

# Reducing Hospital Readmissions

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## Introduction

For most patients who leave the hospital, the last thing they want is to return anytime soon. Yet, many Medicare patients discharged from an inpatient stay find themselves back in the hospital within 30 days. Some of these readmissions are planned, and others may be part of the natural course of treatment for specific conditions; but, increasingly, some hospital readmissions are being thought of as avoidable and as “indicators of poor care or missed opportunities to better coordinate care.”<sup>1</sup>

On January 25, 2008, AcademyHealth held a one-day invitational meeting, sponsored by the Commonwealth Fund, to discuss hospital readmission trends, identify best practices for preventing readmissions, and examine potential policy levers that could be used to reduce readmissions. Attending the meeting were key thought leaders, including researchers, providers, health plan representatives, and public policymakers, including individuals from government agencies such as the Centers for Medicare & Medicaid Services (CMS) and the Agency for Healthcare Research and Quality (AHRQ); private quality improvement organizations such as the National Quality Forum (NQF), the National Committee for Quality Assurance (NCQA), the Joint Commission, and the Institute for Healthcare Improvement (IHI); health care policy centers such as the Brookings Institution and the Urban Institute; and provider representatives, including hospital and home health care administrators, physicians, and nurses. This report summarizes the information presented and issues discussed during that meeting.

## Background

Hospitalizations are costly, accounting for approximately 31 percent of total health care expenditures.<sup>2</sup> In Medicare, inpatient care accounts for 37 percent of spending,<sup>3</sup> and readmissions contribute significantly to that cost: 18 percent of Medicare patients discharged from the hospital have a readmission within 30 days

of discharge, accounting for \$15 billion in spending.<sup>4</sup> Multiple factors contribute to avoidable hospital readmissions: they may result from poor quality care or from poor transitions between different providers and care settings. Likewise, such readmissions may occur if patients are discharged from hospitals or other health care settings prematurely, are discharged to inappropriate settings, or do not receive adequate information or resources to ensure continued progression. A lack of system factors, such as coordinated care and seamless communication and information exchange between inpatient and community-based providers, may also lead to unplanned readmissions.

Hospital readmissions may adversely impact payer and provider costs and patient morale. Some hypothesized in the 1980s that Medicare’s implementation of the hospital inpatient prospective payment system (PPS) would encourage physicians to discharge patients “sicker and quicker.” That did not turn out to be a significant problem for the quality of inpatient care; yet, patients were discharged earlier, which may theoretically increase the risk of readmissions, which are costly to payers. Moreover, preliminary analysis suggests that the majority of readmissions are for medical services, rather than surgical procedures, suggesting that hospital readmissions may not be profitable to hospitals.<sup>5</sup> Repeated hospital admissions may also demoralize patients and leave them feeling lost and confused.

Reducing avoidable hospital readmissions, then, represents a unique opportunity for policymakers, payers, and providers to reduce health care costs while increasing the quality of patient care. Identifying best practices and policy levers to reduce avoidable readmissions would likely improve quality, reduce unnecessary health care utilization and costs, promote patient-centered care, and increase value in the health care system. Moreover, as some individuals are at greater risk of readmission as a result of individual

characteristics, care coordination efforts that reduce hospital readmission may help eliminate disparities in health care.

Recently, CMS, the Medicare Payment Advisory Commission (MedPAC), and several private organizations have proposed initiatives to decrease hospital readmissions. CMS may include hospital readmission rates as an efficiency measure in the proposed value-based purchasing initiative, and MedPAC has analyzed policy levers, such as public reporting and payment reforms, that encourage high quality care and may reduce hospital readmissions.<sup>6</sup> In addition, some researchers have completed clinical trials examining evidence-based practices for discharge planning. Despite this increased concern and awareness of the negative consequences of hospital readmissions, surprisingly little empirical evidence exists examining the frequency of and trends in hospital readmissions.

To inform the January 25 meeting, AcademyHealth and the Commonwealth Fund commissioned a paper by Stephen F. Jencks, M.D., M.P.H., Mark V. Williams, M.D., and Eric A. Coleman, M.D., M.P.H., that examines hospital readmission trends for Medicare fee-for-service (FFS) patients between 2006 and 2007. Following Dr. Jencks’ presentation, meeting participants discussed what is currently known about hospital readmissions, best practices for preventing them, and potential policy levers that could be implemented to encourage behavior that decreases hospital readmissions. The following report synthesizes the main themes of discussion and presents best practices and potential policy levers for reducing hospital readmissions.

