Facility-Level Percutaneous Coronary Intervention Readmission Rates Are Not Associated With Facility-Level Mortality: Insights From the VA Clinical Assessment, Reporting, and Tracking (CART) Program

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Background—Thirty-day readmission after percutaneous coronary intervention (PCI) is common, costly, and linked to poor patient outcomes. Accordingly, facility-level 30-day readmission rates have been considered as a potential quality measure. However, it is unknown whether facility-level 30-day readmission rates are associated with facility-level mortality. We sought to determine the effect of 30-day readmissions after PCI on mortality at both the patient and facility level in the Veterans Administration hospital system.

Methods and Results—We included all patients who underwent PCI in the Veterans Administration hospital system nationally from October 2007 through August 2012, comparing all-cause mortality rates between patients with and without 30-day readmissions following PCI. Patients were then aggregated at the hospital level to evaluate the correlation between hospital-level readmission rates with hospital-level 1-year mortality rates. Among 41 069 patients undergoing PCI at 62 sites, 12.2% were readmitted within 30 days of discharge. Patients with 30-day readmission had higher risk-adjusted mortality (hazard ratio 1.53, 95% CI 1.44–1.63, $P<0.0001$). Facilities varied widely in 30-day readmission rates (systemwide range of 6.6–19.4%, median 11.8%, interquartile range 10.0–13.2%); however, adjusted facility-level readmission rates were not correlated with adjusted 1-year mortality rates.

Conclusions—Thirty-day readmissions after PCI are common and are a significant risk factor for mortality for individual patients even after robust statistical adjustment for clinical confounding. However, lack of correlation between readmission and mortality at the facility level suggests that quality improvement based on facility-level readmission rates will not modify mortality in this high-risk group. (*J Am Heart Assoc*. 2016;5:e003503 doi: 10.1161/JAHA.116.003503)

Key Words: cardiac catheterization • cardiovascular outcomes • coronary artery disease • mortality • readmission

R educing hospital readmission rates has received significant emphasis as a method for improving the quality of care while reducing costs. Medicare penalizes hospitals with high risk-standardized 30-day readmission rates for a number of medical conditions.[1] Percutaneous coronary intervention (PCI) has been considered as a penalty condition, given that nearly 15% of Medicare patients receiving PCI are readmitted within 30 days of discharge, at a cost of nearly $360 million annually.[2] However, whether or not the 30-day PCI readmission rate is an accurate measure of healthcare system quality is unknown.

The relationship between post-PCI readmission and mortality in a national integrated healthcare system, such as the Veterans Administration (VA) hospital system, may be stronger than in the community and may function as a facility-level performance measure in this setting. A potential performance measure should be attributable, measurable, feasible, reliable, and expected to improve outcomes.[3] Readmission rate may reflect "systems" issues or care processes[4] and may be a marker of fragmented care, a deficit that goes hand in hand with poor-quality longitudinal care. In support of this idea, interventions that have successfully reduced readmissions have been multifaceted and addressed care at the system level.[5–7] For example, it has

been established that if one considers only the subset of patient who had an acute myocardial infarction (MI) in the VA, parallel reductions in readmission and mortality have been observed over the last 15 years, suggesting that mortality and readmission may be correlated.[8] The drivers of an acute MI readmission and mortality association may act similarly in all of the PCI patients, though this is unknown. In order to reasonably expect that modifying facility-level 30-day PCI readmission would impact mortality, one would expect that the potential quality measure and outcome would track together at the facility level.

In this study, we sought to confirm that 30-day readmissions after PCI in the Veterans Administration hospital system are associated with mortality for individual patients. We then aimed to evaluate whether aggregate 30-day readmission rates for facilities are correlated with aggregate 1-year mortality outcomes to evaluate this as a quality metric. If readmission and mortality correlated at the facility level, it would suggest readmission as a quality metric with the potential to improve patient outcomes.

