Successful Interventions for Avoiding Readmission
In the Elderly

Rebekah L. Gardner, MD

For an elderly patient, hospitalization can herald a cascade of admissions and progressive functional decline. Readmissions, often defined as those that occur within a specified time frame after discharge from an index admission, are particularly frequent among patients initially admitted with congestive heart failure, chronic obstructive pulmonary disease, myocardial infarction, diabetes, and stroke. In addition to the deleterious effects of the hospitalization itself, the act of transferring patients back and forth between healthcare settings creates an opportunity for medical errors and miscommunication. With patients back and forth between healthcare settings creates an opportunity for medical errors and miscommunication.1 With shorter hospital stays and an increasing prevalence of hospitalists, the discharge transition is fraught for elderly patients with multiple chronic conditions. Healthcare staff may relay information about patients’ medical histories, medications and allergies, and prior testing late, incorrectly, incompletely, or not at all. This transition gap is receiving recognition at all levels of patient care delivery, and the Centers for Medicare & Medicaid Services has targeted care transitions and hospital readmissions as areas needing quality improvement. More and more, rates of readmission to the hospital are perceived as markers for quality of care.2

Over the last fifteen years, investigators have undertaken a variety of studies to understand why particular diseases and patient subgroups are at higher risk for readmission. They have proposed different interventions to ameliorate the transition from the hospital. Unfortunately, it is difficult to know what works. Categorizing the possible interventions is challenging because of marked heterogeneity in every aspect of the effort. For example, some investigators begin when patients are first admitted, while others focus on patients’ arrival at their first post-discharge clinic visit. More ambitious programs seek to pursue change at multiple points between admission and discharge. This article will discuss some of the more successful interventions.

Pre-discharge interventions

Many interventions target patients while they are still in the hospital. Patients may be assessed for risk of poor outcomes, educated about their condition, trained on self-management skills, evaluated by geriatric consultants, or given follow-up appointments before leaving the hospital. Interventions often include the patients’ caregivers in the patient education and discharge planning.

Koelling and colleagues provide an example of a successful pre-discharge intervention in patients admitted with congestive heart failure.3 The researchers compared standard discharge care with the addition of a one-hour, one-on-one teaching session with a nurse educator. The session focused on the principles of heart failure and the rationale for therapy, dietary recommendations, and self-management strategies. With this intervention, they halved heart failure readmissions within 180 days of discharge.

Post-discharge interventions

The majority of transition interventions in the literature take place after hospital discharge. Typically these incorporate a home visit, often by an advanced practice or specially trained nurse. Depending on the study, a variety of medical personnel (physicians, pharmacists, physical therapists) might also perform patient assessments, measure vital signs, and make management recommendations. In addition to patient visits and recommendations, providers also perform medication reconciliation, educate patients and their caregivers, facilitate communication with patients’ primary care physician or specialists, or work on self-management skills.

Disease management programs often provide the framework for this approach. Young and colleagues found that in patients discharged after myocardial infarction they reduced readmissions by about half by using a protocol that included six home visits by a nurse trained in cardiac care, a standardized assessment checklist, communication with primary care physicians, and patient education.4

Telehealth interventions

Telehealth interventions are an emerging strategy to prevent readmissions. This category represents a variation of post-discharge home care intervention, but instead of a nurse visiting patients’ homes, the assessment and communication occur remotely, usually by telephone. These programs range from unstructured telephone calls to multiple calls with the goal of teaching self-management skills, promoting medication adherence, and adjusting therapies based on symptoms. Other interventions provide in-home instruments to allow daily measurement of weight, blood pressure, heart rate, and rhythm, which patients then transmit over a telephone line.

One successful telehealth intervention included three months of remote monitoring of patients with angina and congestive heart failure.5 The program included weekly video conferencing to assess patients’ progress and to provide education; blood pressure and weight were transmitted daily over a
telephone line. The investigators reduced readmissions by a third during this period, with much of the benefit in the patients with angina. A systematic review of home monitoring for patients with heart failure reported a positive impact on hospital readmissions, as well as emergency department visits and quality of life.6

**Multidimensional interventions**

Multidisciplinary, multidimensional interventions address several points along the patient pathway and incorporate many of the modalities discussed above. These are often intensive, both in time and resources; and almost all include advanced practice nurses. In one of the best-known studies in this category in older patients with congestive heart failure, Naylor and colleagues reduced readmissions by a third.7 Specially trained nurses visited patients within 24 hours of their index hospital admission and then daily while the patients were hospitalized. They performed a comprehensive assessment of patients and caregivers, spearheaded discharge planning, coordinated care among the patients’ hospital and outpatient physicians, and assisted with medication regimens. They then performed a home visit within 24 hours of discharge and weekly for the first month. The nurses were also available by telephone 7 days a week.