### Defining the term “readmissions”

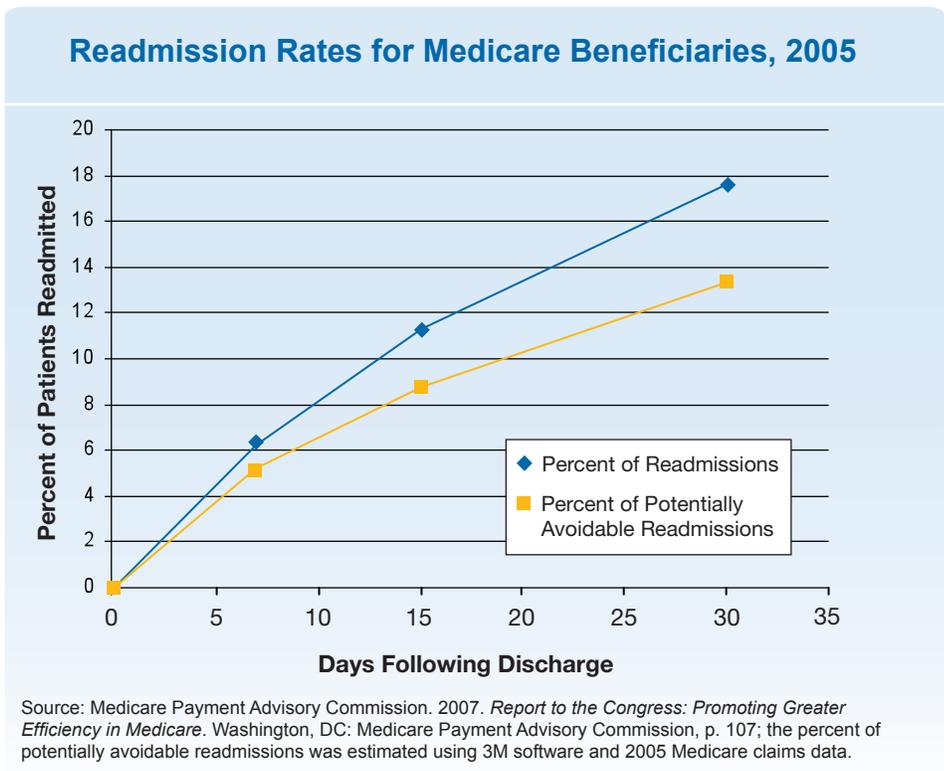
Critical to the analysis of readmissions is appropriateness. Some readmissions may be unavoidable. Other readmissions may be avoidable, but nevertheless occur, due to a *lack* of follow-up care coordination or some other problem.

Obtaining a readmissions rate of zero is not feasible and may even indicate poor quality care, as many readmissions are medically appropriate due to an unavoidable change in condition or a new condition. For example, physicians may provide patient-centered care by discussing early discharge with patients, with the mutual understanding that readmission may be necessary. On the other hand, behavioral choices, such as non-compliance with dietary recommendations, may also trigger an avoidable readmission despite proper outpatient care coordination. Other readmissions may occur as a result of a medical error or adverse event that occurred during the initial hospitalization or as a result of a lack of social support, follow-up care, understanding of discharge instructions, or communication following discharge. These avoidable readmissions that occur as a result of a breakdown along the care continuum were the focus of meeting discussion and of this brief.

In addition to classifying readmissions, it is also important to establish common terminology for describing readmissions. One meeting participant raised the concern that the term ‘readmission,’ or rehospitalization, suggests multiple admissions related to the initial admission. As mentioned above, an avoidable, inappropriate readmission may result from an adverse event that occurred during the initial admission or as a result of inappropriate care coordination following discharge. Because it may be difficult to link subsequent admissions to the initial admission, ‘multiple admissions’ may be a more appropriate term to use if it is unclear whether the hospitalizations are related.

### What do we know about hospital readmissions?

Preliminary analysis indicates that up to two-thirds of Medicare beneficiaries are readmitted or die within one year of the initial hospitalization.<sup>7</sup> As evidenced by the chart above, the gap between the percentage of readmissions and the percentage of potentially avoidable readmissions widens as the number of days increase, suggesting that efforts to



prevent avoidable readmissions should target discharge planning and the time immediately following discharge.