Methods

Data Source

The VA Clinical Assessment, Reporting, and Tracking (CART) Program is a national clinical quality program that collects patient and procedural data from all veterans undergoing PCI in the VA healthcare system.[9,10] The CART Program uses a software application embedded in the VA electronic health record for clinical documentation and data collection. These data are linked to other VA data repositories, allowing longitudinal assessment of mortality, hospitalization, outpatient visits, pharmacy prescriptions, and laboratory test results. In addition, CART data are linked to fee-based data for hospitalizations at non-VA centers where the VA pays for the veterans' care. Details on CART and the validity, completeness, and timeliness of CART data have been previously described.[11] A significant strength of the CART database is that it captures detailed procedural data such as indication for the procedure, the urgency of the procedure, and granular data on angiogram findings and interventions. This study was approved by the Colorado Multiple Institutional Review Board (COMIRB) with waiver of informed consent, given the retrospective nature of the study.

Study Population and Setting

We included all patients who underwent PCI in the Veterans Administration hospital system between October 1, 2007 and August 30, 2012. We excluded patients from 3 VA facilities that performed fewer than 50 procedures over the study

period to avoid inflation of variance due to small numbers. We also excluded 1749 (4.0%) of patients who were missing PCI indication, 195 (0.4%) patients missing PCI status, and 720 (1.6%) of patients who died within 30 days of discharge. For staged PCI, or those in whom return for another PCI was preplanned for clinical indications, the final PCI of the staged procedures was taken as the index PCI for this analysis. A staged PCI was defined as staged if it is within 60 days of the prior PCI, is not ST-elevation MI/non-ST elevation MI/ Cardiogenic Shock/Emergent/Urgent/Salvage, and is not on a vessel that has been treated before (ever before in CART). In this way, a staged PCI was not counted as a readmission. If a patient had multiple PCIs over the study period that were not linked as prespecified "staged" procedures, only the first PCI was used as the index PCI.

PCI Readmission and Mortality Outcomes

All-cause readmissions within 30 days of discharge after PCI were identified using VA administrative data and fee-basis inpatient files as well as Medicare inpatient files. One-year mortality was ascertained from the Veterans Administration hospital system Vital Status File, which pulls from multiple VA and non-VA data sources including VA beneficiary death file, VA Medicare Vital Status File, and the Social Security Administration (SSA) Death Master File. For the time-to-event mortality outcome, patients were followed after discharge from the date of their PCI until either their date of death or September 30, 2013, whichever came first.

Statistical Analysis

Characteristics of patients are summarized in Table 1, including a comparison by 30-day readmission status (readmitted versus not readmitted). Additionally, patient characteristics were compared across quartiles of unadjusted facility-level 30-day readmission rates (Table 2) for the same demographic and clinical characteristics as in Table 1.

To compare patient-level longitudinal outcomes by 30-day readmission status, we compared Kaplan–Meier survival curves in unadjusted analyses. We then determined the patient-level relationship between 30-day readmission status and risk-adjusted time-to-event outcomes using a Cox proportional hazards model. For adjusted analyses, the following variables were included: patient demographics (age, sex, race), medical history and risk factors (tobacco use, body-mass index, hypertension, diabetes mellitus, chronic kidney disease, glomerular filtration rate, chronic obstructive pulmonary disease, length of stay >3 days), cardiovascular history (prior MI, cardiovascular disease, peripheral arterial disease, prior PCI, prior coronary artery bypass graft, congestive heart failure, prior cardiogenic

