

October 21, 2011

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President and CEO  
National Quality Forum  
600 13<sup>th</sup> Street, NW, Suite 500 North  
Washington, DC 20005

SUBJECT: Comments Regarding the Cardiovascular Maintenance Review Project

Dear Dr. Corrigan:

On behalf of our more than 5,000 member hospitals, health systems and other health care organizations, and our 42,000 individual members, the American Hospital Association (AHA) appreciates the opportunity to comment on the National Quality Forum's (NQF) Cardiovascular Maintenance Review project. Reviewing measures that have previously been endorsed is one of the fundamental tenants of measure development and we commend the NQF for continually holding all developers to this high standard. Recognizing the current state of science and medicine and how advances alter our fundamental delivery of care is something that measures must be responsive to. Our detailed comments on the measures under review are included below.

**Hospital 30-day, all cause, risk-standardized readmission rate following heart failure hospitalization (#0330)**

We are pleased at this opportunity to provide additional comment on the heart failure (HF) readmission measure. We provided comment on August 19 in response to the NQF's initial public comment period. In our August 19 remarks, we urged the steering committee to have additional dialogue with the measure developer on stratification of the HF readmission measure to properly account for disparities. The measure developer responded to our comments, stating:

Examination of the current publicly-reported readmission measures demonstrates that hospitals serving high proportions of African-American patients or patients of low SES often perform well on the measures.

The fundamental problem with this response is that it only pertains to a narrow use of the HF readmission measure—public reporting on *Hospital Compare*. Since *Hospital Compare* only ranks hospitals into three distinct categories of “below the national average, at the national average and above the national average,” analyzing performance in this way **is not a sufficient approach when applying the HF readmission measure to the readmissions payment penalty program that was authorized in the Affordable Care Act (ACA)**.

The Centers for Medicare and Medicaid Services (CMS) has finalized this HF readmission measure for application in the readmission penalty program. Rather than using the *Hospital Compare* methodology for determining HF readmission performance, the readmission penalty program will be using a point estimate of an individual hospital's performance using an observed

to expected methodology. A component of this methodology will consider the national average for HF readmissions. The literature (see attachments) has very clearly documented that African-Americans have a statistically higher level of readmissions than all other race/ethnicities. This is why we have been asking for proper stratification of the HF readmission measure.

A simple example can illustrate the magnitude of our concerns if the HF readmission measure is not properly stratified.

- For fiscal year 2013 (October 1, 2012), all inpatient acute care hospitals will be subject to a maximum payment penalty of 1 percent of all unadjusted Medicare payments.
- For a large academic teaching hospital, 1 percent is equivalent to an average of \$1 million per year.
- Since the ACA readmission penalty program is dependent upon readmission measures, as little as a single HF readmission could lead to a loss of \$1 million in payments.
- By fiscal year 2015, the maximum readmission penalty increases to 3 percent of payments or an average of \$3 million per year for a large academic teaching hospital.

The potential for unintended consequences due to the magnitude of these financial implications is enormous. That is why it is imperative for the measure developer to do everything in its power to ensure the HF readmission measure does not contribute to unintended consequences.

Beyond illustrating what is at stake in how the HF readmission measure will be applied, we also are concerned with how the measure developer has been analyzing national performance on the HF readmission measure. The HF readmission measure application states the following methodology:

CMS has performed analyses to evaluate disparities in performance by hospitals based on the proportion of patients that they serve that are African-American. These analyses show that though the median RSRR is slightly higher for hospitals with higher proportions of African-American patients compared with lower proportions, the range of performance is similar. We divided hospitals into deciles based on the proportion of their patients that were African-American and looked at hospitals across deciles. The combined lowest 5 deciles have fewer than 5 percent African-American patients and a median HF RSRR 24.3 (range 18.2-33.2) compared to hospitals in the highest decile with greater than 25 percent African American patients and a median HF RSRR 26.0 (range 20.6-32.8).

Focusing on deciles of performance and relying on the median of a range is misleading and insufficient. Because the measure developer has repeatedly failed to release national data, beyond this scant reference in the measure application, we have engaged an independent research group to provide the steering committee with the data necessary to make a truly informed decision. The attached analysis by KNG illustrates unadjusted HF readmission rate for whites is 24.2 percent and for blacks is 27.2 percent. Underlying this staggering difference, KNG also analyzed HF readmissions by quartiles of performance and provided both the mean and median of each range. Figure 1 in the attachment shows that hospitals in the highest quartile of non-white percent have a significantly higher HF readmission rate than those in the lowest quartile.

In addition to the independent analysis of the HF readmission measure, we also recently released a TrendWatch (attached) that captures the full suite of considerations that must be addressed when reviewing readmissions. Among the several important findings in the TrendWatch, we highlight the most significant:

One study of general medicine patients in a large urban, university medical center found that African American patients had a higher risk of readmission than patients of any other race. A different study of just Medicare beneficiaries with heart failure found that minority patients, other than African Americans, had a higher risk of readmission.

Overall, black Medicare patients had higher readmission rates than whites, and patients from what the authors call “minority-serving hospitals” had higher readmission rates than those from “non-minority serving hospitals.” The article concludes that racial disparities in readmissions are related to both race and site of care, recognizing there also are factors beyond hospitals’ control that could explain the findings.

Both of these compelling studies provide additional information that the steering committee did not have available for its past deliberations. We ask the steering committee to carefully review this additional information and take it into consideration in its subsequent review of the HF readmission measure. These studies illustrate there is compelling need to stratify the HF readmission measure. We urge the steering committee to consider lack of stratification as a seriously flaw in the assessment the HF readmission measure’s scientific acceptability.

# The Effect of Race on Hospital Readmission Rates for Medicare Beneficiaries with Heart Failure

*Prepared By:*

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*Prepared For:*

American Hospital Association

October 17, 2011



*answering today's health policy questions*

## Purpose of Analysis

In this analysis, we answer the following questions:

1. What are the hospital readmission rates for Medicare patients with heart failure by race groups?
2. How do hospital risk-adjusted readmission rates (RSRRs) for patients with heart failure as reported by Hospital Compare vary by the percent of non-white patients treated at a hospital?
3. How do race-adjusted readmission rates compare to unadjusted rates by hospital characteristics?

## Data

We used the following data to perform this analysis:

- 2009 100% Medicare Inpatient Limited Data Set (LDS) Standard Analytical File
- 2009 100% denominator file
- March 2011 release of Hospital Compare file
- FY 2011 CMS Hospital Inpatient Prospective Payment System (IPPS) Final Rule Impact File

## Results

Table 1 presents the race distribution of index admissions for heart failure in the Medicare population in 2009, after excluding 487 index admissions with missing race information. Approximately 84 percent of the 369,390 index admissions for heart failure were White patients; 12.1% were Black patients. Other race group accounted for 4.2% of the index admissions.

