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The Hospital Readmissions Reduction Program

Evidence for Harm

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Heart failure is the leading inpatient diagnosis associated with 30-day readmissions among Medicare beneficiaries accounting for $1.7 billion in annual costs. A portion of these readmissions may be preventable by improvements in care transition processes and early follow-up in the post-acute care setting. The Hospital Readmissions Reduction Program (HRRP), passed under the Patient Protection and Affordable Care Act of 2010, aimed to reduce health care utilization by targeting readmissions. The Centers for Medicare & Medicaid Services (CMS) implemented the program initially targeting readmissions following hospitalizations for heart failure, acute myocardial infarction, and pneumonia. It is a financial stick without a carrot approach that involves penalizing hospitals with higher than expected readmission rates without any additional resources provided and without providing any evidence-based guidance on how to safely and effectively achieve the stated goals. Up to 3% of a hospital's all-Medicare admissions revenue from any condition (target or non-target) is at stake directly because of this policy, thereby providing a strong financial incentive for hospitals to reduce readmission rates of target conditions. Penalties for readmissions are up to 15-fold greater than those for quality measures, patient safety, or mortality. In 2017, 79% of the hospitals subject to the HRRP were penalized, amounting to $528 million in revenue for the CMS.

CONCERNS WITH THE 30-DAY READMISSION METRIC AND PENALTIES

Ever since the HRRP was first under consideration, significant concerns have been raised regarding the use of risk-standardized 30-day readmission rates as an accurate measure of hospital quality and a valid basis for financial penalties to be applied, particularly for heart failure patients. Because the model is risk adjusted on the basis of administrative claims, concerns have been raised that it cannot adequately adjust for illness severity or medical complexity, and is subject to variation in coding. Hospitals in lower socioeconomic regions are more likely to have higher 30-day risk-standardized rehospitalization rates irrespective of the quality of care provided. Thus, hospitals are for the most part being penalized based on the patients cared for, rather than the quality of care provided. There were also significant concerns raised regarding the potential for unintended consequences. Because the financial penalties were applied disproportionately on safety-net and teaching hospitals, they may have hindered the ability of these hospitals to provide care for vulnerable and sicker populations, depleting hospital resources available to improve care for the very populations at the highest risk of poor outcomes. Penalizing hospitals financially with limited resources may have directly undermined patient safety efforts and exacerbated disparities in the quality of care delivered. Incentives to reduce readmissions may also

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TABLE 1 Increase in Risk-Adjusted Mortality After the HRRP Implementation Among FFS Medicare Beneficiaries 65 Years of Age and Above, Hospitalized for Heart Failure

	GWTG-HF Registry Linked to FFS Medicare Data*	100% Sample of FFS Medicare Data†	5% Random Sample of FFS Medicare Data‡
Risk adjustment	Clinical	Administrative	Administrative
Time period	Pre-HRRP (2006–2010) to Post-HRRP (2012–2014)	2008 to 2014	2010 to 2012
30-day mortality	1.4% ↑	1.3% ↑	–
90-day mortality	–	~2.2% ↑	–
1-yr mortality	5.0% ↑	–	3.3% ↑

*Gupta et al. (4); †Dharmarajan et al. (2); and ‡Khera et al. (5).
FFS = fee-for-service; GWTG-HF = Get With The Guidelines-Heart Failure; HRRP = Hospital Readmissions Reduction Program.

have potentially encouraged "gaming" of the system, including inappropriate triage strategies in emergency departments, increased use of observation stays when admissions would have been warranted, and delaying readmissions beyond discharge day 30. Further, a very narrow focus on reducing readmissions may have diverted the attention and resources of hospitals from meaningful heart failure quality-improvement efforts and patient safety.

THE HRRP AND HOSPITAL READMISSIONS

Despite the substantial concerns with the 30-day readmission metric and penalties, the HRRP was implemented without any plans for *independent* monitoring of patient safety or potential emergence of unintended consequences. The HRRP has now been declared to be a success with achievement of its goal of reducing readmissions (1,2). The heart failure 30-day readmission rates declined from 23.5% to 21.4% from 2008 to 2014 (2). However, this 9% relative reduction in readmissions is much lower than previous estimates of nearly a quarter of readmissions deemed as readily avoidable. Some studies have suggested that some of the decline in readmissions may have involved patients being shifted to observation status, thus excluding them from being counted as a readmission. Further, a recent study suggested that up to two-thirds of the reduction in risk-adjusted readmission rates may have been due to upcoding post-HRRP (3), making any true reduction in readmissions relatively modest. Moreover, much of the gains in readmissions reduction from implementation of the HRRP have already been achieved, and further reduction in readmissions have slowed down or ceased (1). Therefore, the success of the program in reducing readmissions appears to be far from what has been touted.

HAVE HEART FAILURE PATIENTS BENEFITED OR BEEN HARMED BY THE HRRP?