Table 1. Number of Patients Within Each Covariate Level by Readmission Status

Variable	Not Readmitted	Readmitted	All
Readmitted (30 day)	36 048	5021	41 069
Age, y at procedure	63.6 (59.6, 69.6)	65 (60.3, 73.9)	63.7 (59.7, 70.2)
Sex (M)	98.5 (35 497)	97.5 (4895)	98.4 (40 392)
Race (white vs nonwhite)	80 (28 836)	80.6 (4045)	80.1 (32 881)
BMI	29.8 (26.5, 33.7)	29.3 (25.8, 33.5)	29.8 (26.4, 33.7)
Tobacco	63.4 (22 852)	61.7 (3099)	63.2 (25 951)
Hypertension	89.5 (32 246)	91.4 (4590)	89.7 (36 836)
Diabetes mellitus	46.4 (16 716)	52.5 (2635)	47.1 (19 351)
CKD	17.2 (6194)	27.5 (1382)	18.4 (7576)
GFR			
GFR <30	3.2 (1159)	7.2 (361)	3.7 (1520)
GFR (30, 60)	17.6 (6335)	24.8 (1245)	18.5 (7580)
GFR (60, 90)	53.1 (19 124)	47.2 (2368)	52.3 (21 492)
GFR ≥90	26.2 (9430)	20.9 (1047)	25.5 (10 477)
COPD	21.6 (7785)	31.1 (1562)	22.8 (9347)
CVD	17 (6132)	24.4 (1223)	17.9 (7355)
PAD	20.8 (7504)	29.2 (1468)	21.8 (8972)
Prior MI	33.8 (12 201)	38 (1906)	34.3 (14 107)
Prior PCI	39.7 (14 309)	39 (1958)	39.6 (16 267)
Prior CABG	25.4 (9167)	30.8 (1544)	26.1 (10 711)
CHF	20.8 (7513)	35.3 (1772)	22.6 (9285)
Primary indication			
ACS/unstable	25.4 (9173)	29.5 (1481)	25.9 (10 654)
Stable/ch pain/asymptom.	44.5 (16 036)	29.7 (1493)	42.7 (17 529)
NSTEMI	17.8 (6399)	24.9 (1252)	18.6 (7651)
STEMI	6.1 (2206)	9 (454)	6.5 (2660)
Valv. heart disease/other	6.2 (2234)	6.8 (341)	6.3 (2575)
Status			
Elective/elective staged	67.2 (24 207)	51.8 (2601)	65.3 (26 808)
Emergent/salvage	5.9 (2115)	10.1 (507)	6.4 (2622)
Urgent	27 (9726)	38.1 (1913)	28.3 (11 639)
Prior card. shock	0.2 (73)	0.5 (26)	0.2 (99)
LOS >3 days	19.8 (7128)	42.5 (2134)	22.6 (9262)

All variables indicate % (N) except continuous variables (age, BMI), which are reported as median (interquartile range). ACS indicates acute coronary syndrome; BMI, body-mass index; CABG, coronary artery bypass grafting; CHF, congestive heart failure; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; CVD, cerebrovascular disease; GFR, glomerular filtration rate; LOS, length of stay; M, male; MI, myocardial infarction; NSTEMI, non-ST-elevation MI; PAD, peripheral arterial disease; PCI, percutaneous coronary intervention; STEMI, ST-elevation MI.

shock), and clinical status (PCI indication and PCI status). PCI status was categorized into elective, urgent, emergent/salvage, or missing. A random intercept for site (frailty term) was added to the model to account for clustering of results within sites when estimating the coefficients and their standard errors. A stratified analysis from the patient-level data was performed to compute the hazard ratio for 1-year

mortality for patients with and without a 30-day readmission in key diagnostic subgroups.

Risk-adjusted hospital-level rates (and accompanying 95% credible intervals) of our primary outcomes were modeled through Bayesian profiling using a Markov Chain Monte Carlo (MCMC) method.[12] Each outcome (either mortality within 365 days or readmission within 30 days) was modeled as

Table 2. Patient Characteristics Organized by Site Quartiles of Unadjusted 30-Day Readmission Rate