Patient-level factors also influence the likelihood that a Medicare beneficiary will be rehospitalized. Readmissions are more common for certain conditions—such as heart failure (HF)—and vary by race and Medicare coverage. One study indicates that 29 to 47 percent of elderly patients with heart failure are readmitted within three to six months of discharge.<sup>8</sup> Another found that African Americans and dually eligible Medicare enrollees—especially those who have experienced a stroke or have diabetes or asthma—may be more likely to be readmitted to the hospital.<sup>9</sup> A recent MedPAC simulation found that Medicare beneficiaries with end-stage renal disease (ESRD) had above average readmission rates, indicating that some Medicare beneficiaries—such as those with multiple conditions—may be at increased risk for readmissions.<sup>10</sup>

Readmission rates also differ across hospitals, states, and geographic regions. A MedPAC simulation found that, even after controlling for case mix and

severity, readmission rates differed across hospitals.<sup>11</sup> A study by Elliott Fisher, M.D., M.P.H., and colleagues compared hospital readmission rates in Boston and New Haven, Conn. and found that readmission rates varied across hospitals in Boston, and that readmission rates by clinical condition, age, sex, and race were higher in Boston than in New Haven.<sup>12</sup> The researchers posited that the hospital bed supply influenced physician decision making, and subsequently, the differences in readmission rates both across hospitals in Boston and between the two cities.

Readmission rates also vary across states and geographic areas. The Commonwealth Fund’s 2007 *State Scorecard on Health System Performance* found that in 2003, readmission rates for the top five performing states (Vermont, Wyoming, Iowa, Oregon, and Nebraska) averaged 13.8 percent, while the average readmission rate for the five lowest performing states (Oklahoma, Maryland, Texas, Nevada, and Louisiana) was 21.8 percent.<sup>13,14</sup> The following maps depict readmission rate rank by state and the inpatient treatment intensity for Medicare patients with chronic illnesses rank by



state, as documented by the Dartmouth Atlas Group.<sup>15</sup> Using the state rankings for readmission rates and inpatient treatment intensity, the states were divided generally into quartiles.<sup>16</sup>

As suggested by the maps, there are some similarities between the inpatient treatment intensity of chronically ill Medicare beneficiaries and the readmission rates. Many states with lower inpatient treatment intensity also have lower readmission rates; similarly, many states with high inpatient treatment intensity have higher readmission rates. The reason for this relationship, however, is unclear.

### **Fragmented system of care hinders providers' ability to reduce avoidable readmissions**

Hospitals often serve as the focal point for reducing hospital readmissions; however, readmissions are influenced by multiple factors along the care continuum. Many meeting participants agreed that the current delivery system is unsustainable and a significant contributor to avoidable readmissions; i.e., a true system approach to care is lacking. Efforts to reduce readmissions will require examination of characteristics and processes along the care continuum—before, during, and after the initial hospital admission.

Insofar as hospital readmissions correlate with hospital admissions, preventing the initial admission could help to reduce readmission. As one participant noted, “an effective way to prevent readmission is to prevent the ‘index’ hospitalization.” The declining number of practicing primary care physicians (PCPs) may jeopardize access to timely primary care, a medical home, and preventive care. Moreover, increased specialization inhibits providers' ability to treat and manage patients with multiple chronic conditions. Coordinating the care of Medicare beneficiaries with multiple chronic conditions—a 1999 study found that 65 percent of Medicare beneficiaries had two or more chronic conditions<sup>17</sup>—is challenging because patients with multiple chronic conditions

may be treated by as many as 16 different physicians per year.<sup>18</sup> As individuals with multiple chronic conditions are at high risk for readmissions, improving disease and care management initiatives may help to maintain these individuals in community settings. One participant noted that Medicare's quality improvement organizations (QIOs) consider hospitalizations of individuals with chronic conditions an avoidable error until proven otherwise.