**Table 1: Race Distribution of Hospitalizations for Heart Failure for Medicare Patients, 2009**

| Race                  | Index Admissions | Percent |
|-----------------------|------------------|---------|
| White                 | 309,256          | 83.7%   |
| Black                 | 44,508           | 12.0%   |
| Other                 | 2,773            | 0.8%    |
| Asian                 | 3,847            | 1.0%    |
| Hispanic              | 7,280            | 2.0%    |
| North American Native | 1,726            | 0.5%    |
| Total                 | 369,390          |         |

Source: KNG Health Analysis of 2009 100% Medicare inpatient claims data and beneficiary data.

Note: 487 index admissions with unknown race were not included in the analysis.

Table 2 lists the unadjusted readmission rates for heart failure patients by race groups. We computed the unadjusted readmission rate of heart failure by 6 race groups, 3 race groups and 2 race groups.

**Table 2. Unadjusted Readmission Rates of Heart Failure by Race Groups**

| Race                       | Readmission Rate | # Admissions   |
|----------------------------|------------------|----------------|
| <b>Full Race Breakdown</b> |                  |                |
| White                      | 24.2%            | 309,256        |
| Black                      | 27.2%            | 44,508         |
| Other                      | 25.0%            | 2,773          |
| Asian                      | 24.1%            | 3,847          |
| Hispanic                   | 27.6%            | 7,280          |
| North American Native      | 27.6%            | 1,726          |
| <b>Three Race Groups</b>   |                  |                |
| White                      | 24.2%            | 309,256        |
| Black                      | 27.2%            | 44,508         |
| Other                      | 26.3%            | 15,626         |
| <b>Two Race Groups</b>     |                  |                |
| White                      | 24.2%            | 309,256        |
| Non-White                  | 27.0%            | 60,134         |
| <b>Total</b>               | <b>24.6%</b>     | <b>369,390</b> |

Source: KNG Health Analysis of 2009 100% Medicare inpatient claims data and beneficiary data.

Note: Index admissions with unknown race were not included in the analysis.

"Other" of three race groups includes races other than White and Black.

In Table 3, we computed the average risk-adjusted readmission rates (RSRR) for heart failure patients by quartile based on the percent of non-white index admissions for heart failure. The RSRR was obtained from Hospital Compare. To complete Table 3, we first ranked the hospitals by their percent of non-white patients treated for heart failure and then linked the hospital rank to the Hospital Compare data. The cut-off points for the quartiles of non-white percent are 1.1% (25 percentile), 7.5% (50 percentile) and 21.8% (75 percentile). We plotted the distribution of RSRR by hospital for each quartile in figure 1.

**Table 3. Summary of RSRR by Quartiles of Hospitals Based on Non-White Percent**

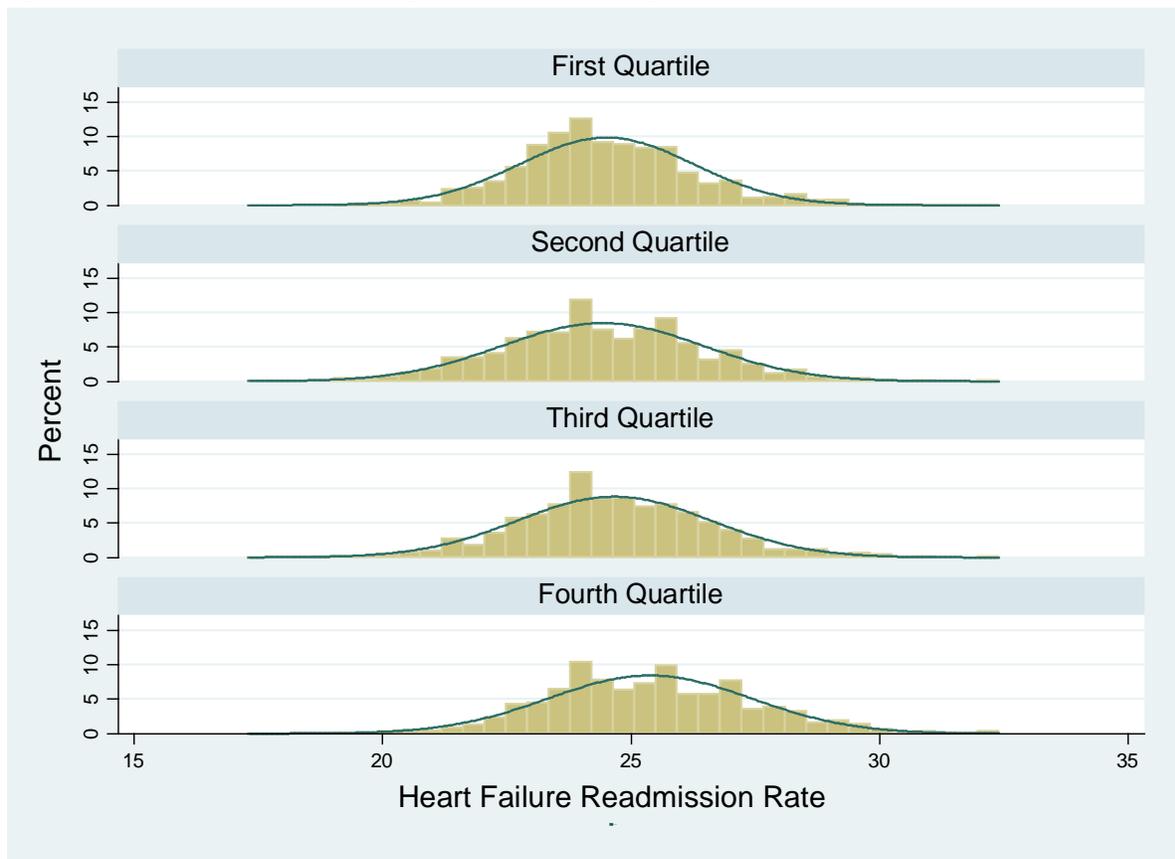
| Quartile | Range of Non-White Percent | Mean | Median | S.D. | # of Hospitals |
|----------|----------------------------|------|--------|------|----------------|
| 1        | 0%-1.1%                    | 24.5 | 24.3   | 1.7  | 919            |
| 2        | 1.1%-7.5%                  | 24.4 | 24.3   | 2.0  | 927            |
| 3        | 7.5%-21.8%                 | 24.7 | 24.6   | 1.9  | 927            |
| 4        | 21.8%-100%                 | 25.4 | 25.2   | 2.0  | 920            |
| Total    |                            | 24.7 | 24.6   | 2.0  | 3,693          |

Source: KNG Health Analysis of Hospital Compare data (March 2011 release) and 2009 100% Medicare inpatient claims data and beneficiary data.

Note: Index admissions with unknown race were not included in the analysis.

Hospitals included in the analysis have at least 10 admissions for heart failure in 2009.

**Figure 1 Distribution of RSRR by Quartiles of Hospitals Based on Non-White Percent**



Source: KNG Health Analysis of Hospital Compare data (March 2011 release) and 2009 100% Medicare inpatient claims data and beneficiary data.