Variable	Q1 (N=15)	Q2 (N=16)	Q3 (N=16)	Q4 (N=15)	*P*-Value
Age, y at procedure	63.2 (59.1, 68.5)	63.9 (59.9, 70.8)	63.6 (59.6, 69.9)	64.1 (59.9, 71.3)	<0.0001
Sex (M)	98.3 (7643)	98.5 (11 315)	98.3 (11 956)	98.3 (9478)	0.6604
Race (white vs nonwhite)	78.6 (6113)	81.4 (9351)	80.4 (9782)	79.2 (7635)	<0.0001
BMI	30 (26.6, 34)	29.8 (26.4, 33.6)	29.8 (26.5, 33.9)	29.5 (26.2, 33.4)	<0.0001
Tobacco	67.5 (5252)	63.5 (7295)	64.6 (7853)	57.6 (5551)	<0.0001
Hypertension	90.7 (7054)	89 (10 229)	90.1 (10 953)	89.2 (8600)	0.0003
Diabetes mellitus	47.2 (3668)	46.5 (5342)	48.2 (5866)	46.4 (4475)	0.0193
CKD	17.8 (1381)	19.1 (2199)	18.2 (2219)	18.4 (1777)	0.0931
GFR					<0.0001
GFR <30	3.0 (237)	3.4 (396)	3.9 (475)	4.3 (412)	
GFR (30, 60)	17.9 (1393)	18.7 (2146)	19.0 (2305)	18.0 (1736)	
GFR (60, 90)	51.9 (4035)	51.7 (5942)	51.2 (6228)	54.8 (5287)	
GFR ≥90	27.1 (2111)	26.2 (3006)	25.9 (3152)	22.9 (2208)	
COPD	21.6 (1679)	23.1 (2651)	25 (3037)	20.5 (1980)	<0.0001
CVD	17.1 (1328)	17.4 (2003)	19.3 (2343)	17.4 (1681)	<0.0001
PAD	21.2 (1648)	21.3 (2447)	22.8 (2773)	21.8 (2104)	0.0147
Prior MI	36.3 (2824)	33.7 (3867)	34.2 (4153)	33.8 (3263)	0.0007
Prior PCI	42.1 (3270)	37.8 (4344)	39.5 (4802)	39.9 (3851)	<0.0001
Prior CABG	26.8 (2083)	25.0 (2875)	26.2 (3180)	26.7 (2573)	0.0145
CHF	21.4 (1667)	22.2 (2556)	22.9 (2785)	23.6 (2277)	0.0044
Primary indication					<0.0001
ACS/unstable	29.6 (2301)	28.2 (3239)	24 (2920)	22.8 (2194)	
Stable/Ch. pain/asymptom.	42.9 (3338)	38.6 (4436)	45.6 (5546)	43.6 (4209)	
NSTEMI	15.8 (1227)	20.9 (2396)	17.3 (2104)	20 (1924)	
STEMI	4.7 (362)	6.7 (769)	6 (724)	8.3 (805)	
Valv. heart disease/other	7.0 (548)	5.7 (650)	7.1 (866)	5.3 (511)	
Status					<0.0001
Elective/elective staged	73.9 (5743)	63.2 (7261)	66.1 (8042)	59.8 (5762)	
Emergent/salvage	4.6 (354)	6.3 (720)	6.4 (777)	8 (771)	
Urgent	21.6 (1679)	30.5 (3509)	27.5 (3341)	32.3 (3110)	
Prior card. shock	0.3 (23)	0.3 (31)	0.3 (31)	0.1 (14)	0.1614
LOS >3 days	18.0 (1397)	21.9 (2520)	21.6 (2625)	28.2 (2720)	<0.0001

Readmission rate was calculated for each facility and broken down by quartiles with Q1 having sites with the lowest readmission rate, Q4 the highest. Unless otherwise stated, values represent median (interquartile range); or % (Freq). ACS indicates acute coronary syndrome; BMI, body-mass index; CABG, coronary artery bypass grafting; CHF, congestive heart failure; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; CVD, cerebrovascular disease; GFR, glomerular filtration rate; LOS, length of stay; M, male; MI, myocardial infarction; NSTEMI, non–ST-elevation MI; PAD, peripheral arterial disease; PCI, percutaneous coronary intervention; STEMI, ST-elevation MI.

logistic regression adjusting for the covariates mentioned previously, and included a random intercept term for each hospital to account for clustering by site. Modeling with MCMC used a single chain with 10 000 burn-in iterations, 100 000 estimation iterations that were thinned by a factor of 20 for a total of 5000 retained estimation iterations used for final calculation of estimates. MCMC modeling was performed using PROC MCMC (SAS version 9.4; SAS Institute Inc, Cary,

NC) with postprocessing of MCMC iterations using R (version 3.1.1; The R Foundation for Statistical Computing, Vienna, Austria) to obtain hospital-level estimates and 95% credible intervals.