Once patients are admitted to the hospital, they are rarely treated by their community-based physicians. In fact, community-based physicians may be unaware that their patients have been admitted. The increase in care by hospitalists is due, in part, to community-based physicians' desire to only provide care in the community setting. There is concern, however, that the provision of care by hospitalists creates discontinuities in the care continuum, both at the time of admission and discharge. Hospitalists may be unfamiliar with a patient's health and social history and, once a patient is discharged to the outpatient setting, the PCP may be unfamiliar with the rationale behind care provided in the inpatient setting. While hospitalists may try to contact PCPs to discuss care and discharge plans, they note that it is often difficult to communicate directly with community-based providers. Additionally, the payment system does not allow payment to both a hospitalist and PCP on the same day for evaluation and management (E&M) of the same clinical condition if the physicians are in the same medical group and specialty.<sup>19</sup>

The transition from the inpatient to the outpatient setting is a critical point along the care continuum in which there is a real opportunity to prevent readmissions, as evidenced by the graph on page 3. Although patients may receive discharge plans from a nurse or social worker, they may not fully understand follow-up care instructions or have the ability to appropriately self manage their care. Oftentimes, patients do not receive physician or nurse follow-up calls or do

not visit their PCPs in a timely manner following discharge. While all meeting participants agreed that a follow-up call to patients following discharge may help to ensure that patients are receiving appropriate follow-up care and answer any outstanding questions that patients may have, providers note the lack of resources available to provide such services.

A lack of communication, seamless information exchange, and relationships between inpatient and outpatient providers, as well as PCPs and specialists, inhibit providers from delivering high quality, patient-centered, and coordinated care. Engaging providers and patients at each point along the care continuum in efforts to improve communication, coordination, and discharge planning is essential to decreasing inappropriate and costly hospital readmissions. Even within the context of the current delivery system, meeting participants suggested that adopting and promoting a sense of “systemness” through mechanisms such as team-based care and electronic medical records (EMRs) would be a distinct improvement. As one participant noted, “we need system behavior without the system.”

### **Best practices for reducing hospital readmissions**

Despite the challenges presented by the current delivery system, efforts have been taken to study the effectiveness of different interventions on reducing hospital readmissions and to create innovative processes within specific organizations to minimize inappropriate readmissions. While there is evidence-based research evaluating the effectiveness of various processes or interventions relating to hospital readmissions—including discharge planning, medication reconciliation, care transitions, and home health care—many of these studies focus on specific patient populations.<sup>20, 21, 22</sup> For example, a clinical trial found that congestive heart failure patients who received transitional care—which included a needs assessments, education, etc.—from advanced practice nurses

(APNs), both during and following the inpatient stay, experienced a reduction in readmissions by 36 percent compared to the control group, which did not receive the transitional care intervention.<sup>23</sup>

In addition to these evidence-based practices, some providers, private health plans, and private quality improvement organizations have also developed mechanisms and practices—such as improving discharge planning, identifying high-risk individuals, and decreasing inappropriate use of the 911 emergency calling system—that have been successful in reducing hospital readmissions. The following describes practices, the majority of which have not been rigorously evaluated, implemented by individual organizations to reduce hospital readmissions.

#### Improved discharge planning

Meeting participants agreed that improving discharge planning was essential to decreasing readmissions. Efforts to improve discharge planning include planning at the time of the sentinel admission, requiring that a proper discharge plan is in place, refilling prescriptions, and scheduling a primary care appointment prior to discharge. One participant believed that the term “discharge” had a bad connotation and instead suggested using the term “transition” to imply a smooth handoff between two points of care. Another participant agreed, noting that “transition” infers a sense of accountability between both the giving and receiving parties. The case study to the right highlights how a variety of inpatient providers worked together to improve discharge planning.

#### Targeting initiatives toward high-risk populations presents the opportunity for real impact

Insofar as a small percentage of patients use the majority of health care services, identifying high-risk patients and targeting interventions to them would allow payers and providers the opportunity for real impact on a high-cost patient population. In one example, a home health care provider developed an algorithm to identify high-risk

patients and then identified strategies, such as front-loading the number of home visits immediately after discharge, for clinical teams to manage these patients. Once a high-risk patient is identified, clinicians are notified via computerized mobile devices and patients are tele-monitored. Tele-monitoring high-risk patients alone has decreased readmissions by 15 percent. Similarly, a private health plan used claims data and a predictive model to stratify the health and risk of members. Once high-risk patients are identified, the health plan targets care and disease management, and care coordination and integration programs toward these individuals.

#### Initiatives to improve systemic failures may help reduce readmissions

The table on page 7 highlights some of the strategies used by private health plans and providers to reduce readmissions; it is by no means exhaustive. These initiatives aim to ameliorate discrete systemic problems, such as a lack of communication and inappropriate use of the 911 emergency calling system. Efforts to improve the efficiency of the system may free up resources necessary for reducing readmissions.

