

**JING LI, MD, MS**

Assistant Professor of Medicine;  
Center for Health Services Research,  
University of Kentucky, Lexington

**ROBERT YOUNG, MD, MS**

Assistant Professor of Medicine; Division  
of Hospital Medicine, Feinberg School  
of Medicine, Northwestern University,  
Chicago, IL

**MARK V. WILLIAMS, MD\***

Director, Center for Health Services  
Research; Professor & Vice Chair, Depart-  
ment of Internal Medicine; Interim Chief,  
Division of Hospital Medicine, University  
of Kentucky, Lexington

# Optimizing transitions of care to reduce rehospitalizations

## ABSTRACT

Transitions of care—when patients move from one health care facility to another or back home—that are poorly executed result in adverse effects for patients. Fortunately, programs can be implemented that enhance collaboration across care settings and improve outcomes, including reducing hospital readmission rates.

## KEY POINTS

Traditional health care delivery models typically do not have mechanisms in place for coordinating care across settings, such as when a patient goes from the hospital to a skilled nursing facility or to home.

Transitions can fail, leading to hospital readmission, because of ineffective patient and caregiver education, discharge summaries that are incomplete or not communicated to the patient and the next care setting, lack of follow-up with primary care providers, and poor patient social support.

A number of programs are trying to improve transitions of care, with some showing reductions in hospital readmission rates and emergency department visits.

Successful programs use multiple interventions simultaneously, including improved communication among health care providers, better patient and caregiver education, and coordination of social and health care services.

**Y**OU HAVE SPENT SEVERAL DAYS checking on a patient hospitalized for an acute exacerbation of heart failure. You have straightened out her medications and diet and discussed a plan for follow-up with the patient and a family member, and now she is being wheeled out the door. What happens to her next?

Too often, not your desired plan. If she is going home, maybe she understands what she needs to do, maybe not. Maybe she will get your prescriptions filled and take the medications as directed, maybe not. If she is going to a nursing home, maybe the physician covering the nursing home will get your plan, maybe not. There is a good chance she will be back in the emergency room soon, all because of a poor transition of care.

*Transitions of care* are changes in the level, location, or providers of care as patients move within the health care system. These can be critical junctures in patients' lives, and if poorly executed can result in many adverse effects—including rehospitalization.<sup>1</sup>

Although high rehospitalization rates gained national attention in 2009 after an analysis of Medicare data,<sup>2</sup> health care providers have known about the lack of coordinated care transitions for more than 50 years.<sup>3</sup> Despite some progress, improving care transitions remains a national challenge. As the health system evolves from a fee-for-service financial model to payment-for-value,<sup>4</sup> it is especially important that health care providers improve care for patients by optimizing care transitions.

In this article, we summarize the factors contributing to poor care transitions, highlight programs that improve them, and discuss strategies for successful transitions.

\*Dr. Williams has disclosed that he serves as principal investigator on Project BOOST for the Society of Hospital Medicine.

doi:10.3949/ccjm.81a.13106

## ■ TRANSITION PROBLEMS ARE COMMON

Transitions of care occur when patients move to short-term and long-term acute care hospitals, skilled nursing facilities, primary and specialty care offices, community health centers, rehabilitation facilities, home health agencies, hospice, and their own homes.<sup>5</sup> Problems can arise at any of these transitions, but the risk is especially high when patients leave the hospital to receive care in another setting or at home.

In the past decade, one in five Medicare patients was rehospitalized within 30 days of discharge from the hospital,<sup>2</sup> and up to 25% were rehospitalized after being discharged to a skilled nursing facility.<sup>6</sup> Some diagnoses (eg, sickle cell anemia, gangrene) and procedures (eg, kidney transplantation, ileostomy) are associated with readmission rates of nearly one in three.<sup>7,8</sup>

The desire of policymakers to “bend the cost curve” of health care has led to efforts to enhance care coordination by improving transitions between care venues. Through the Patient Protection and Affordable Care Act, a number of federal initiatives are promoting strategies to improve care transitions and prevent readmissions after hospital discharge.

The Hospital Readmission Reduction Program<sup>9</sup> drives much of this effort. In fiscal year 2013 (beginning October 1, 2012), more than 2,000 hospitals incurred financial penalties of up to 1% of total Medicare diagnosis-related group payments (about \$280 million the first year) for excess readmissions.<sup>10</sup> The penalty's maximum rose to 2% in fiscal year 2014 and could increase to 3% in 2015. The total penalty for 2014 is projected to be \$227 million, with 2,225 hospitals affected.<sup>11</sup>

The Centers for Medicare and Medicaid Innovation has committed hundreds of millions of dollars to Community-based Care Transitions Programs<sup>12</sup> and more than \$200 million to Hospital Engagement Networks<sup>13</sup> to carry out the goals of the Partnership for Patients,<sup>14</sup> aiming to reduce rehospitalizations and other adverse events.