Finally, a Spearman correlation was calculated to assess correlation between adjusted 30-day readmission rate and adjusted 1-year mortality rate for the facilities examined. Point estimates for rates of outcome for all sites were sorted

in ascending order and plotted (along with associated confidence intervals) to create "caterpillar plots" for visual comparison of site-level variability.

Results

Our study cohort consisted of 41 069 patients undergoing PCI at 62 sites, of whom 5021 (12.2%) were readmitted within 30 days. Those who were readmitted had more chronic medical conditions, had more severe coronary disease, and were more likely to present for an emergent or urgent procedure (Table 1).

The unadjusted probability of mortality was higher for patients readmitted within 30 days after discharge (Figure 1). After adjusting for the variables listed in Table 1, 30-day readmission was associated with a significantly higher risk of mortality (hazard ratio=1.53, 95% CI 1.44–1.63, $P<0.01$). Hazard ratios stratified by individual risk factors illustrated that readmission status was a consistent predictor of 1-year mortality across various risk profiles (Table S1).

Unadjusted 30-day readmission rates varied among facilities from ≈6.5% to over 19% (interquartile range 10.0–13.2). Facilities with higher readmission rates also treated patients with higher acuity (acute MI, urgent or emergent status) who had longer incident hospital stays, while facilities that performed more elective PCIs or PCIs on patients with a history of prior PCI tended to have lower 30-day readmission rates (Table 2).

Variation in facility-level 30-day readmission rates and mortality persisted after adjustment for patient-level variables, indicating that patient-level variables did not fully explain
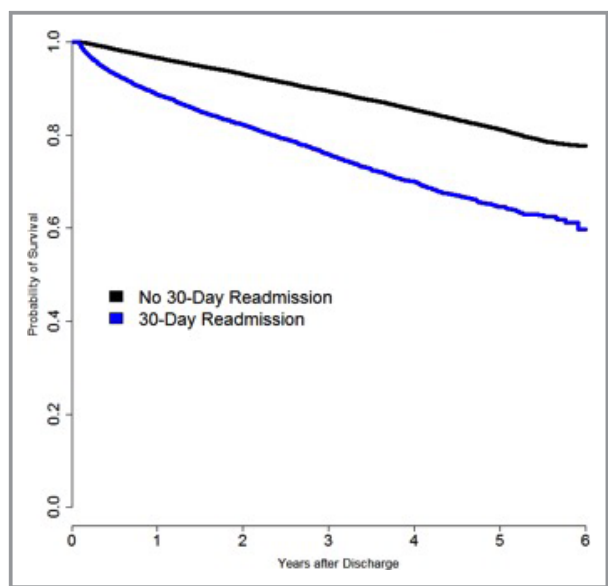
Figure 1. Kaplan–Meier curve for patient-level 1-year mortality with or without readmission.

facility-level variability (Figure 2). For 1-year mortality, hospital-level risk-adjusted estimates ranged from 3.1% to 6.1% with a median of 4.4% (interquartile range 4.0, 4.8). For 30-day readmission rates, estimates ranged from 9.8% to 17.2%, with a median of 12.1 (interquartile range 11.4, 13.0). However, there was no correlation between standardized 30-day readmission and standardized 1-year mortality among facilities (correlation coefficient=0.065; $P=0.613$) (Figure 3). Coefficient estimates for the models used in calculation of risk-adjusted 30-day readmission and 1-year mortality rates (Table S2) show that the association of covariate-to-readmission and covariate-to-mortality appeared similar in most instances.

Discussion

More than 1 in 10 patients who undergo PCI in the VA health system are readmitted within 30 days of discharge, and these patients experience higher rates of subsequent mortality. Readmission rates vary by as much as 2-fold across facilities after adjustment for patient population, but there was no significant correlation between 30-day readmission rates and 1-year mortality rates for individual facilities. This suggests that 30-day readmission after PCI identifies a patient group at high long-term adverse outcomes, but that modifying the facility-level readmission pattern will not modify this risk.