Note: Index admissions with unknown race were not included in the analysis. Hospitals included in the analysis have at least 10 admissions for heart failure in 2009.

In Table 4, we report the average of the hospital-level percentage difference between the unadjusted readmission rates and race-adjusted readmission rates by hospital characteristics (as well as the median, 25<sup>th</sup> percentile, and 75<sup>th</sup> percentile). We took two analytical steps to compute the race-adjusted readmission rates. First, we determined the overall race distribution (White and Non-White) of Medicare patients admitted for heart failure in 2009. We used two race groups only, because the number of index admissions for patients of races other than White or Black was small, especially at the hospital level. We were concerned that the small number of index admissions could produce inaccurate readmission rates. Then, in the second step, for each hospital, we computed the unadjusted readmission rates by race and then compute the hospital-level readmission rate by using the overall race distribution as a weight. The weighted readmission rates are the race-adjusted readmission rates. The formula for percent change is  $(\text{adjusted race} - \text{unadjusted race}) / \text{unadjusted}$

rate. We also computed the absolute percent change, which is the absolute value of percent change.

# TRENDWATCH

## Examining the Drivers of Readmissions and Reducing Unnecessary Readmissions for Better Patient Care

Nearly one-fifth of Medicare beneficiaries—roughly 2 million beneficiaries per year<sup>1</sup>—discharged from a hospital return within 30 days, according to the Medicare Payment Advisory commission (MedPAC).<sup>2</sup> Some of the readmissions are planned, some are unplanned and others are unrelated to the initial reason the patient came to the hospital. Identifying and reducing avoidable readmissions will improve patient safety, enhance quality of care, and lower health care spending. That is why policymakers, consumers, hospital leaders and the medical community are focused increasingly on readmissions to hospitals.

Policymakers are proposing incentives to reduce hospital readmissions by publicly posting data on readmission rates and lowering payments to hospitals with high rates. First, in 2009, hospitals began voluntarily reporting hospital readmission rates to the Centers for Medicare & Medicaid Services (CMS) for public review on its website, *Hospital Compare*.

Rates of readmission occurring for any reason following hospitalization for one of three common conditions—heart attack, heart failure, and pneumonia—are displayed.<sup>3</sup> Most recently, in the *Patient Protection and Affordable Care Act* (ACA), Congress enacted the Hospital Readmissions Reduction Program (HRRP) under which Medicare will penalize hospitals for higher-than-expected rates of readmissions beginning in FY 2013.<sup>4</sup>

Careful planning is warranted to ensure that the HRRP achieves its dual aims of improving quality and reducing costs. There are opportunities to achieve cost savings by reducing readmissions, but not all readmissions can or should be avoided. Additionally, as CMS proceeds with the HRRP, evidence is mounting that the link between readmissions and quality of care is more complex than assumed. Further, the role of other factors—such as a patient's demographic and socioeconomic characteristics, social support structure, and co-morbid conditions,

all of which are crucial to appropriate risk adjustment of readmission rates—is still not fully understood.

America's hospitals are committed to improving the safety and quality of care they deliver, and many are already working to reduce avoidable readmissions. Innovative programs focus on improving care transitions, bolstering post-discharge monitoring and follow-up care, and strengthening linkages with other community providers. Payment rules should encourage hospitals to invest in programs proven effective, and should avoid unintended adverse consequences for other aspects of patient care.

This TrendWatch examines recent research on hospital readmissions, including the linkages between readmissions and quality of care, and the various circumstances that may drive readmissions. It also discusses the changes put in place by the ACA and highlights the considerations and additional research that are warranted as policymakers implement the new HRRP.



from the field

“Patients who have chronic disease like heart failure are a vulnerable group. At the hospital, they receive 24-hour monitoring, so if there is any change, the doctors and nurses can respond immediately. Yet when they are discharged home, they are pretty much on their own.”

Sarwat I. Chaudhry, M.D., assistant professor, Yale School of Medicine<sup>34</sup>



## Classification of Readmissions Can Help Identify Targets for Reduction

The AHA, in consultation with clinicians, has developed a framework to help policymakers and providers consider the different types of readmissions. While some readmissions might have been avoided if the patient received the right care at the right time, still others may be unavoidable due to the natural progression of disease, accepted treatment protocol, or a patient's preferences. Some readmissions are part of a planned course of treatment. The framework can aid policymakers in designing a program for reducing readmissions that targets those rehospitalizations that are less desirable and potentially avoidable.

The framework contemplates four distinct types of readmissions:

- 1) A **planned** readmission **related** to the initial admission, such as a series of chemotherapy treatments or reconstructive surgery following removal of a body part.
- 2) A **planned** readmission **unrelated** to the initial admission, such as readmission for removal of a lung tumor discovered during an admission for a heart attack.
- 3) An **unplanned** readmission **unrelated** to the initial admission, such as readmission for a fracture sustained in a car accident following an initial stay for an appendectomy.
- 4) An **unplanned** readmission **related** to the initial admission, such as readmission for a surgical site infection or adverse reaction to a medication. (Chart 1)

It is this last group of readmissions—those **unplanned** but **related** to

**Unplanned readmissions related to the initial stay likely offer the best opportunity for savings and care improvements.**

Chart 1: A Framework for Classification of Readmissions

|                       | Related to Initial Admission  | Unrelated to Initial Admission  |
|-----------------------|---|---|
| Planned Readmission   | A <b>planned</b> readmission for which the reason for readmission is <b>related</b> to the reason for the initial admission.    | A <b>planned</b> readmission for which the reason for readmission is <b>not related</b> to the reason for the initial admission.    |
| Unplanned Readmission | An <b>unplanned</b> readmission for which the reason for readmission is <b>related</b> to the reason for the initial admission. | An <b>unplanned</b> readmission for which the reason for readmission is <b>not related</b> to the reason for the initial admission. |

Source: American Hospital Association.

the initial admission—on which AHA seeks to focus public policy efforts to reduce readmissions. Hospitals cannot influence the occurrence of unplanned, unrelated readmissions because they are not predictable or preventable.

Likewise, hospitals ought not to be expected to eliminate planned readmissions, as these are typically part of clinically appropriate treatment plans. For example, clinical guidelines for implantation of an implantable cardiac defibrillator (ICD) do not recommend implantation of an ICD within 40

days of myocardial infarction for prevention of sudden cardiac death.<sup>5</sup> In this case, a patient admitted for a heart attack would have to be readmitted later for implantation of the ICD. Similarly, if a patient experienced a significant side effect during outpatient administration of chemotherapy, then the patient would typically be admitted for inpatient administration for all subsequent courses of chemotherapy.<sup>6</sup> These repeat admissions should not be targeted as they are markers of appropriate care.

“ ”  
*from the field*

“I think that the message to patients and the general public is that they should be wary of seemingly simple measures of quality of care. One simple measure is not enough.”