At first, despite these efforts, readmission rates did not appear to change substantially.<sup>15</sup> However, the Centers for Medicare and Medicaid Services reported that hospital readmission rates for Medicare fee-for-service beneficiaries declined in 2012 to 18.4%,<sup>16</sup> although

some believe that the reduction is related to an increase in the number of patients admitted for observation in recent years.<sup>17</sup>

## ■ TRANSITIONS ARE OFTEN POORLY COORDINATED

Although some readmissions are unavoidable—resulting from the inevitable progression of disease or worsening of chronic conditions<sup>18</sup>—they may also result from a fumbled transition between care settings. Our current system of care transition has serious deficiencies that endanger patients. Areas that need improvement include communication between providers, patient education about medications and treatments, monitoring of medication adherence and complications, follow-up of pending tests and procedures after discharge, and outpatient follow-up soon after discharge.<sup>19–21</sup>

Traditional health care does not have dependable mechanisms for coordinating care across settings; we are all ensconced in “silos” that generally keep the focus within individual venues.<sup>22</sup> Lack of coordination blurs the lines of responsibility for patients in the period between discharge from one location and admission to another, leaving them confused about whom to contact for care, especially if symptoms worsen.<sup>23,24</sup>

Gaps in coordination are not surprising, given the complexity of the US health care system and the often remarkable number of physicians caring for an individual patient.<sup>5</sup> Medicare beneficiaries see an average of two primary care physicians and five specialists during a 2-year period; patients with chronic conditions may see up to 16 physicians in 1 year.<sup>25</sup> Coordinating care between so many providers in different settings, combined with possible patient factors such as disadvantaged socioeconomic status, lack of caregiver support, and inadequate health literacy, provides many opportunities for failures.

Research has identified several root causes behind most failed care transitions:

### Poor provider communication

Multiple studies associate adverse events after discharge with a lack of timely communication between hospital and outpatient providers.<sup>26</sup> One study estimated that 80% of serious medical errors involve miscommunication dur-

**Transitions of care can be critical junctures in patients' lives**

ing the hand-off between medical providers.<sup>27</sup> Discharge summaries often lack important information such as test results, hospital course, discharge medications, patient counseling, and follow-up plans. Most adverse drug events after hospital discharge result directly from breakdown in communication between hospital staff and patients or primary care physicians.<sup>28</sup> Approximately 40% of patients have test results pending at the time of discharge and 10% of these require some action; yet outpatient physicians and patients are often unaware of them.<sup>21</sup>

### Ineffective patient and caregiver education

The Institute of Medicine report, *Crossing the Quality Chasm: A New Health System for the 21st Century*,<sup>29</sup> noted that patients leaving one setting for another receive little information on how to care for themselves, when to resume activities, what medication side effects to watch out for, and how to get answers to questions. Of particular concern is that patients and caregivers are sometimes omitted from transition planning and often must suddenly assume new self-care responsibilities upon going home that hospital staff managed before discharge. Too often, patients are discharged with inadequate understanding of their medical condition, self-care plan,<sup>23,24</sup> and who should manage their care.<sup>30</sup>

Up to 36% of adults in the United States have inadequate health literacy (defined as the inability to understand basic health information needed to make appropriate decisions), hindering patient education efforts.<sup>31–33</sup> Even if they understand, patients and their caregivers must be engaged or “activated” (ie, able and willing to manage one’s health) if we expect them to adhere to appropriate care and behaviors. A review found direct correlations between patient activation and healthy behavior, better health outcomes (eg, achieving normal hemoglobin A<sub>1c</sub> and cholesterol levels), and better care experiences.<sup>34</sup> This review also noted that multiple studies have documented improved activation scores as a result of specific interventions.

### No follow-up with primary care providers

The risk of hospital readmission is significantly lower for patients with chronic obstructive pulmonary disease or heart failure who receive

follow-up within 7 days of discharge.<sup>35–38</sup> Of Medicare beneficiaries readmitted to the hospital within 30 days of discharge in 2003–2004, half had no contact with an outpatient physician in the interval between their discharge and their readmission,<sup>2</sup> and one in three adult patients discharged from a hospital to the community does not see a physician within 30 days of discharge.<sup>39</sup> The dearth of primary care providers in many communities can make follow-up care difficult to coordinate.

### Failure to address chronic conditions

Analyses of national data sets reveal that patients are commonly rehospitalized for conditions unrelated to their initial hospitalization. According to the Center for Studying Health System Change, more than a quarter of readmissions in the 30 days after discharge are for conditions unrelated to those identified in the index admission, the proportion rising to more than one-third at 1 year.<sup>39</sup> Among Medicare beneficiaries readmitted within 30 days of discharge, the proportion readmitted for the same condition was just 35% after hospitalization for heart failure, 10% after hospitalization for acute myocardial infarction, and 22% after hospitalization for pneumonia.<sup>40</sup>

### Lack of community support

Multiple social and environmental factors contribute to adverse postdischarge events.<sup>41–43</sup> For socioeconomically disadvantaged patients, care-transition issues are compounded by insufficient access to outpatient care, lack of social support, and lack of transportation. Some studies indicate that between 40% to 50% of readmissions are linked to social problems and inadequate access to community resources.<sup>44–47</sup> Psychosocial issues such as limited health literacy, poor self-management skills, inadequate social support, and living alone are associated with adverse outcomes, including readmission and death.<sup>48,49</sup> Such factors may help explain high levels of “no-shows” to outpatient follow-up visits.