The 30-day post-PCI readmission rate of 12.2% across the VA appears lower than the 14.6% rate in Medicare populations, but this should be interpreted with caution, given differences in sampling and uncertainty in statistical significance.[3] Still, a lower readmission rate in the VA is consistent, given that readmission rates for other common conditions are lower in the VA than in Medicare populations.

The link between patient-level 30-day readmission after PCI and mortality should be viewed as an opportunity to improve care to an at-risk group of patients, though best practices are not known. After extensive adjustment for baseline health metrics, 30-day readmission remained associated with an almost 50% increase in risk of mortality. Either the readmission itself causes patient harm or the current models lack clinically significant confounding factors. Every measured risk factor of chronic disease and disability was more prevalent in the readmitted group, and it is likely that unmeasured risk factors varied similarly, with worse health status in those who were readmitted. Social situation, overall frailty, living situation, and medical literacy likely impact both post PCI readmission and mortality, but were not captured in the hazards model.[13,14] Improving outcomes in this high-risk population will likely involve careful exploration of these less-well-documented risk factors.
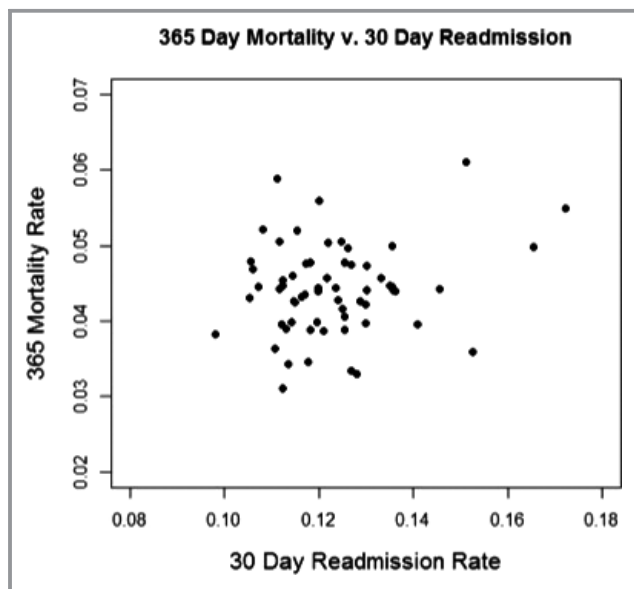
In contrast, the lack of a facility-level correlation between PCI readmission and mortality suggests that targeting 30-day
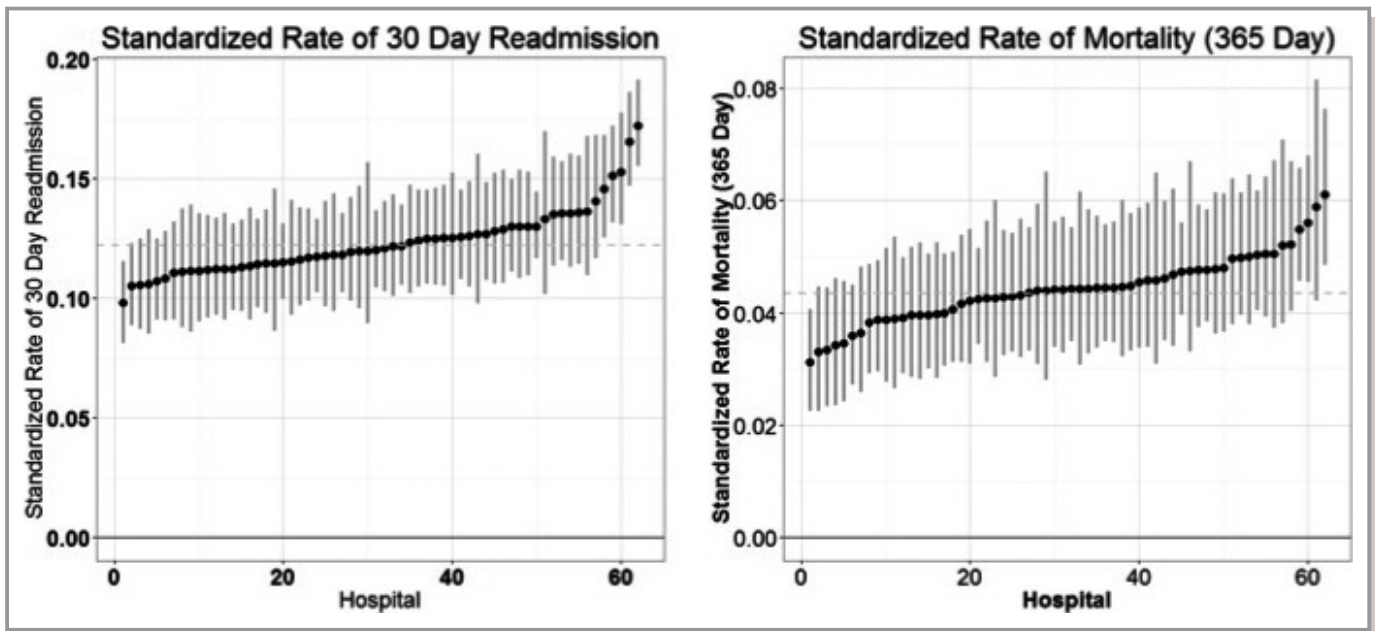
Figure 2. Caterpillar plots of hospital rank by adjusted 30-day readmission rate (A) or 365-day mortality (B) on the *x*-axis and standardized outcome measure on the *y*-axis. The horizontal line represents the systemwide outcome mean, dots represent the calculated adjusted 30-day readmission rate of a single facility, and the vertical bars represent 95% credible intervals. A, Estimates and 95% CI for 30-day readmission rates: systemwide rate=12.2%. B, Estimates and 95% CI for rate of mortality: systemwide rate=4.3%.