As evidenced by the table on the next page, the majority of the strategies have only anecdotal evidence supporting their success in reducing readmissions. Further empirical studies of how these best practices reduce hospital readmissions could inform other providers and policymakers looking to promote this behavior. A meeting participant questioned whether stakeholders should examine individual measures that appear to work, or if they should look at the processes from a systemic level. Some warned that by adopting one initiative, we may adversely influence another.

#### Policy levers to reduce avoidable hospital readmissions

While there are practices that hospital and community-based providers can implement to reduce the rate of hospital readmissions, there is not a shared understanding of where responsibility for post-discharge interventions resides. Providers often do not have the time or resources to implement such initiatives, particularly if they are duplicative of actions taken by others. Additionally, the health care financing system does not “reward” such activities. As already noted,

#### Hospitals reduce readmission rates to 5 percent or less as a result of improved discharge planning initiatives

A goal of the IHI and the Robert Wood Johnson Foundation’s (RWJF) Transforming Care at the Bedside (TCAB) initiative was to reduce hospital readmissions for patients with heart failure through efforts including enhanced discharge planning. IHI worked with ten hospitals to develop mechanisms to improve provider and patient education, patient-centered communication, and post-acute care follow-up using the IHI “how-to-guide.” Using a team-based approach, inpatient providers worked with patients, families, and community-based providers immediately after the initial admission to plan patients’ discharge. Providers continually used teach back, the process of having patients repeat the instructions back to the provider, throughout patients’ stay at the hospital and at the time of discharge to ensure that patients understood discharge instructions. When patients were discharged from the hospital, providers reconciled medications, provided real-time information to the community-based provider, and ensured that patients had a follow-up visit scheduled within a certain time period depending on whether the patient was at high or moderate risk of readmission. If patients were readmitted soon after discharge, providers tried to determine the root cause for the readmission in order to prevent future readmissions. Using these strategies, 2 of the 10 participating hospitals were able to reduce readmissions rates to 5 percent or less.

— Buell, J.M. “Transforming the Discharge Process,” *Healthcare Executive*, Vol. 23, No. 2, March/April 2008; meeting discussion.

the evidence underlying many of the practices designed to reduce the rate of hospital readmissions is largely anecdotal. Some participants cautioned that it may be inappropriate to implement policy levers without first evaluating the effectiveness and merit of best practices or isolated demonstrations. Other participants suggested that implementing policy levers that encourage these best practices may help to reduce readmissions while decreasing costs and promoting patient-centered care. While many meeting participants agreed that developing policy levers to reduce hospital readmissions was important, they did not always agree on which policy levers would be most appropriate.

### Measurement, public reporting, and pay for performance

Meeting participants agreed that routinely measuring readmission rates is essential, yet they recognized that there are many challenges to obtaining valid measurements. As one participant noted, “You can’t improve what you do not measure.” Measuring readmission rates would inform hospital administrators’ efforts to gauge the success of quality improvement efforts aimed at reducing readmissions. In order to effectively implement public reporting, however, measurements must be carefully crafted and considered to ensure that the mechanism promotes shared accountability among system players. Moreover, current measures are not

evidence-based and would require crude hospital rates and risk adjustment. Despite these challenges, participants agreed that providers and health plans should move forward in measuring readmission rates.

Public reporting may be effective in raising awareness for the high rate of hospital readmissions and incentive action, as poor outcomes may adversely impact providers’ reputation and market share. Some private payers have already implemented public reporting by requiring that both hospitals and medical groups report readmission rates. A health plan administrator noted that these measures also allow administrators to gauge the success of disease and care management initiatives. In addition, MedPAC recently

### Innovative initiatives to reduce avoidable readmissions

Party Initiated	Problem Addressed	Intervention	Target Subject	Outcomes
Integrated Delivery System (IDS)	Care coordination	Placed case managers at select community-based sites. The case managers maintained contact with the hospital-based case managers and within 24 to 48 hours conducted a patient assessment, reconciled patient medications, and ensured follow-up care with a PCP or ancillary services within 4 to 7 days	Medicare Advantage patients	N/A
Home health care provider	Physician communication	Created a physician web-portal to inform PCPs that their patients were hospitalized	PCPs	N/A
Home health care provider	Inappropriate use of 911	Ensured that every patient had an emergency plan on their refrigerator listing appropriate numbers to call when certain symptoms presented	Home health patients	N/A
Home health care provider	Inappropriate use of the emergency department (ED)	Stationed staff in one area of a hospital ED to treat patients presenting to the ED	ED patients	Diverted 28 percent of patients back home, avoiding hospital admission
Private health plan	Physician-patient communication	Encouraged physicians to follow-up with patients post discharge	Recently discharged patients	Had success in reducing readmissions when a single provider made calls; did not have success when a team of providers were involved unless the team had access to information technology (IT)

recommended that Medicare privately report readmission rates to hospitals and physicians, and then publicize the rates after two years.<sup>24</sup>