Eiran Z. Gorodeski, M.D., researcher and associate staff member in cardiovascular medicine, Cleveland Clinic, OH<sup>20</sup>

## The ACA Hospital Readmissions Reduction Program

The HRRP creates an incentive to reduce hospital readmissions by lowering Medicare payment rates to hospitals showing greater-than-expected, or “excess,” readmissions. Beginning in FY 2013, 30-day readmission rates for a hospital’s Medicare patients with heart attack (AMI), heart failure and pneumonia will be compared to the expected rate of readmissions, using risk adjustment to account for age, gender, medical diagnosis and selected medical history. In FY 2009, 2.5 percent of discharges from hospitals paid under the inpatient prospective payment system and included in *Hospital Compare* had a principal diagnosis of AMI, 5.7 percent had heart failure, and 4.2 percent had pneumonia.<sup>7</sup> The rate of excess readmissions for these three conditions will translate to a payment reduction for the hospital for each Medicare admission, capped at 1 percent of Medicare payments in FY 2013 and at 3 percent by FY 2015. The HHS Secretary may expand HRRP to additional conditions beginning in FY 2015.<sup>8</sup>

The Obama administration has also launched the *Partnership for Patients: Better Care Lower Costs*, a new public-private partnership that will help improve the quality, safety and affordability of health care for all Americans.<sup>9</sup> This program will build on the Community-based Care Transition Program, a five-year program created by the ACA in which hospitals and community-based organizations will work together to improve care transitions, including post-discharge follow-up, and thus aim to reduce readmissions for high-risk Medicare beneficiaries.<sup>10</sup> Together these programs will receive \$1 billion in funding.<sup>11</sup>

Many factors contribute to a hospital’s readmission rate, including patients’ socioeconomic status, demographic factors, co-morbid conditions, and access to social supports. It is important that

### Risk-adjusted readmission rates do not account for some factors that may influence risk of readmission.

Chart 2: Risk Adjustment Variables for 30-day All-cause Risk Standardized Readmission Rate Following Pneumonia Hospitalization

| Included in Risk Adjustment     |                            | Not Included in Risk Adjustment                    |
|---------------------------------|----------------------------|--|
| Age                             |                            | Medicare eligibility status (e.g., aged, disabled) |
| Gender                          |                            | Dual eligibility (Medicaid) status or income       |
| History of CABG                 |                            | Frailty  |
| Condition Categories including: |                            | Social support structure                           |
| History of infection            | Septicemia/shock           | Race or ethnicity                                  |
| Cancer                          | Diabetes                   | Geographic region                                  |
| Hematological disorders         | Gastrointestinal disorders | Limited English proficiency                        |
| Malnutrition                    | Dementia & senility        |  |
| Drug/alcohol abuse              | Psychiatric disorders      |  |
| Paraplegia, paralysis, et al.   | CHF & other heart disease  |  |
| Stroke & vascular disease       | COPD & lung disorders      |  |
| Asthma                          | Pneumonia                  |  |
| ESRD or dialysis                | Renal failure              |  |
| Urinary tract infection         | Skin ulcers                |  |
| Vertebral fractures             | Other injuries             |  |

Source: National Quality Forum. Measure # 0506. [www.qualityforum.org](http://www.qualityforum.org).  
 Note: CABG=coronary artery bypass graft; ESRD=end stage renal disease; CHF=congestive heart failure; and COPD=chronic obstructive pulmonary disease.

the risk adjustment mechanisms account for these factors so that hospitals treating a more complex patient mix are not unduly penalized for readmissions. However, the risk adjusters proposed for use in the HRRP are imperfect; while there are important factors that will be nearly impossible to measure and account for, such as social support structure, the risk adjusters also fail to capture certain important known factors, such as whether a beneficiary has “dual eligible” status. Dual eligible beneficiaries are those who qualify for both Medicare and Medicaid. These 9 million beneficiaries are the most chronically ill in both programs and have health care costs that are nearly five times those of other Medicare beneficiaries.<sup>12</sup>

Other challenges in risk adjustment exist around race, ethnicity and limited English proficiency. (Chart 2)

The ACA specifies that certain readmissions will be excluded from hospitals’ readmission rates. These exclusions include “readmissions that are unrelated to the prior discharge (such as a planned readmission or transfer to another applicable hospital).”<sup>13</sup> This language is consistent with AHA’s readmissions framework. However, the statute also reflects the difficulty in distinguishing each of the four types of readmissions, as it specifically addresses only one of the four types discussed above. How these exclusions are accounted for in regulation remains a key policy concern.

## Calculating the ACA Payment Reduction for Excess Readmissions

The hospital readmissions reduction program in the ACA directs the Medicare program to recoup payments made to hospitals for “excess” readmissions for patients with heart attack, heart failure or pneumonia by reducing payment for each Medicare admission moving forward.

However, the AHA has identified a technical error in the ACA language that leads to an overstatement of the amount of money hospitals must pay back to the Medicare program. As shown in the example, the formula was intended to use a hospital’s number of **expected readmissions** for each condition as the basis for the calculation in order to calculate the payments associated with excess readmissions. Instead, the formula in the statute uses a hospital’s **total number of admissions** for the conditions. This error, if left unresolved, will inappropriately inflate hospitals’ payment reductions.

For example, consider a hospital with the following statistics:

- 1,000 total admissions for the three conditions
- \$5,000 average base diagnosis-related group (DRG) payment
- 51 actual readmissions
- 50 expected readmissions

In this example, the hospital had one more readmission than expected, or one “excess” readmission. Since the average base DRG payment for the hospital is \$5,000, its payments should be reduced by \$5,000—the payment amount for the one excess readmission. To arrive at this amount, the calculation is made by first determining the ratio of excess readmissions by subtracting 1 from the ratio of actual to expected readmissions ( $((51/50) - 1) = 0.02$ ). Next, that factor (0.02) is multiplied by the average DRG payment (\$5,000), and the number of **expected readmissions** (50) for a penalty of \$5,000, correctly representing the dollar amount associated with the “excess” readmissions.

$$(0.02) * \$5,000 * 50 \text{ expected readmissions} = \$5,000$$

However, the technical error in the ACA’s language results in this hospital’s payments being reduced much more than \$5,000. According to the legislative language, the excess readmissions ratio (0.02) and average DRG payment (\$5,000) would be multiplied by the hospital’s **total number of admissions for the three conditions** (1,000) for a penalty of \$100,000. The calculation mandated by the statute is:

$$(0.02) * \$5,000 * 1,000 \text{ total admissions} = \$100,000$$

Because the formula uses the **total number of admissions for the three conditions**, the penalty for this hospital will be 20 times the amount of payment for excess readmissions. The AHA believes Congress intended to recoup money paid out for excess readmissions, which the current formula fails to do. Therefore, the error in the legislative language should be clarified to reflect “expected readmissions,” instead of the total number of admissions.