Any success of a program cannot be defined in isolation but needs to account for both its effectiveness as well as safety for patients. We therefore investigated the trends in risk-adjusted readmissions and mortality pre- and post-HRRP after hospitalization for heart failure using prospectively captured, detailed clinical registry data from the American Heart Association Get With The Guidelines-Heart Failure (GWTG-HF) program (4). We used a rigorous, interrupted time series analysis approach using generalized estimating equations accounting for within-hospital clustering of patients. We found that although the 30-day risk-adjusted readmissions declined from 20.0% in the pre-HRRP period to 18.4% in the post-HRRP period, 30-day risk-adjusted mortality increased from 7.2% to 8.6% post-HRRP implementation. This indicated reversal of a decade-long trend in declining heart failure mortality before the HRRP implementation. The trends in 1-year risk-adjusted readmissions and mortality were even more alarming. For 1-year outcomes, the reduction in readmissions further narrowed (57.2% to 56.3%) with an even greater rise in mortality (31.3% to 36.3%) post-HRRP versus pre-HRRP. The findings were rigorous across various sensitivity analyses that included evaluation among hospitals continuously enrolled in the GWTG-HF registry throughout the study period as well as after inclusion of transferred patients in the study cohort. The findings of harm were also present in all subgroups studied that included race/ethnicity, teaching hospital status, and rural or urban hospital location. Although findings of increased mortality post-HRRP may be related to changing patient demographics and severity of illness, in this detailed clinical registry, we found no evidence of an increase in patients' sickness over time among those admitted with heart failure. In addition, in our study, the in-hospital mortality was relatively stable in the pre- and post-HRRP time periods, further dispelling any concern of increasing severity of illness among admitted patients in the post-HRRP time period.

Our study findings are consistent with other reports evaluating trends in heart failure mortality in fee-for-service Medicare beneficiaries using a national Medicare dataset (**Table 1**) (2,5). The report from Dharmarajan et al. (2) showed a 1.3% absolute increase in 30-day risk-adjusted mortality post-HRRP. This is similar to the 1.4% increase in 30-day mortality post-HRRP implementation in our study. The declining heart failure mortality in fee-for-service Medicare

beneficiaries from 2004 to 2010, followed by a reversal of a decade-long trend of declining mortality in heart failure after the year 2010, is also consistent with the report by Khera et al. (5) using a 5% random Medicare sample. This analysis finds that the temporal increase in 1-year mortality after the year 2010 (when the HRRP was first implemented) was confined to patients with an inpatient diagnosis of heart failure with no comparable increase among patients with only an outpatient diagnosis of heart failure. The rise in mortality for heart failure patients begins precisely as health systems were first exposed to public reporting of 30-day readmission rates and the HRRP, and were entirely coincident as to when 30-day readmissions first began to decline (2). The detailed risk adjustment using clinical data in our report (4) also addresses any concern that increase in mortality post-HRRP may have been due to inadequate risk adjustment from use of administrative variables in these national Medicare data reports (2,5). If at all, the use of claims data for risk adjustment in mortality would underestimate the rise in mortality post-HRRP due to evidence of upcoding after the law was implemented.

Even though there was a large increase in both 30- and 90-day heart failure mortality in the report by Dharmarajan et al. (2), the authors concluded that there was no evidence of increasing mortality rates related to reducing readmissions. Their conclusion was based on a correlation analysis of paired monthly hospital 30-day readmission and mortality rates that showed a weak correlation (0.066) between the 30-day readmission and mortality rates. Of note, this analysis did not evaluate the association of the change in readmission rates with change in mortality rates pre- and post-HRRP. The authors contend that because the post-HRRP increase in risk-adjusted mortality was observed for heart failure, but not other targeted conditions, it makes it unlikely that the HRRP implementation contributed. Yet, it was only in heart failure that an inverse relationship between 30-day readmissions and 30-day mortality was found even prior to the HRRP, making a HRRP causal relationship even more plausible. It also appears to be based on the presumption that any harm from the HRRP policy can only result from an actual reduction in readmissions. Yet, harm could result even when there is little or no change in readmissions. It has been well evidenced that the safety-net hospitals caring for sick and vulnerable populations have been disproportionately penalized by this policy, which may further hinder their ability to provide care and may result in harm. Further, such an analysis at the hospital level may suffer from the ecological fallacy where even though there was an overall weak positive correlation between readmissions and mortality, there could still be harm at the patient level if there were greater number of patients served at hospitals where readmissions fell but mortality increased. In fact, even among those hospitals where readmission declined, there has been a post-HRRP increase in mortality in heart failure patients, in aggregate. Patient-level analyses are more relevant, valid, and patient-centric in evaluating readmissions or mortality changes following implementation of the HRRP.

There is no evidence that heart failure patients have benefited from the HRRP. Yet, there is clear, compelling, consistent, and independently corroborated evidence that mortality has increased in heart failure patients with the HRRP implementation. These findings appear to represent the worst of all fears realized regarding the potential impact of the HRRP. In light of these findings and keeping patient safety first and foremost, we urge CMS to initiate an expeditious reconsideration of this policy in heart failure. A re-evaluation is needed on how best to achieve the goal of reducing avoidable readmissions in heart failure while improving care quality, health status, and preventable deaths, and mitigating the harm accrued because of the implementation of this penalty-based policy. Is it ethical to continue a policy where there is significant concern for substantial ongoing patient harm?

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