Once readmission rates are measured and publicly reported, payers could decide whether to include readmission rates as a pay-for-performance measure. Doing so may further incentivize physician efforts to improve discharge planning, care coordination, and collaboration. Basing payment on readmission rates, however, would require that providers, payers, and public policymakers consider and establish a baseline rate, particularly one that is adjusted for important patient characteristics.

Similarly, CMS' recently proposed value-based purchasing initiative may also help reduce hospital readmissions, as policymakers are currently deciding whether to include hospital readmission rates as an efficiency measure. The marginal payment incentive to reduce readmissions under the value-based purchasing program, however, may not be enough to lead to substantial behavioral change.

### Fundamental payment reform

A recurring meeting theme was that current payment methods and system constraints do not support providers' desire to provide a comprehensive package of care. While some participants eagerly embraced direct financial incentives to improve discharge planning and care coordination, others were more hesitant, especially as many of the practices listed in the previous section lack empirical evidence of their ability to reduce inappropriate readmissions. Direct financial incentives could lead to behavioral change because providers would experience direct financial consequences if they failed to reduce readmission rates. Direct financial incentives considered are outlined in the chart to the right.

While aligning provider payment with incentives may raise awareness and incentivize action to reduce readmissions, it would require statutory authority and may create spillover effects. One participant noted,

“We need to change the payment system so that it does not deter physicians from providing the type of patient care they want to provide to patients along the continuum.”

### Demonstrations and private initiatives

The policy options discussed earlier in this paper could be tested through demonstrations or implemented together through statutory authority. Recent CMS demonstrations, such as the physician group practice, care coordination, disease management, gainsharing, and home health pay-for-performance demonstrations, may indirectly reduce hospital readmissions rates and may help to inform targeted readmission initiatives. The general CMS demonstration authority is limited to payment changes, however. Further, there is concern about implementing new initiatives that may result in a costly new benefit applied to all beneficiaries rather than being appropriately targeted.

In addition to demonstrations, policymakers could examine whether other public or private initiatives reduce readmissions. Policymakers could develop a policy similar to CMS' recent refusal to reimburse

providers for “never events.” One participant suggested selecting a small number of causes of avoidable readmissions for which CMS will not pay and then examine how physicians and providers react. Lessons from private health plans and providers who have implemented isolated demonstrations or have created policies for public reporting may also inform public policymakers' efforts.

### Technical assistance

CMS's 9<sup>th</sup> Statement of Work contract cycle for QIOs, beginning in August 2008 and lasting through July 2011, includes improving patient transitions between care settings as one of its initiatives for select state QIOs.<sup>25</sup> Specifically, the QIOs aim to improve care coordination, encourage seamless transitions, and decrease readmissions. One participant suggested that policymakers allow the QIOs to work with communities to develop a comprehensive strategy to reduce readmissions. Once a QIO has success in engaging the community and reducing hospital readmissions, the model can be implemented elsewhere.

When considering different policy options, policymakers must determine who will pay for the interventions, who will benefit, and what potential spillover

### Potential payment reforms to reduce readmissions

CPT code and payment weight changes	Would pay for enhanced discharge planning practices
Gainsharing	Would allow system providers to share cost savings achieved by adopting practices that reduce hospital readmissions and may effectively promote collaboration between providers
Bundled payments based on episodes of care	Would eliminate a single payment based on an index hospitalization and instead provide reimbursement based on the episode of care. The episode of care may include post-acute care and would therefore provide inpatient providers incentive to complete effective care coordination and other identified best practices upon discharge from the inpatient setting
Virtual bundling	Would pay providers FFS rates but adjust payments based on the volume of services across the episode. Virtual bundling would provide incentives for inpatient and outpatient providers to effectively communicate with each other and would be easier to implement than bundled payment as contracts are not required

effects could influence the provision of care, the health care workforce, or relations between system providers. As hospital readmissions are a system issue, policies should aim to encourage accountability across system providers and not just one entity. Strategically crafted policies that align stakeholder incentives and promote collaboration have the potential to create a virtual system that promotes patient-centered, quality health care.