## ■ NATIONAL MODELS OF BEST PRACTICES

Efforts to reduce readmissions have traditionally focused on hospitals, but experts now recognize that multiple factors influence readmis-

**One in five Medicare patients is rehospitalized within 30 days**

sions and must be comprehensively addressed. Several evidence-based models seek to improve patient outcomes with interventions aimed at care transitions:

**Project BOOST**

Project BOOST (Better Outcomes by Optimizing Safe Transitions)<sup>50</sup> is a national initiative developed by the Society of Hospital Medicine to standardize and optimize the care of patients discharged from hospital to home. The program includes evidence-based clinical interventions that can easily be adopted by any hospital. Interventions are aimed at:

- Identifying patients at high risk on admission
- Targeting risk-specific situations
- Improving information flow between inpatient and outpatient providers
- Improving patient and caregiver education by using the teach-back method
- Achieving timely follow-up after discharge.

The program includes a year of technical support provided by a physician mentor.

Preliminary results from pilot sites showed a 14% reduction in 30-day readmission rates in units using BOOST compared with control units in the same hospital.<sup>51</sup> Mentored implementation was recognized by the Joint Commission and the National Quality Forum with the 2011 John M. Eisenberg Award for Innovation in Patient Safety and Quality.<sup>52</sup>

**Project RED**

Project RED (Re-Engineered Discharge)<sup>53</sup> evolved from efforts by Dr. Brian Jack and colleagues to re-engineer the hospital workflow process to improve patient safety and reduce rehospitalization rates at Boston Medical Center. The intervention has 12 mutually reinforcing components aimed at improving the discharge process.

In a randomized controlled trial, Project RED led to a 30% decrease in emergency department visits and readmissions within 30 days of discharge from a general medical service of an urban academic medical center.<sup>54</sup> This study excluded patients admitted from a skilled nursing facility or discharged to one, but a recent study demonstrated that Project RED also led to a lower rate of hospital admis-

sion within 30 days of discharge from a skilled nursing facility.<sup>55</sup>

**The STAAR initiative**

The STAAR initiative (State Action on Avoidable Re-hospitalizations)<sup>56</sup> was launched in 2009 by the Institute for Healthcare Improvement with the goal of reducing avoidable readmissions in the states of Massachusetts, Michigan, and Washington. Hospital teams focus on improving:

- Assessment of needs after hospital discharge
- Teaching and learning
- Real-time hand-off communication
- Timely follow-up after hospital discharge.

As yet, no published studies other than case reports show a benefit from STAAR.<sup>57</sup>

**The Care Transitions Program**

The Care Transitions Program,<sup>58</sup> under the leadership of Dr. Eric Coleman, aims to empower patients and caregivers, who meet with a “transition coach.” The program provides assistance with medication reconciliation and self-management, a patient-centered record owned and maintained by the patient to facilitate cross-site information transfer, timely outpatient follow-up with primary or specialty care, a list of red flags to indicate a worsening condition, and instructions on proper responses.

A randomized controlled trial of the program demonstrated a reduction in hospital readmissions at 30, 90, and 180 days, and lower hospital costs at 90 and 180 days.<sup>59</sup> This approach also proved effective in a real-world setting.<sup>60</sup>

**The Transitional Care Model**

Developed by Dr. Mary Naylor and colleagues, the Transitional Care Model<sup>61</sup> also aims at patient and family empowerment, focusing on patients’ stated goals and priorities and ensuring patient engagement. In the program, a transitional care nurse has the job of enhancing patient and caregiver understanding, facilitating patient self-management, and overseeing medication management and transitional care.

A randomized controlled trial demonstrated improved outcomes after hospital discharge for elderly patients with complex medical illnesses, with overall reductions in medical

**Our current system has serious deficiencies that endanger patients**



costs through preventing or delaying rehospitalization.<sup>62</sup> A subsequent real-world study validated this approach.<sup>63</sup>

### The Bridge Model

The Illinois Transitional Care Consortium's Bridge Model<sup>64</sup> is for older patients discharged home after hospitalization. It is led by social workers ("bridge care coordinators") who address barriers to implementing the discharge plan, coordinate resources, and intervene at three points: before discharge, 2 days after discharge, and 30 days after discharge.

An initial study showed no impact on the 30-day rehospitalization rate,<sup>65</sup> but larger studies are under way with a modified version.

### Guided Care

Developed at the Johns Hopkins Bloomberg School of Public Health, Guided Care<sup>66</sup> involves nurses who work in partnership with physicians and others in primary care to provide patient-centered, cost-effective care to patients with multiple chronic conditions. Nurses conduct in-home assessments, facilitate care planning, promote patient self-management, monitor conditions, coordinate the efforts of all care professionals, and facilitate access to community resources.