## The Relationship Between Readmissions and Quality of Care Is Complex

In the AHA framework, only one type of readmission—a readmission that is unplanned and related to the initial admission—could indicate a lapse in providing the right care at the right time within the hospital. Yet, payers and others commonly use global readmission rates, along with mortality rates, as indicators of the quality of care delivered to patients during a hospital stay.

Conventional wisdom is that higher rates of either mortality or readmission within 30 days of hospital discharge

indicate lower quality care. However, growing evidence reveals that mortality and readmissions may in fact be inversely associated with one another, calling into question the assumption that low readmission rates are always desirable.

Researchers at Cleveland Clinic (OH) recently used Medicare data posted on the *Hospital Compare* website to study the link between readmissions and mortality for beneficiaries admitted for heart failure. They found that hospitals with higher readmission rates actually had lower

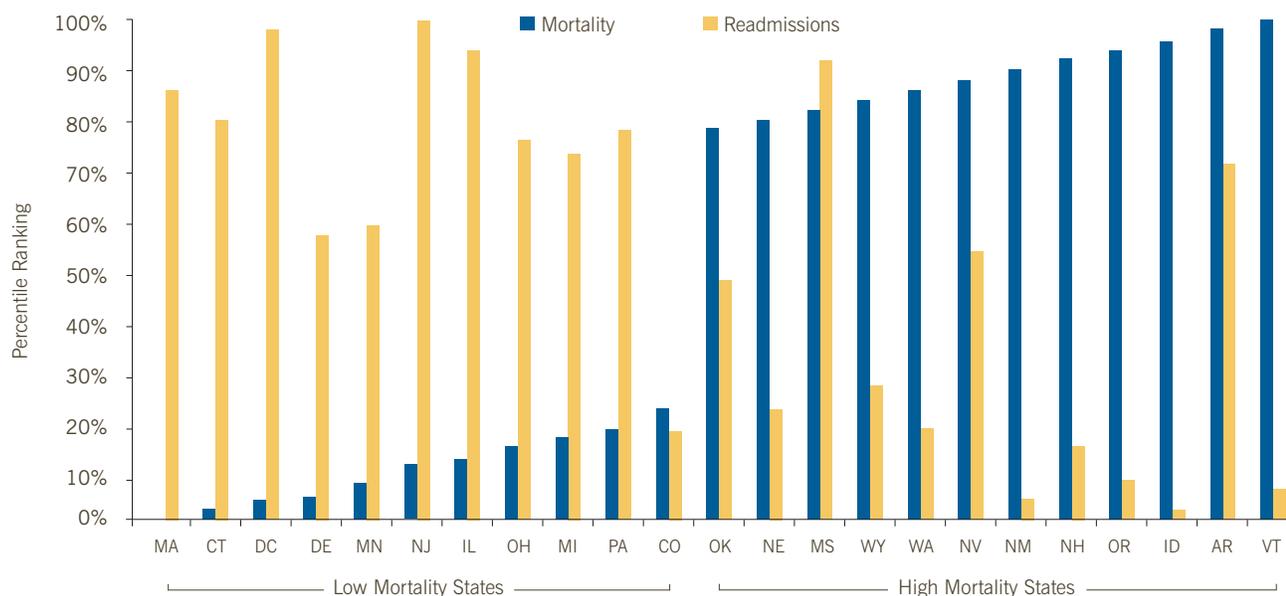
30-day mortality rates.<sup>14</sup>

A similar analysis using *Hospital Compare* data conducted by the Greater New York Hospital Association also concluded that mortality is inversely related to readmissions.<sup>15</sup> (Chart 3) And comparison of better- and worse-than-expected hospital referral regions (HRRs)<sup>16</sup> with respect to 30-day mortality and readmissions shows that some hospitals with better-than-expected mortality actually had worse-than-expected readmissions.<sup>17</sup>

Another analysis compared hospitals

## There appears to be an inverse relationship between mortality and readmissions.

Chart 3: Percentile Rankings of Adjusted Mortality and 30-day Readmission Rates, States with the Lowest and Highest Adjusted Mortality Rates



Source: Analysis by Greater New York Hospital Association, 2009.

Note: Findings based on CMS' *Hospital Compare* data released on July 7, 2009. Chart shows 11 states with lowest and 12 states with highest adjusted mortality rates. MD was omitted from the low mortality states because readmissions data were not available.

ranked among the top 50 “America’s Best Hospitals” in cardiac surgery by *U.S. News & World Report* and those not ranked. For patients treated for heart failure, the study found lower rates of mortality among ranked hospitals but no difference in readmission rates between ranked and non-ranked hospitals. Interestingly, among the top-ranked hospitals, there were no

hospitals that performed better than expected on both mortality and readmissions.<sup>18</sup>

Similarly, a study of 39 children’s hospitals in 24 states examined the relationship between readmissions and the state’s child health system performance, as ranked by The Commonwealth Fund. The ranking is based on 13 indicators

measuring access, quality, costs, equity and the potential for children to lead healthy lives. The likelihood of readmission in the year following discharge rose as the states’ performance ranking improved. States with the highest-performing systems had significantly higher readmission rates than states with the lowest-performing systems.<sup>19</sup>

## Readmission Rates May Be Ill Suited as Measures of Quality

Experts do not all agree that readmission rates are valid as quality measures. A review of the literature on hospital readmissions concluded that readmission rates are not useful indicators of quality of care.<sup>21</sup> In part, these measures do not typically distinguish among the different types of readmissions arrayed in Chart 1—meaning they do not consider which

readmissions are within or beyond the hospital’s control. For instance, patients may be readmitted as a result of unpreventable progression of disease, planned follow-up care, their own preference for treatment timing, or an unrelated diagnosis or trauma.

Additionally, there are multiple factors such as patient characteristics and patterns

of care that cloud the picture. For example, patients hospitalized for heart failure in the Veterans Affairs (VA) Health Care System became sicker over a four-year study period, with greater co-morbidities, yet mortality rates declined, in part due to more frequent use of recommended therapies.<sup>22</sup> At the same time, readmission rates climbed,

perhaps because sicker patients who might have otherwise died remained alive, and thus were at greater risk for rehospitalization. Further, providers reported heightened monitoring of discharged patients, a factor that may have resulted in more readmissions but saved more lives.<sup>23</sup>

One argument in favor of using readmission rates to measure quality of

care is that a readmission is an indicator of an omission of needed care, or an error in the care given to a patient. Yet, as the AHA framework describes, this theory is unsupported for readmissions that are a specified step in a treatment plan, and for unrelated, unplanned readmissions that could not have been anticipated.