Coleman’s group also demonstrated a substantial decrease in readmissions by incorporating an advanced practice nurse in a multidimensional intervention.8 Similar to Naylor’s study, the nurse met with patients while they were in the hospital, made home visits, and helped patients manage their medications. In Coleman’s work, however, the nurse acted as a “coach” for patients and their caregivers; nurses did not participate in medical management and were not involved as another healthcare provider. For example, the nurse encouraged the patients to call their primary care physician if questions arose and rehearsed the upcoming encounter to help patients articulate their needs.

**Challenges in the field**

Judging the generalizability of a particular intervention is challenging. Successful transition interventions may rely on one or two specific nurses or may address a shortcoming in a particular delivery network. In addition, much of the research is coming from abroad, and different health care systems, particularly single-payer systems, may produce different outcomes than a similar intervention in the United States. Many of the interventions that appear to work in one study will show no significant effect in another. Some discharge interventions have actually been associated with an increase in readmission rates.9

Additionally, the studies vary in the duration of the intervention, and in the frequency and intensity of patient contact. The measured endpoints vary from study to study. Although this discussion focuses on readmissions, studies also examine other clinical factors (e.g., mortality, medication use, guideline adherence, and functional status), healthcare utilization (e.g., days in hospital when readmitted, multiple readmissions, emergency department visits, and total costs), knowledge of disease management, quality of life, patient satisfaction, and caregiver burden. Lastly, the number of patients included in each study is often small, and projects may be underpowered to detect meaningful results. Although researchers have performed systematic reviews and meta-analyses to capture these effects, the results are often equivocal.

**Successful elements**

Most systematic reviews of these transition interventions cautiously report some evidence of their efficacy.10 Interventions that include both a pre-discharge and a post-discharge component and interventions that include some aspect of patient education and self-management seem to be the most beneficial.11 Early post-discharge involvement and frequent contact also have been cited as important elements in improving clinical outcomes.12

Encouragingly, almost all interventions which measure cost show a decreased cost associated with performing the intervention, regardless of whether the number of readmissions had been reduced. This is because often investigators are able to demonstrate a decrease in the number of days patients stay in the hospital when readmitted or a decrease in “multiple readmissions.” Cost-effectiveness is a particularly compelling outcome when investigators include total healthcare costs in their calculations, not just hospital costs. Ironically, despite the benefits and likely cost-effectiveness, hospitals may actually profit from readmissions. Consequently, it may be reasonable to target health insurers as potential sponsors and to emphasize the link to quality of care to create incentive in reluctant participants.

**Upcoming demonstrations**

The Centers for Medicare & Medicaid Services (CMS) have focused on care transitions in their 9th Scope of Work for quality improvement. In the coming months, they will select 18 states to create demonstration projects aimed at reducing readmission rates. These interventions will address system-level weaknesses, specific diseases that carry high risk of readmission, and drivers of local readmission rates.

**Conclusion**

Readmissions after a hospitalization are common in the elderly, and certain diseases, such as congestive heart failure, are associated with a particularly high readmission rate. There is an enticing array of potential interventions to ameliorate this problem - from a simple telephone call after discharge to a multidisciplinary, multidimensional year-long intervention - and many appear promising in reducing readmissions and lowering costs. Future research should attempt to standardize intervention taxonomy, design, and outcome measures to facilitate comparison across multiple protocols. In addition, more investigation is required to determine which aspects of the multidimensional interventions are the most effective.

**References**

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**Rapids**

by Louise Giguere

Like a river, the natural flow of life
the source, what force, the majesty,
the depth, making its mark, surrounds,
the edges, its determined course, profound.

It turns, it bends, smooth as glass,
and the willowy reed, like an innocent lass,
lulled, to the sound of motion, floating,
mellowed, unaware of the gradual change.

The range, the increasing turbulence,
the broken sound, the uneven obstructions
not budging, but judging, the current of breath,
the forecast, the charge, the venous protest

The slow boil fury of cold foam,
oscillates, blinding,
rapt, treasonous tears
It's calling.

The aqueous energy stirred,
straight through.
delving deep, deeper, the unfamiliar,
the rapids they were.

Cresting, the rapid phase, leveling,
the waters calmed, gently flowing,
recalling, the feelings,
the squalor of reversing tides,
on its way.

The birth, the stream, the flexing range,
fountain head fluxes, forward,
to the great somewhere.

The rapids remembered, like a river felt,
life's blood, the natural flow of life,
navigating, nearing the source, wending,
and winsome, the greatest course,
Rapids, once again, surrenders.
To be, the current, the force,
The open seas

The author, who lives in Coventry, has written this poem around her stroke. She writes: “Rapids is a metaphor about a mindset and emotional well being, while paralleling the assault on the blood vessels leading to the actual stroke experience. The poem continues with recognition, acceptance, change, and finally ongoing emotional and physical recovery.”

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