A cluster-randomized controlled trial found that this program had mixed results, reducing the use of home health care but having little effect on the use of other health services in the short run. However, in the subgroup of patients covered by Kaiser-Permanente, those who were randomized to the program accrued, on average, 52% fewer skilled nursing facility days, 47% fewer skilled nursing facility admissions, 49% fewer hospital readmissions, and 17% fewer emergency department visits.<sup>67</sup>

### The GRACE model

The GRACE model (Geriatric Resources for Assessment and Care of Elders)<sup>68</sup> was developed to improve the quality of geriatric care, reduce excess health care use, and prevent long-term nursing home placement. Each patient is assigned a support team consisting of a nurse practitioner and a social worker who make home visits, coordinate health care and community services, and develop an individualized care plan.

In one study,<sup>69</sup> GRACE reduced hospital admission rates for participants at high risk of hospitalization by 12% in the first year of the program and 44% in the second year. GRACE participants also reported higher quality of life compared with the control group.<sup>69</sup>

### INTERACT tools

Led by Dr. Joseph Ouslander, INTERACT (Interventions to Reduce Acute Care Transfers)<sup>70</sup> is a quality-improvement initiative for skilled nursing facilities, designed to facilitate the early identification, evaluation, documentation, and communication of changes in the status of residents. Visitors to its website can download a set of tools and strategies to help them manage conditions before they become serious enough to require a hospital transfer. The tools assist in promoting important communication among providers and enhancing advance-care planning.

A 6-month study in 25 nursing homes showed a 17% reduction in self-reported hospital admissions with this program compared with the same period the previous year.<sup>71</sup>

### Additional home-based care interventions

Additional innovations are under way in home-based care.

**The Home Health Quality Improvement National Campaign** is a patient-centered movement to improve the quality of care received by patients residing at home.<sup>72</sup> Through its Best Practices Intervention Packages, it offers evidence-based educational tools, resources, and interventions for reducing avoidable hospitalizations, improving medication management, and coordinating transitional care.

**The Center for Medicare and Medicaid Innovation Independence at Home Demonstration**<sup>73</sup> is testing whether home-based comprehensive primary care can improve care and reduce hospitalizations for Medicare beneficiaries with multiple chronic conditions.

### ■ NO SINGLE INTERVENTION: MULTIPLE STRATEGIES NEEDED

A 2011 review found no single intervention that regularly reduced the 30-day risk of rehospitalization.<sup>74</sup> However, other studies have

**Patients with chronic conditions may see up to 16 physicians in 1 year**

TABLE 1

**Key strategies to reduce hospital readmissions**

|  |
|--|
| Engage a team of key stakeholders—the patient, caregivers, hospital and skilled nursing staff, primary care doctors, home health workers |
| Assess risk and develop a comprehensive transition plan throughout hospitalization   |
| Enhance medication management  |
| Institute daily interdisciplinary communication by the health care team focused on a coordinated transition                              |
| Standardize transition plans, procedures, and forms  |
| Send discharge summaries directly to the primary care physician or next care setting at discharge  |
| Provide easily understood discharge plans to patients and caregivers, and ensure patient understanding through teach-back                |
| Ensure timely follow-up and coordination of support after a patient leaves the care setting  |

shown that multifaceted interventions can reduce 30-day readmission rates. Randomized controlled trials in short-stay, acute care hospitals indicate that improvement in the following areas can directly reduce hospital readmission rates:

- Comprehensive planning and risk assessment throughout hospitalization
- Quality of care during the initial admission
- Communication with patients, their caregivers, and their clinicians
- Patient education
- Predischarge assessment
- Coordination of care after discharge.

In randomized trials, successful programs reduced the 30-day readmission rates by 20% to 40%,<sup>54,62,75–79</sup> and a 2011 meta-analysis of randomized clinical trials found evidence that interventions associated with discharge planning helped to reduce readmission rates.<sup>80</sup>

Methods developed by the national care transition models described above can help hospitals optimize patient transitions (TABLE 1). Although every model has its unique attributes, they have several strategies in common:

**Engage a team of key stakeholders** that may include patients and caregivers, hospital staff (physicians, nurses, case managers, social workers, and pharmacists), community physicians (primary care, medical homes, and specialists), advance practice providers (physician assistants and nurse practitioners), and postacute care facilities and services (skilled nursing facilities, home health agencies, as-

sisted living residences, hospice, and rehabilitation facilities).

**Develop a comprehensive transition plan** throughout hospitalization that includes attention to factors that may affect self-care, such as health literacy, chronic conditions, medications, and social support.

**Enhance medication reconciliation and management.** Obtain the best possible medication history on admission, and ensure that patients understand changes in their medications, how to take each medicine correctly, and important side effects.

**Institute daily interdisciplinary communication** and care coordination by everyone on the health care team with an emphasis on the care plan, discharge planning, and safety issues.<sup>81</sup>

**Standardize** transition plans, procedures and forms. All discharging physicians should use a standard discharge summary template that includes pertinent diagnoses, active issues, a reconciled medication list with changes highlighted, results from important tests and consultations, pending test results, planned follow-up and required services, warning signs of a worsening condition, and actions needed if a problem arises.