A review of the literature found mixed

evidence linking readmissions with the care patients received during the initial hospital stay.<sup>24</sup> Another study found that patients who were readmitted within 28 days of discharge were no more likely to have received low-quality care than patients without a readmission.<sup>25</sup>

## Patient Characteristics and Health Conditions Play an Important Role in Readmissions

A patient's life circumstances (low-income or lack of social support) and individual characteristics (co-morbid conditions or underlying disability) are all important factors in whether a patient will be readmitted to the hospital. The risk adjustment methods used to calculate readmission rates for beneficiaries with heart attack, heart failure or pneumonia do not account for all of these factors. Thus, new financial penalties on hospitals may not make appropriate accommodation for patients' life circumstances that could drive readmissions.

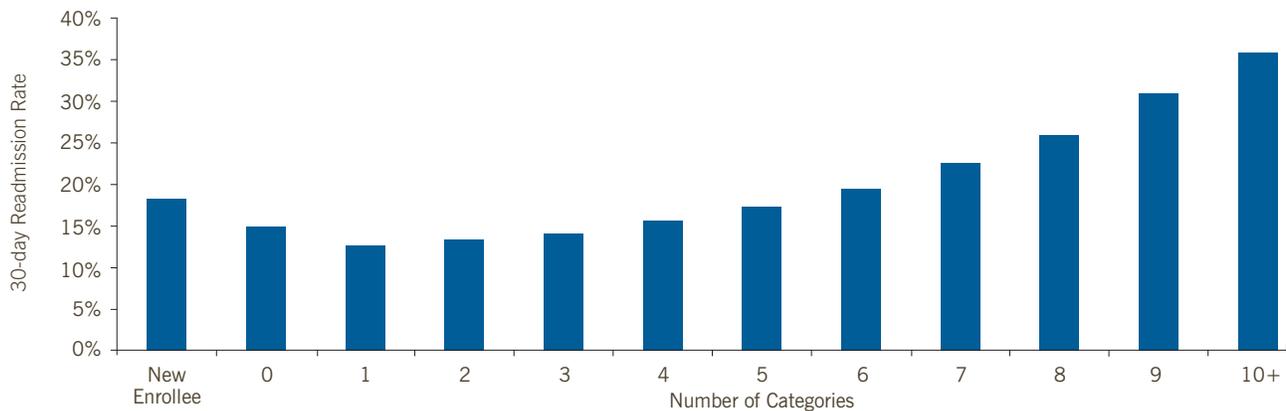
### Chronic Conditions

Patients with co-morbidities are at heightened risk of rehospitalization. (Chart 4) An analysis of adults hospitalized in six states found that, the higher the number of chronic conditions a patient had, the greater the chance of readmission.<sup>27</sup> Similarly, the likelihood of readmission was greater for patients with a higher severity of illness score.<sup>28</sup> Another study of 37 U.S. children's hospitals also found that a higher rate of readmissions was associated with higher prevalence of use of assistive technology such as a gastrostomy tube or cerebrospinal fluid shunt.<sup>29</sup>

Additional research has focused on identifying the specific conditions that are predictive of readmissions. A study of more than 6,800 general medicine patients in a large urban, university medical center found six co-morbidities to be associated with readmission: congestive heart failure, renal disease, cancer (with and without metastasis), weight loss and iron deficiency anemia.<sup>30</sup> MedPAC also found that the readmission rates for Medicare beneficiaries with end-stage renal disease (ESRD) are higher than average—31.6 percent of ESRD patients are readmitted within 30 days

**The more chronic conditions a patient has, the greater likelihood of readmission.**

Chart 4: 30-day Readmission Rate for Non-dual, Disabled Medicaid Beneficiaries by Number of Chronic Illness and Disability Categories



Source: Gilmer T. and Hamblin, A. (December 2010). *Hospital Readmissions among Medicaid Beneficiaries with Disabilities: Identifying Targets of Opportunity*. New Jersey: Center for Health Care Strategies.  
 Note: Number of chronic illnesses and disabilities measured using Chronic Illness and Disability Payment System (CDPS), a risk adjustment model used to adjust capitated payments to health plans that enroll Medicaid beneficiaries. Study included 941,208 Medicaid beneficiaries hospitalized from 2003-2005 in 50 states and DC.

as compared to only 16.9 percent of non-ESRD patients.<sup>31</sup>

Other studies have focused on patients admitted for a particular condition or procedure. One such study found that patients readmitted after being hospitalized with heart failure—one of the targets of the HRRP—were more likely to have diabetes, peripheral vascular disease, stroke and coronary artery disease than their counterparts who weren't readmitted.<sup>32</sup> An analysis of readmissions for complications of coronary artery bypass graft (CABG) surgery had similar conclusions. Six co-morbid conditions were associated with readmission within 30 days of discharge: vascular disease, congestive heart failure, chronic obstructive pulmonary disease (COPD), diabetes, liver failure and dialysis.<sup>33</sup>

### Depression

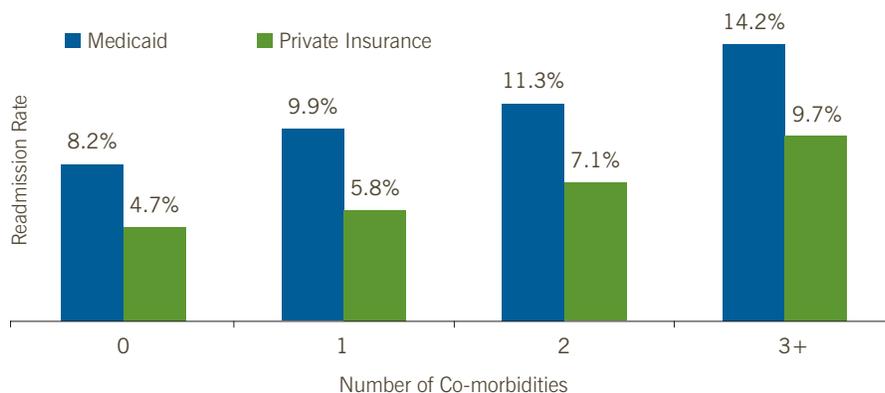
Psychological conditions, such as depression, can adversely affect patient recovery and increase the likelihood of readmission. Following hospitalization for coronary artery disease, “distressed” patients were found to have significantly higher rates of readmission within six months than “non-distressed” patients.<sup>35</sup> Similarly, a Canadian study found that heart attack patients who were depressed were more likely to be readmitted in the year after discharge.<sup>36</sup> The link between depression and readmission is not limited to patients with cardiac conditions; a study of 142 internal medicine patients at a hospital in Australia also found that depression predicted higher rates of readmission.<sup>37</sup>

### Demographic Factors

Numerous studies have demonstrated the influence of patient characteristics such as age, gender,<sup>38</sup> race,<sup>39</sup> geographic region<sup>40</sup> and Medicaid coverage<sup>41</sup> on the risk of readmission. There is not yet consensus on the most important predictive factors, but it is evident that demographic and

### Medicaid beneficiaries are consistently at greater risk of readmission than privately insured adults.

Chart 5: Non-obstetric, Adult 30-day Readmission Rates by Insurance Coverage and Number of Co-morbidities, 2007