readmission rates at the facility level will not reliably improve mortality. Prior data demonstrated similarly significant site-to-site variation in post-PCI readmission rates among the Medicare community[15] and in an analysis of facilities within the state of Massachusetts.[16] The lack of correlation between facility-level readmission and outcomes is important because

Figure 3. Scatter plot of facility-level adjusted 30-day readmission rate to facility-level standardized 1-year mortality rate (correlation coefficient=0.065; *P*=0.613).

it suggests that penalties levied against centers with high post-PCI readmissions would not affect the mortality in this high-risk group and that the relationship is not causal, but instead mediated by unmeasured confounding. This is not to say that quality improvement efforts in this arena are futile, only that those targeted at the facility level may not accurately single out the highest risk population and modify mortality. Our data exemplify the complexity involved in applying an association across multilevel analyses, a complexity that is likely generalizable. One cannot assume that patient-level associations will be replicated when aggregated to the facility level. It is possible that patient-level associations exist within sites even while the overall site rates fail to correlate. Even after risk adjustment, additional factors not accounted for in the model may explain the lack of correlation observed between 30-day readmission and mortality rates at the site level. These unmeasured confounders may act at the patient level or the site level, and further research will be required to identify them as possible targets for quality improvement.

This analysis should be interpreted in the context of the data set from which it was derived. Our cohort was representative of the national VA population but not of the national population as a whole. Our cohort was over 98% male, which is reflective of the VA patient population, and so application of our findings to females would constitute extrapolation. There may be particular clinical and demographic features of the VA population that alter this

population's vulnerability to readmission and subsequent mortality. We used mortality as a marker of the quality of a health system because it is quantifiable and with unquestionable clinical significance, but other outcomes such as recurrent MI or quality of life may be more sensitive to differences in care delivery. As discussed above, our patient-level analysis of outcomes is dependent on risk modeling to single out the effect of 30-day readmission alone, and risk modeling for variables can only include the data that are quantified and available. Residual confounder linking readmission and mortality likely impact our patient-level analysis and may also alter the facility-level analysis in unpredictable ways.