**Always send discharge summaries** directly to the patient's primary care physician or next care setting at the time of discharge.

**Give the patient a discharge plan that is easy to understand.** Enhance patient and family education using health literacy standards<sup>82</sup>

**Problems occur especially when patients leave a hospital for another setting**

and interactive methods such as teach-back,<sup>83</sup> in which patients demonstrate comprehension and skills required for self-care immediately after being taught. Such tools actively teach patients and caregivers to follow a care plan, including managing medications.

**Follow up and coordinate support** in a timely manner after a patient leaves the care setting. Follow-up visits should be arranged before discharge. Within 1 to 3 days after discharge, the patient should be called or visited by a case manager, social worker, nurse, or other health care provider.

### ■ CHALLENGES TO IMPROVING TRANSITIONS

Although several models demonstrated significant reductions of hospital readmissions in trials, challenges remain. Studies do not identify which features of the models are necessary

or sufficient, or how applicable they are to different hospital and patient characteristics. A 2012 analysis<sup>84</sup> of a program designed to reduce readmissions in three states identified key obstacles to successfully improving care transitions:

**Collaborative relationships across settings are critical, but very difficult to achieve.** It takes time to develop the relationships and trust among providers, and little incentive exists for skilled nursing facilities and physicians outside the hospital to engage in the process.

**Infrastructure is lacking,** as is experience to implement quality improvements.

**We lack proof that models work on a large scale.** Confusion exists about which readmissions are preventable and which are not. More evidence is needed to help guide hospitals' efforts to improve transitions of care and reduce readmissions. ■

### ■ REFERENCES

1. Coleman EA. Falling through the cracks: challenges and opportunities for improving transitional care for persons with continuous complex care needs. *J Am Geriatr Soc* 2003; 51:549–555.
2. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med* 2009; 360:1418–1428.
3. Rosenthal JM, Miller DB. Providers have failed to work for continuity. *Hospitals* 1979; 53:79–83.
4. Gabow P, Halvorson G, Kaplan G. Marshaling leadership for high-value health care: an Institute of Medicine discussion paper. *JAMA* 2012; 308:239–240.
5. Bonner A, Schneider CD, Weissman JS. Massachusetts State Quality Improvement Institute. Massachusetts Strategic Plan for Care Transitions. Massachusetts Executive Office of Health and Human Services, 2010. [http://www.patientcarelink.org/uploadDocs/1/Strategic-Plan-for-Care-Transitions\\_2-11-2010-\(2\).pdf](http://www.patientcarelink.org/uploadDocs/1/Strategic-Plan-for-Care-Transitions_2-11-2010-(2).pdf). Accessed April 7, 2014.
6. Mor V, Intrator O, Feng Z, Grabowski DC. The revolving door of rehospitalization from skilled nursing facilities. *Health Aff (Millwood)* 2010; 29:57–64.
7. Elixhauser A (AHRQ), Steiner C (AHRQ). Readmissions to US Hospitals by Diagnosis, 2010. HCUP Statistical Brief #153. April 2013. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb153.pdf>. Accessed April 7, 2014.
8. Weiss AJ (Truven Health Analytics), Elixhauser A (AHRQ), Steiner C (AHRQ). Readmissions to US Hospitals by Procedure, 2010. HCUP Statistical Brief #154. April 2013. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb154.pdf>. Accessed April 7, 2014.
9. Centers for Medicare & Medicaid Services (CMS). Readmissions Reduction Program. <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html>. Accessed April 7, 2014.
10. Kaiser Health News (KHN); Rau J. Medicare To Penalize 2,217 Hospitals For Excess Readmissions. <http://www.kaiserhealthnews.org/Stories/2012/August/13/medicare-hospitals-readmissions-penalties.aspx>. Accessed April 7, 2014.
11. Kaiser Health News (KHN); Rau J. Armed With Bigger Fines, Medicare To Punish 2,225 Hospitals For Excess Readmissions. <http://www.kaiserhealthnews.org/Stories/2013/August/02/readmission-penalties-medicare-hospitals-year-two.aspx>. Accessed April 7, 2014.
12. Centers for Medicare & Medicaid Services (CMS). Community-based Care Transitions Program. <http://innovation.cms.gov/initiatives/CCTP/>. Accessed April 7, 2014.
13. Centers for Medicare & Medicaid Services (CMS). Hospital Engagement Networks (HENs). <http://partnershipforpatients.cms.gov/about-the-partnership/hospital-engagement-networks/thehospitalengagementnetworks.html>. Accessed April 7, 2014.
14. Centers for Medicare & Medicaid Services (CMS). About the Partnership for Patients. <http://partnershipforpatients.cms.gov/about-the-partnership/about-thepartnershipforpatients.html>. Accessed April 7, 2014.
15. Jha AK, Joynt KE, Orav EJ, Epstein AM. The long-term effect of premier pay for performance on patient outcomes. *N Engl J Med* 2012; 366:1606–615.
16. Gerhardt G, Yemane A, Hickman P, Oelschlaeger A, Rollins E, Brennan N; Centers for Medicare & Medicaid Services (CMS). Medicare Readmission Rates Showed Meaningful Decline in 2012. <http://www.cms.gov/mmrr/Briefs/B2013/mmrr-2013-003-02-b01.html>. Accessed April 7, 2014.
17. Office of Inspector General; US Department of Health and Human Services. Hospitals' Use of Observation Stays and Short Inpatient Stays for Medicare Beneficiaries. Report (OEI-02-12-00040). <http://oig.hhs.gov/oei/reports/oei-02-12-00040.asp>. Accessed April 7, 2014.
18. van Walraven C, Bennett C, Jennings A, Austin PC, Forster AJ. Proportion of hospital readmissions deemed avoidable: a systematic review. *CMAJ* 2011; 183:E391–E402.
19. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med* 2003; 138:161–167.
20. Moore C, McGinn T, Halm E. Tying up loose ends: discharging patients with unresolved medical issues. *Arch Intern Med* 2007; 167:1305–1311.
21. Roy CL, Poon EG, Karson AS, et al. Patient safety concerns arising from test results that return after hospital discharge. *Ann Intern Med* 2005; 143:121–128.
22. Coleman EA, Fox PD; HMO Workgroup on Care Management. Managing patient care transitions: a report of the HMO Care Management Workgroup. *Health-plan* 2004; 45:36–39.
23. Coleman EA, Berenson RA. Lost in transition: challenges and