## Conclusion

All meeting participants agreed that hospital readmissions are a pervasive problem that adversely affects patients, payers, and providers. Reducing hospital readmissions, therefore, requires the involvement of all stakeholders. While not all interventions will be generalizable, initiatives such as EMRs, improved communication, and improved hand-offs between inpatient and outpatient providers which are aimed at reducing hospital readmissions in the Medicare population could decrease avoidable readmissions for the non-Medicare population.

As evidenced by meeting discussion, more data and information are necessary to target initiatives and fully understand the scope of the problem.<sup>26</sup> Public and private payers should combine data to gain a greater perspective and understanding of what initiatives would be best for other populations, such as the privately insured and Medicare Advantage beneficiaries. In addition, evaluations of some initiatives and best practices would be useful to inform the policy debate. The more information available, the more providers are likely to recognize the real cost savings they can accrue when they reduce readmissions. Reducing readmissions may also empower physicians to provide what they know is the best quality of care without the systemic bulwarks.

Reducing hospital readmissions within a fragmented health care system requires stakeholders to challenge aspects of the current system by breaking silos of care, improving relationships between providers, and working to develop the future system and workforce. Training new physicians in preventive medicine

and care coordination may help to reduce readmissions, as well as change the culture from one where physicians value autonomy to one that encourages and rewards collaboration. Moreover, public policymakers and providers should consider ways to increase the value of primary care in order to increase the number of PCPs in the workforce.

Reducing hospital readmissions is a substantial task given the financial, regulatory, and systemic constraints. While challenging, the gains may be enormous. From a systemic level, preventing readmissions could reduce costs and promote patient-centered, high quality care. When considering best practices and policies to reduce readmissions however, stakeholders should examine how such initiatives will affect individuals and groups that comprise the system. Continued dialogue, study, and experimentation are necessary to reduce the number of avoidable readmissions and increase the value of health care.

## Appendix A

Areas for further research identified by meeting participants include the following:

### Epidemiology

- Why do readmissions occur?
- What symptoms trigger hospital readmissions?
- Where do patients first seek help?
- Do hospital readmissions occur more frequently for emergent care or planned/elective procedures?
- Do hospital readmissions occur more frequently in the last months of life?
- Does preventing readmissions for any group (diagnosis categories) merely defer the readmission rather than truly prevent it?
- What are the small area variation and population strata of hospital readmissions?
- How do state- and hospital-level readmissions compare with findings from Dartmouth Atlas research?
- Do readmission rates vary depending on whether physicians receive FFS or global payments?

### Definition and measurement

- How do we distinguish between avoidable readmissions and appropriate readmissions?
- Can we attribute readmission rates to the index hospital or index physician?

- What are readmission rates for the last year of life?
- How do readmission rates compare for the Medicare Advantage population?
- How do we define futile readmissions for patients at the end of life?

### Interventions

- How do medical homes and a regular source of care influence readmission rates?
- Do integrated delivery systems (IDSs) have lower readmission rates and if so, what practices can be learned from them?
- Can care models that encompass providers not typically involved in care coordination help create “systemness”?
- How do we involve health professionals other than physicians in models of care?
- What policy levers can be implemented to create “systemness” within a community?
- What is a good discharge/transition?
- What is the taxonomy of processes in care transitions?
- What initiatives are other large health systems (ie. Australia, United Kingdom) doing to prevent or reduce readmissions?
- Does after-hour care, expanded use of nurses, tele-medicine, e-mail, etc. make a difference?
- How do we bring interventions that appear effective for heart failure to scale?

- How do other interventions that have face validity and include improved disease and care management actually impact readmissions?
- What are the stratification thresholds for enrollment into disease management programs that would help define positive outcomes from such programs?
- What interventions are appropriate for individuals in their last year of life?
- How do we manage complex patients with multiple conditions?
- Can we measure interventions’ performances with Medicaid and commercial payer populations?
- Can we train providers to have more direct conversations with patients/families on the advantages/disadvantages of readmissions and continuation of aggressive treatment plans at the end of life?

### Payment

- How would proposed policy levers impact providers’ finances?
- What alterations in reimbursement would facilitate efforts to reduce hospitalization?
- How can we alter the payment system to reward efforts that reduce readmissions while also benefiting the health of patients?

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- 26 To see a list of identified research and data needs, please view Appendix A.