Source: Jiang, H.J., and Wier, L.M. (April 2010). *All-cause Hospital Readmissions among Non-elderly Medicaid Patients, 2007*. HCUP Statistical Brief #89. Rockville, MD: Agency for Healthcare Research and Quality.

socioeconomic factors have a significant effect on readmissions.<sup>42</sup>

Race and ethnicity have been shown to be a predictor of readmissions but how this plays out is not completely understood. One study of general medicine patients in a large urban, university medical center found that African American patients had a higher risk of readmission than patients of any other race.<sup>43</sup> A different study of just Medicare beneficiaries with heart failure found that minority patients, other than African Americans, had a higher risk of readmission.<sup>44</sup>

Another recent study explored whether disparities in readmission rates are attributable primarily to race itself or to the site of care, given that care for minorities is concentrated in a relatively small number of hospitals. Overall, black Medicare patients had higher readmission rates than whites,<sup>45</sup> and patients from what the authors call “minority-serving hospitals” (hospitals in the top decile of proportion of black Medicare patients) had higher readmission rates than those from “non-

minority serving hospitals.” The article concludes that racial disparities in readmissions are related to both race and site of care, recognizing there also are factors beyond hospitals’ control that could explain the findings.<sup>46</sup>

Language barriers lead to greater risk of readmission because patients and their families are less likely to understand their diagnosis or discharge instructions. Among more than 7,000 patients admitted to a northern California hospital, Latino and Chinese patients who did not speak English were significantly more likely to be readmitted within 30 days than English speakers.<sup>47</sup>

Income and socioeconomic status also play a role. One study of Medicare patients found that patients discharged from hospitals in counties with low median income had higher readmission rates than those discharged in counties with high median income.<sup>48</sup> Another found that Medicare beneficiaries receiving Supplemental Security Income (SSI) were more likely to be rehospitalized.<sup>49</sup>

Public insurance coverage also appears associated with greater risk of readmission.<sup>50</sup> Using hospital data from 10 states, one study found that non-obstetric, adult Medicaid patients had higher readmission rates than their privately insured counterparts, nearly 11 percent compared to only 6 percent.<sup>51</sup> (Chart 5)

Hospitals serving disproportionate numbers of minority, low-income, or otherwise vulnerable patients may have higher readmission rates than other hospitals because of the risk factors of their patient population. This scenario is illustrated in Chart 6 in a comparison of the Bronx, NY, to Fairfield, CT, two communities with very different demographic profiles located in close proximity to each other. The Bronx has a median household income less than half that in Fairfield, nearly triple the minority population, and lower levels of educational attainment. Yet, nearly all of the hospitals in the Bronx performed better than the U.S. average on giving discharge instructions to heart failure patients, while only half of the hospitals in Fairfield performed the same. One might then expect hospitals in the Bronx to have better readmission rates for heart failure patients; but in fact, nearly

## The effect of socioeconomic factors raises questions about using readmissions to measure quality.

Chart 6: Community Characteristics and Hospital Quality Measures for a Suburban and an Urban Community

|   | Fairfield, CT | Bronx, NY |
|---|---------------|-----------|
| <b>Community Characteristics</b>  |               |           |
| Estimated Population  | 895,030       | 1,391,903 |
| Median Household Income   | \$80,020      | \$34,031  |
| Persons Below Poverty Line  | 7%            | 27%       |
| Non-Hispanic White Population   | 70%           | 13%       |
| No English Spoken at Home (aged ≥ 5)                                      | 24%           | 53%       |
| Bachelor Degree or Higher (aged ≥ 25)                                     | 40%           | 15%       |
| <b>Hospital Quality Data</b>  |               |           |
| Hospitals in County with Quality Data on CMS <i>Hospital Compare</i> Site | 6             | 7         |
| Hospitals with HF Discharge Instruction Rate Better than the U.S. Average | 3             | 6         |
| Hospitals with HF Readmission Rate Significantly Worse than U.S. Average  | 0             | 6         |
| Hospitals with HF Mortality Rate Significantly Worse than U.S. Average    | 0             | 0         |

Source: Bhalla, R., and Kalkut, G. (2010). Could Medicare Readmission Policy Exacerbate Health Care System Inequality? *Annals of Internal Medicine*, 152(2), 114-117.

Note: HF=Heart Failure.

all had worse rates than the U.S. average, while none of the hospitals in Fairfield were below the national average.<sup>52</sup> Penalizing hospitals in these circumstances

may further disadvantage their patients, perhaps exacerbating health disparities. (Chart 6)

## Hospitals Are Testing Innovative Approaches to Reduce Readmissions

Even when considering unplanned, related readmissions, it is not feasible for a hospital to prevent all such readmissions, and too low a rate might actually indicate poor quality care.<sup>54</sup> The best way to improve quality of care as it relates to readmissions is to focus on those rehospitalizations that may be avoidable. The challenge is that there are varying methods, with no agreed-upon standards, for identifying such potentially preventable readmissions.<sup>55</sup>

There is also little agreement on the characteristics that might best predict

which patients are at greatest risk of readmission, and thus should receive the most attention or be targeted for intervention. A review of five statistical models intended to predict patient risk of readmission found little consistency among patient characteristics—including demographic variables and co-morbid conditions—that are significant predictors.<sup>56</sup> Further work is warranted to help hospitals better focus their efforts on those patients most likely to benefit.

However, there are some promising findings indicating that hospitals' invest-

ments in enhanced discharge planning and follow-up care can help reduce readmissions. For example, one study examined the impact of early follow-up care (within seven days) on readmissions of patients with heart failure. The authors found that patients with an initial admission in a hospital in the lowest quartile of performance on early follow-up care had a greater risk of readmission than patients initially admitted to hospitals with higher rates of early follow-up care.<sup>57</sup>

Already, hospitals are moving forward

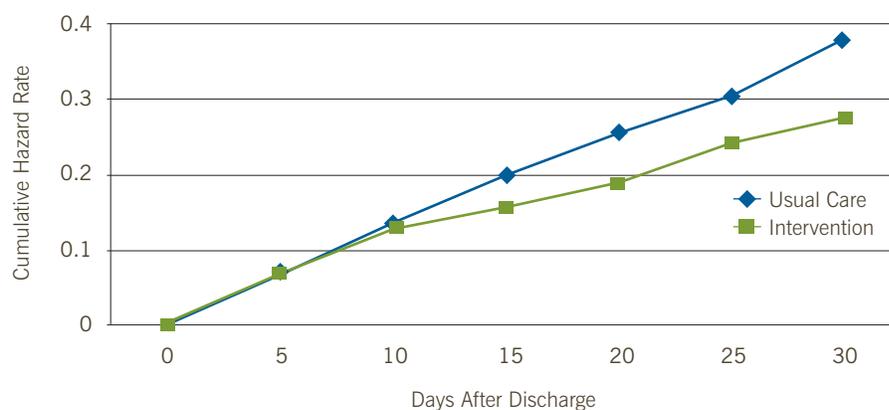
with efforts to reduce readmissions and improve quality of care. Hospitals are testing varying approaches, including partnering with post-acute care providers and enhancing discharge planning and follow-up services. (Chart 7)

**Metro Health Hospital** in Wyoming, MI initiated its Congestive Heart Failure (CHF) readmissions program in August of 2010 and—only six months into the program—cut its CHF readmission rate in half, from 15.5 percent for the first and second quarters of 2010 to 7.4 percent for the third and fourth quarters of 2010. Metro established a CHF unit staffed only by nurses with advanced training in CHF care. The nurses on the CHF floor developed education materials for patients, including information on appropriate diet and self health care, and they review these materials with patients during their stay in the hospital. Additionally, clinical secretaries schedule primary care provider (PCP) appointments for each CHF patient before they leave the hospital and the PCP receives clear and concise information on the patient's hospitalization, including what kind of follow-up care may be needed. Each patient is scheduled to see his/her doctor within seven days of discharge.