- opportunities for improving the quality of transitional care. *Ann Intern Med* 2004; 141:533–536.
24. **Snow V, Beck D, Budnitz T, et al; American College of Physicians; Society of General Internal Medicine; Society of Hospital Medicine; American Geriatrics Society; American College of Emergency Physicians; Society of Academic Emergency Medicine.** Transitions of Care Consensus Policy Statement American College of Physicians-Society of General Internal Medicine-Society of Hospital Medicine-American Geriatrics Society-American College of Emergency Physicians-Society of Academic Emergency Medicine. *J Gen Intern Med* 2009; 24:971–976.
  25. **Pham HH, Schrag D, O'Malley AS, Wu B, Bach PB.** Care patterns in Medicare and their implications for pay for performance. *N Engl J Med* 2007; 356:1130–1139.
  26. **Kripalani S, LeFevre F, Phillips CO, Williams MV, Basaviah P, Baker DW.** Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA* 2007; 297:831–841.
  27. **Solet DJ, Norvell JM, Rutan GH, Frankel RM.** Lost in translation: challenges and opportunities in physician-to-physician communication during patient handoffs. *Acad Med* 2005; 80:1094–1099.
  28. **Kripalani S, Jackson AT, Schnipper JL, Coleman EA.** Promoting effective transitions of care at hospital discharge: a review of key issues for hospitalists. *J Hosp Med* 2007; 2:314–323.
  29. **National Research Council.** *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, DC: The National Academies Press, 2001.
  30. **O'Leary KJ, Kulkarni N, Landler MP, et al.** Hospitalized patients' understanding of their plan of care. *Mayo Clin Proc* 2010; 85:47–52.
  31. **Coleman EA, Chugh A, Williams MV, et al.** Understanding and execution of discharge instructions. *Am J Med Qual* 2013; 28:383–391.
  32. **Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K.** Low health literacy and health outcomes: an updated systematic review. *Ann Intern Med* 2011; 155:97–107.
  33. **Kutner M, Greenberg E, JinY, Paulsen C.** *The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy (NCES 2006–483).* US Department of Education. Washington, DC: National Center for Education Statistics, 2006. <http://nces.ed.gov/pubsub2006/2006483.pdf>. Accessed April 7, 2014.
  34. **Hibbard JH, Greene J.** What the evidence shows about patient activation: better health outcomes and care experiences; fewer data on costs. *Health Aff (Millwood)* 2013; 32:207–214.
  35. **Lin CY, Barnato AE, Degenholtz HB.** Physician follow-up visits after acute care hospitalization for elderly Medicare beneficiaries discharged to noninstitutional settings. *J Am Geriatr Soc* 2011; 59:1947–1954.
  36. **Sharma G, Kuo YF, Freeman JL, Zhang DD, Goodwin JS.** Outpatient follow-up visit and 30-day emergency department visit and readmission in patients hospitalized for chronic obstructive pulmonary disease. *Arch Intern Med* 2010; 170:1664–1670.
  37. **Hernandez AF, Greiner MA, Fonarow GC, et al.** Relationship between early physician follow-up and 30-day readmission among Medicare beneficiaries hospitalized for heart failure. *JAMA* 2010; 303:1716–1722.
  38. **van Walraven C, Taljaard M, Etchells E, et al.** The independent association of provider and information continuity on outcomes after hospital discharge: implications for hospitalists. *J Hosp Med* 2010; 5:398–405.
  39. **Sommers A, Cunningham PJ.** *Physician Visits After Hospital Discharge: Implications for Reducing Readmissions.* Research Brief No. 6. National Institute for Health Care Reform (NIHCR), 2011. [www.nihcr.org/Reducing\\_Readmissions.html](http://www.nihcr.org/Reducing_Readmissions.html). Accessed April 7, 2014.
  40. **Dharmarajan K, Hsieh AF, Lin Z, et al.** Diagnoses and timing of 30-day readmissions after hospitalization for heart failure, acute myocardial infarction, or pneumonia. *JAMA* 2013; 309:355–363.
  41. **Calvillo-King L, Arnold D, Eubank KJ, et al.** Impact of social factors on risk of readmission or mortality in pneumonia and heart failure: systematic review. *J Gen Intern Med* 2013; 28:269–282.
  42. **Coventry PA, Gemmell I, Todd CJ.** Psychosocial risk factors for hospital readmission in COPD patients on early discharge services: a cohort study. *BMC Pulm Med* 2011; 11:49.
