.
<b>Primarily educational interventions</b>	Patient education (and self-care training) delivered before or upon hospital discharge by various personnel or modes of delivery: in-person, interactive CD, or video education, but without home visiting.
<b>Other</b>	Unique interventions or interventions that did not fit into any of the other categories (e.g., individual peer support for patients with HF or cognitive training for patients with HF and cognitive dysfunction).

**Clinical Bottom Line**

**Table 2: Summary of Key Findings and Strength of Evidence for Transitional Care Interventions Versus Usual Care for HF**

Intervention	Outcome at 3–6 Months	N Studies	N Subjects	Finding	Relative Risk (95% CI)	NNT*	SOE
<b>Home-visiting programs</b>	All-cause readmission	9	1563	↓	0.75 (0.68 to 0.86)	9	●●●
	HF-specific readmission	1	282	↓	0.51 (0.31 to 0.82)	7	●●○
	Composite endpoint**	4	824	↓	0.78 (0.65 to 0.94)	10	●●○
	Mortality	8	1693	↓	0.77 (0.60 to 0.997)	33	●●○
	Number of hospital days at readmission	3	403	↓	WMD, -1.17 (-2.44 to 0.09)	NA	●○○
<b>Structured telephone support</b>	All-cause readmission	8	2166	↔	0.92 (0.77 to 1.10)	NA	●●○
	HF-specific readmission	7	1790	↓	0.74 (0.61 to 0.90)	14	●●●
	Composite endpoint	3	977	↔	0.81 (0.58 to 1.12)	NA	●○○
	Mortality	7	2011	↓	0.74 (0.56 to 0.97)	27	●●○
	Number of hospital days at readmission	5	1189	↓	WMD, -0.95 (-2.43 to 0.53)	NA	●●○
<b>Telemonitoring</b>	All-cause readmission	3	434	↔	1.11 (0.87 to 1.42)	NA	●●○
	HF-specific readmission	1	182	↔	1.70 (0.82 to 3.51)	NA	●●○
	Mortality	3	564	↔	0.93 (0.25 to 3.48)	NA	●○○
<b>Multidisciplinary-HF clinic</b>	All-cause readmission	2	336	↓	0.70 (0.55 to 0.89)	8	●●●
	HF-specific readmission	1	106	–	0.70 (0.29 to 1.70)	NA	○○○
	Composite endpoint	2	306	↔	0.80 (0.43 to 1.01)	NA	●●○
	Mortality	3	536	↓	0.56 (0.34 to 0.92)	18	●●○
<b>Nurse-led HF clinic</b>	All-cause readmission	2	264	↔	0.88 (0.57 to 1.37)	NA	●○○
	HF-specific readmission	1	158	–	0.95 (0.68 to 1.32)	NA	○○○
	Composite endpoint	1	106	–	0.66 (0.43 to 1.01)	NA	○○○
	Mortality	2	264	↔	0.59 (0.12 to 3.03)	NA	●○○
<b>Primarily educational interventions</b>	All-cause readmission	1	200	–	1.14 (0.84 to 1.54)	NA	○○○
	HF-specific readmission	1	223	–	0.53 (0.31 to 0.90)	NA	○○○
	Composite endpoint	2	423	↔	0.92 (0.58 to 1.47)	NA	●○○
	Mortality	2	423	↔	1.20 (0.52 to 2.76)	NA	●○○

95% CI = 95-percent confidence interval; HF = heart failure; N = number; NA = not available; NNT = number needed to treat; SOE = strength of evidence; WMD = weighted mean difference; ↓ = reduced; ↔ = no difference vs. control; – = evidence is insufficient

\* An NA entry for NNT indicates that the relative risk (95% CI) was not statistically significant and that an NNT was not calculated.

\*\* The composite endpoint comprises all-cause readmission or death.