When patients require more than PCP follow-up care, hospital case managers enroll them in home health care before they leave the hospital. Case managers call each patient within 24-48 hours of discharge from the hospital to make sure they are following discharge instructions and keeping their PCP appointments. Metro planned to expand its CHF readmissions program to include pneumonia and acute myocardial infarction patients beginning in August 2011. Metro has also developed a high-risk readmission assessment tool based on information gathered from all patients upon admission which allows the hospital to identify patients as moderate- to high-risk for

### Hospital efforts to enhance discharge planning and follow-up care can help reduce readmissions.

Chart 7: Cumulative Hazard Rate\* of Hospital Utilization for 30 Days Post Discharge, Patients Receiving Usual Care vs. Patients Receiving Discharge Intervention



Source: Jack, B.W., et al. (2009). A Reengineered Hospital Discharge Program to Decrease Rehospitalization: A Randomized Trial. *Annals of Internal Medicine*, 150(3), 178-187.

\*The cumulative hazard rate is the cumulative number of hospital utilization events over total discharges over 30 days and illustrates how the risk of hospital utilization changes over time for each group.

Note: Hospital utilization is defined as a readmission or ED visit within 30 days. Intervention consisted of patient education, discharge planning, and follow-up phone call.

Results statistically significant at  $p=0.004$ .

a hospital readmission and develop an individualized care plan.<sup>58</sup>

**Rush University Medical Center** in Chicago, IL implemented its hospital-wide Enhanced Discharge Planning Program (EDPP) randomized controlled trial from June 2009 to March 2010 and during that period patients participating in the program had 15 percent lower 30-day readmission rates, 24 percent lower 60-day readmission rates and 23 percent lower 90-day readmission rates than patients not participating in the program. EDPP uses the hospital's electronic medical record, which includes clinical data as well as information on the patient's social support structures, to identify patients at risk for readmission. Social workers then telephone those patients after discharge to ensure they are receiving the services detailed in their

care plans, identify any additional needs, and link patients to community services and providers to resolve any issues. Social workers may continue to follow-up for a week to a month, depending on the patient's needs. The majority of the patients participating in the program require social worker intervention post-discharge. From June 2009 to March 2010, EDPP identified problems for 83 percent of program participants which did not emerge until after hospital discharge for 74 percent of the patients. More than one follow-up call was needed for 254 of the 360, or 70.6 percent, of patients in this program.<sup>59</sup>

**The Agency for Healthcare Research and Quality** is funding a project through the AHA's Health Research and Education Trust to help hospitals adopt Project RED (Re-engineered Hospital Discharge), a

program developed by Boston University that led to 30 percent fewer readmissions at Boston University Medical Center.<sup>60</sup> Hospitals use Project RED workflow processes from the time a patient is admitted and throughout the stay to help the patient prepare for discharge. Each patient is assigned a nurse “discharge advocate” who assists the patient in understanding his or her diagnosis, arranges follow-up appointments, and confirms medication plans. Upon discharge, the discharge advocate provides each patient with a personalized set of dis-

charge instructions, which are also shared with the patient’s regular physician, and follows up via phone within two days to identify and resolve any problems.<sup>61</sup>

Some hospitals are saving workforce resources by using Project RED’s “virtual discharge advocate,” Louise, to deliver discharge instructions to patients. Louise speaks to the patient using the communication style of a nurse and her dialogue is tailored for each patient based on the information entered into a workstation. Louise can answer questions and repeat information the patient may not have

understood the first time. Health First, of Rockledge, FL, used Project RED to reduce readmissions of congestive heart failure patients in one unit by 29 percent, compared to similar patients in units where Project RED was not deployed. Health First also hired discharge advocates to assist patients with home care and ensure they see a doctor within seven days. One of the noted barriers to wider use of these programs is the high level of provider investment required to achieve savings that accrues primarily to the health plans.<sup>62</sup>

## Conclusion

Readmissions can be categorized as planned or unplanned, and related or unrelated to the initial admission. Planned readmissions and those unrelated to the initial admission either should not or cannot be prevented by hospitals. Thus, public policies should focus on readmissions that may be avoidable—those that are **unplanned** and **related** to the initial admission, such as a surgical site infection. Additionally, the AHA believes the technical error in the ACA should be clarified in order to recoup an appropriate amount from hospitals with excess readmissions.

While the ACA aims to improve

quality and save costs by reducing readmissions, recent evidence suggests that it is difficult to draw conclusions about quality of patient care using data only on readmissions. Most confounding is the evidence of an inverse relationship between readmissions and mortality. Other factors, from patient characteristics and patients’ life circumstances to the nature of post-hospital care, also seem to matter in determining the rate of readmissions.

More research is needed on the drivers of readmissions. Such insight will be integral to developing risk adjusters that appropriately account for patient

characteristics, including socioeconomic factors, and hospitals’ particular circumstances and patient mix in determining financial penalties for readmissions.

Policymakers seeking statutory or regulatory levers to reduce readmissions should carefully weigh the potential for unintended adverse consequences. Payment penalties intended to shrink readmission rates could exacerbate inequities and leave hospitals with fewer resources to make needed investments in improving patient care. Further, misaligned policies could direct hospitals to reduce readmissions that are appropriate for safe patient care and may actually save lives.

## POLICY QUESTIONS

- How can the HRRP account for patients’ life circumstances and socioeconomic factors in calculating expected and actual readmission rates?
- How can regulators best focus the ACA’s HRRP on unplanned, related readmissions—those that hospitals are best able to prevent?
- How can policymakers effectively encourage hospitals and other providers to continue to design and implement innovative approaches to reduce readmissions?
- What are the best approaches for disseminating information about programs proven to be effective in reducing readmissions?
- How can regulators anticipate and avoid unintended adverse consequences for patients and providers in imposing financial penalties for excess readmissions?
- What additional research is warranted to ensure appropriate risk adjustment of readmission rates for the HRRP?

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