  43. **Weissman JS, Stern RS, Epstein AM.** The impact of patient socioeconomic status and other social factors on readmission: a prospective study in four Massachusetts hospitals. *Inquiry* 1994; 31:163–172.
  44. **Proctor EK, Morrow-Howell N, Li H, Dore P.** Adequacy of home care and hospital readmission for elderly congestive heart failure patients. *Health Soc Work* 2000; 25:87–96.
  45. **Kansagara D, Ramsay RS, Labby D, Saha S.** Post-discharge intervention in vulnerable, chronically ill patients. *J Hosp Med* 2012; 7:124–130.
  46. **Englander H, Kansagara D.** Planning and designing the care transitions innovation (C-Train) for uninsured and Medicaid patients. *J Hosp Med* 2012; 7:524–529.
  47. **Brown R, Peikes D, Chen A, Schore J.** 15-site randomized trial of coordinated care in Medicare FFS. *Health Care Financ Rev* 2008; 30:5–25.
  48. **Arbaje AI, Wolff JL, Yu Q, Powe NR, Anderson GF, Boulton C.** Post-discharge environmental and socioeconomic factors and the likelihood of early hospital readmission among community-dwelling Medicare beneficiaries. *Gerontologist* 2008; 48:495–504.
  49. **Peek CJ, Baird MA, Coleman E.** Primary care for patient complexity, not only disease. *Fam Syst Health* 2009; 27:287–302.
  50. **Society of Hospital Medicine.** Project BOOST: Better Outcomes by Optimizing Safe Transitions. [www.hospitalmedicine.org/BOOST](http://www.hospitalmedicine.org/BOOST). Accessed April 7, 2014.
  51. **Hansen LO, Greenwald JL, Budnitz T, et al.** Project BOOST: effectiveness of a multihospital effort to reduce rehospitalization. *J Hosp Med* 2013; 8:421–427.
  52. **Maynard GA, Budnitz TL, Nickel WK, et al.** 2011 John M. Eisenberg Patient Safety and Quality Awards. Mentored implementation: building leaders and achieving results through a collaborative improvement model. Innovation in patient safety and quality at the national level. *Jt Comm J Qual Patient Saf* 2012; 38:301–310.
  53. **Boston University Medical Center.** Project RED: Re-Engineered Discharge. [www.bu.edu/fammed/projectred/](http://www.bu.edu/fammed/projectred/). Accessed April 7, 2014.
  54. **Jack BW, Chetty VK, Anthony D, et al.** A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. *Ann Intern Med* 2009; 150:178–187.
  55. **Berkowitz RE, Fang Z, Helfand BK, Jones RN, Schreiber R, Paasche-Orlow MK.** Project ReEngineered Discharge (RED) lowers hospital readmissions of patients discharged from a skilled nursing facility. *J Am Med Dir Assoc* 2013; 14:736–740.
  56. **Institute for Healthcare Improvement.** STAAR: State Action on Avoidable Re-hospitalizations. [www.ihiofferings/Initiatives/STAAR/Pages/default.aspx](http://www.ihiofferings/Initiatives/STAAR/Pages/default.aspx). Accessed April 7, 2014.
  57. **Boutwell AE, Johnson MB, Rutherford P, et al.** An early look at a four-state initiative to reduce avoidable hospital readmissions. *Health Aff (Millwood)* 2011; 30:1272–1280.
  58. **University of Colorado Denver.** The Care Transitions Program. [www.caretransitions.org/](http://www.caretransitions.org/). Accessed April 7, 2014.
  59. **Coleman EA, Parry C, Chalmers S, Min SJ.** The care transitions intervention: results of a randomized controlled trial. *Arch Intern Med* 2006; 166:1822–1828.
  60. **Voss R, Gardner R, Baier R, Butterfield K, Lehrman S, Gravenstein S.** The care transitions intervention: translating from efficacy to effectiveness. *Arch Intern Med* 2011; 171:1232–1237.
  61. **Penn Nursing Science.** Transitional Care Model. [www.transitional-care.info/](http://www.transitional-care.info/). Accessed April 7, 2014.
  62. **Naylor M, Broton D, Jones R, Lavizzo-Mourey R, Mezey M, Pauly M.** Comprehensive discharge planning for the hospitalized elderly. A randomized clinical trial. *Ann Intern Med* 1994; 120:999–1006.
  63. **Stauffer BD, Fullerton C, Fleming N, et al.** Effectiveness and cost of a transitional care program for heart failure: a prospective study with concurrent controls. *Arch Intern Med* 2011; 171:1238–1243.
  64. **The Illinois Transitional Care Consortium.** The Bridge Model. [www.transitionalcare.org/the-bridge-model](http://www.transitionalcare.org/the-bridge-model). Accessed April 7, 2014.