**Strength of Evidence Scale<sup>1</sup>**

- High: ●●● High confidence that the evidence reflects the true effect. Further research is very unlikely to change our confidence in the estimate of effect.
- Moderate: ●●○ Moderate confidence that the evidence reflects the true effect. Further research may change our confidence in the estimate of effect and may change the estimate.
- Low: ●○○ Low confidence that the evidence reflects the true effect. Further research is likely to change our confidence in the estimate of effect and is likely to change the estimate.
- Insufficient: ○○○ Evidence either is unavailable or does not permit a conclusion.

<sup>1</sup>Owens DK, Lohr KN, Atkins D, et al. J Clin Epidemiol. 2010 May;63(5):513-23. PMID: 19595577.

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## Other Findings of the Review

- **Interventions with inconclusive evidence:** Evidence was inconclusive to determine the efficacy of the following interventions in reducing HF-specific readmission rates: most primarily educational interventions, nurse-led HF clinic interventions, primary care clinic interventions, peer support interventions, and cognitive training interventions.
- **Quality of life:** HF-specific quality of life was greater for home-visiting programs than usual care over 3 months (low SOE) but not at 6 months (low SOE).
- **Emergency room (ER) visits:** Evidence was insufficient to determine if transitional care interventions increased or decreased ER visits.
- **Components of effective interventions:** Multicomponent interventions such as home-visiting programs and multidisciplinary-HF clinic interventions were effective in reducing all-cause readmissions and mortality over 3 to 6 months.
  - The key components of these interventions included HF education emphasizing self-care, HF pharmacotherapy emphasizing adherence, face-to-face contact after hospital discharge, mechanisms for postdischarge medication adjustment, and streamlined mechanisms to contact care delivery personnel (e.g., a patient hotline).
  - These interventions were higher intensity interventions and included teams of providers who delivered the intervention.

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## What To Discuss With Your Patients and/or Their Caregivers

- Share the important benefits and challenges of these transitional care programs in decreasing readmissions and mortality for people admitted to the hospital with HF.
- Encourage them to ask about the availability of transitional care interventions in the event of hospitalization.
- Discuss their participation, roles, and responsibilities in the various transitional care programs by describing key elements of the programs; for example:
  - Home-visiting programs: Your doctor, nurse, or physician assistant will visit you at home to perform a physical examination, adjust your medication dose if needed, and educate you and/or your caregivers on self-care, medication adherence, and followup visits.

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## Gaps in Knowledge and Limitations of the Evidence Base

Several gaps and limitations were identified in the evidence base reviewed for this report:

- While Medicare and hospitals are focused on 30-day outcomes, few trials assessed the effectiveness of transitional care interventions at 30 days.
- Evidence was insufficient to permit conclusions about the comparative effectiveness of transitional care interventions. Few trials directly compared one type of transitional care intervention with another.
- Evidence was insufficient to permit definitive conclusions about whether any transitional care interventions are more or less efficacious in reducing readmissions or mortality based on patient subgroups defined by age, sex, race, ethnicity, socioeconomic status, disease severity, or coexisting conditions.
- No trial assessed whether transitional care interventions increased or decreased caregiver or self-care burden.
- Included trials varied in the extent to which details of usual care and intervention components were described. Information about any overlap in the services provided to patients was also variable in the included studies.
- Descriptions of whether (and how) interventions addressed medication management were often unsatisfactory.
- Evidence concerning the potential harms of transitional care interventions was limited.

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## Ordering Information

For electronic copies of this clinician research summary and the full systematic review, visit [www.effectivehealthcare.ahrq.gov/heart-failure](http://www.effectivehealthcare.ahrq.gov/heart-failure).

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## Source

The information in this summary is based on *Transitional Care Interventions To Prevent Readmissions for People With Heart Failure*, Comparative Effectiveness Review No. 133, prepared by the RTI International–University of North Carolina Evidence-based Practice Center under Contract No. 290-2012-00008-I for the Agency for Healthcare Research and Quality, May 2014. Available at [www.effectivehealthcare.ahrq.gov/heart-failure](http://www.effectivehealthcare.ahrq.gov/heart-failure). This summary was prepared by the John M. Eisenberg Center for Clinical Decisions and Communications Science at Baylor College of Medicine, Houston, TX.