Strategies to reduce readmissions after PCI and to improve outcomes in this high-risk patient population are greatly needed. With a nearly 50% increase in risk of mortality after controlling for the patient-risk factors, patients readmitted after PCI require careful consideration to discover the impact of nontraditional risk factors. Based on our analysis, it is unlikely that incentivizing hospitals to avoid post-PCI readmissions will impact the increased mortality of this high-risk group. Still, readmission is costly and generally undesirable to patients and the health system. Efforts directed at reducing readmissions may improve patient satisfaction and cost while separate efforts directed at understanding the underlying association between readmission and mortality may someday lead to improved survival in this high-risk group.

Disclosures

None.

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SUPPLEMENTAL MATERIAL

Table S1. An analysis of the patient-level hazard ratio for 1-year mortality stratified by key diagnoses for patients with and without a 30-day readmission.

	HAZARD RATIO	95% CI	P-VALUE
FULL MODEL (INCLUDING MEDICARE)	1.531	(1.436, 1.631)	< 0.01
AGE < 65	1.563	(1.404, 1.740)	< 0.01
CHF			
CHF = "YES"	1.464	(1.339, 1.601)	< 0.01
CHF = "NO"	1.605	(1.465, 1.757)	< 0.01
STEMI/NSTEMI			
STEMI = "YES" or NSTEMI = "YES"	1.625	(1.467, 1.800)	< 0.01
STEMI = "NO" and NSTEMI = "NO"	1.464	(1.349, 1.589)	< 0.01
URGENT STATUS			
URGENT = "YES"	1.503	(1.355, 1.667)	< 0.01
URGENT = "NO"	1.562	(1.441, 1.694)	< 0.01

Table S2. Coefficient estimates for the models used in calculation of patient-level risk-adjusted 30 -day readmission and 1-year mortality rates

Variable	Readmit_30D	Mortality_1yr
CHF	1.49 (1.39,1.61)	2.29 (2.05,2.56)
CKD	1.15 (1.05,1.26)	1.09 (0.95,1.26)
COPD	1.39 (1.29,1.49)	1.44 (1.29,1.61)
CVD	1.19 (1.10,1.28)	1.17 (1.04,1.31)
Diabetes	1.14 (1.06,1.21)	1.34 (1.20,1.48)
GFR_30_60	0.78 (0.67,0.90)	0.48 (0.40,0.57)
GFR_60_90	0.67 (0.58,0.78)	0.39 (0.32,0.47)
GFR_90	0.65 (0.55,0.76)	0.45 (0.36,0.56)
HTN	1.04 (0.93,1.17)	1.00 (0.81,1.25)
Length_stay3	2.04 (1.89,2.19)	1.98 (1.77,2.22)
PAD	1.18 (1.10,1.27)	1.45 (1.30,1.61)
PIND_ACS_UNSTABLE	1.34 (1.24,1.46)	0.98 (0.85,1.14)
PIND_NSTEMI	1.25 (1.13,1.38)	1.43 (1.22,1.68)
PIND_STEMI	1.25 (1.05,1.48)	1.3 (0.98,1.71)
PIND_VALVE_OTHER	1.23 (1.07,1.41)	1.49 (1.24,1.79)
Prior CABG	1.06 (0.99,1.14)	1.10 (0.98,1.23)
Prior CARDSHOCK	1.46 (0.9,2.36)	2.20 (1.23,3.75)
Prior MI	0.97 (0.9,1.04)	1.21 (1.08,1.36)
Prior PCI	0.95 (0.88,1.02)	0.87 (0.78,0.97)
Race White	1.11 (1.03,1.21)	0.94 (0.83,1.06)
Sex (Ref = M)	0.6 (0.49,0.74)	1.15 (0.74,1.87)
STATUS_EMERGENT_SALVAGE	1.68 (1.45,1.97)	1.36 (1.05,1.75)
STATUS_URGENT	1.3 (1.19,1.40)	1.03 (0.90,1.17)
Tobacco	0.95 (0.88,1.01)	1.15 (1.03,1.30)