65. **Altfeld SJ, Shier GE, Rooney M, et al.** Effects of an enhanced discharge planning intervention for hospitalized older adults: a randomized trial. *Gerontologist* 2013; 53:430–440.
66. **Johns Hopkins Bloomberg School of Public Health.** Guided Care. [www.guidedcare.org](http://www.guidedcare.org). Accessed April 7, 2014.
67. **Boult C, Reider L, Leff B, et al.** The effect of guided care teams on the use of health services: results from a cluster-randomized controlled trial. *Arch Intern Med* 2011; 171:460–466.
68. **Counsell SR, Callahan CM, Buttar AB, Clark DO, Frank KI.** Geriatric Resources for Assessment and Care of Elders (GRACE): a new model of primary care for low-income seniors. *J Am Geriatr Soc* 2006; 54:1136–1141.
69. **Bielaszka-DuVernay C.** The ‘GRACE’ model: in-home assessments lead to better care for dual eligibles. *Health Aff (Millwood)* 2011; 30:431–434.
70. **Florida Atlantic University.** INTERACT: Interventions to Reduce Acute Care Transfers. <http://interact2.net/>. Accessed April 7, 2014.
71. **Ouslander JG, Lamb G, Tappen R, et al.** Interventions to reduce hospitalizations from nursing homes: evaluation of the INTERACT II collaborative quality improvement project. *J Am Geriatr Soc* 2011; 59:745–753.
72. **West Virginia Medical Institute.** HHQI-BPIPs (Home Health Quality Improvement - Best Practices Intervention Packages). [www.home-healthquality.org/Education/BPIPs.aspx](http://www.home-healthquality.org/Education/BPIPs.aspx). Accessed April 7, 2014.
73. **Centers for Medicare & Medicaid Services (CMS).** Independence at Home Demonstration. <http://innovation.cms.gov/initiatives/Independence-at-Home/>. Accessed April 7, 2014.
74. **Hansen LO, Young RS, Hinami K, Leung A, Williams MV.** Interventions to reduce 30-day rehospitalization: a systematic review. *Ann Intern Med* 2011; 155:520–528.
75. **Naylor MD, Brooten D, Campbell R, et al.** Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial. *JAMA* 1999; 281:613–620.
76. **Koehler BE, Richter KM, Youngblood L, et al.** Reduction of 30-day postdischarge hospital readmission or emergency department (ED) visit rates in high-risk elderly medical patients through delivery of a targeted care bundle. *J Hosp Med* 2009; 4:211–218.
77. **Garåsen H, Windspoll R, Johnsen R.** Intermediate care at a community hospital as an alternative to prolonged general hospital care for elderly patients: a randomised controlled trial. *BMC Public Health* 2007; 7:68.
78. **Courtney M, Edwards H, Chang A, Parker A, Finlayson K, Hamilton K.** Fewer emergency readmissions and better quality of life for older adults at risk of hospital readmission: a randomized controlled trial to determine the effectiveness of a 24-week exercise and telephone follow-up program. *J Am Geriatr Soc* 2009; 57:395–402.
79. **Coleman EA, Smith JD, Frank JC, Min SJ, Parry C, Kramer AM.** Preparing patients and caregivers to participate in care delivered across settings: the Care Transitions Intervention. *J Am Geriatr Soc* 2004; 52:1817–1825.
80. **Naylor MD, Aiken LH, Kurtzman ET, Olds DM, Hirschman KB.** The care span: the importance of transitional care in achieving health reform. *Health Aff (Millwood)* 2011; 30:746–754.
81. **O’Leary KJ, Buck R, Fligiel HM, et al.** Structured interdisciplinary rounds in a medical teaching unit: improving patient safety. *Arch Intern Med* 2011; 171:678–684.
82. **Agency for Healthcare Research and Quality (AHRQ).** Health Literacy Universal Precautions Toolkit. [www.ahrq.gov/legacy/qual/literacy/](http://www.ahrq.gov/legacy/qual/literacy/). Accessed April 7, 2014.
83. **Schillinger D, Piette J, Grumbach K, et al.** Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003; 163:83–90.
84. **Mittler JN, O’Hora JL, Harvey JB, Press MJ, Volpp KG, Scanlon DP.** Turning readmission reduction policies into results: some lessons from a multistate initiative to reduce readmissions. *Popul Health Manag* 2013; 16:255–260.

---

**ADDRESS:** Mark V. Williams, MD, MHM, 789 South Limestone, Room 551, Lexington, KY 40536-0596; e-mail: [mark.will@uky.edu](mailto:mark.will@uky.edu)