Supplementary Online Content


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References

This supplementary material has been provided by the authors to give readers additional information about their work.

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e-Appendix. Risk-Adjusted Readmission Rates

To identify readmissions, we examined all hospitalizations with the primary discharge diagnoses of CHF, AMI, or pneumonia occurring between January 1, 2006 and November 30, 2008 (International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9) codes for CHF 398.91, 404.x1, 404.x3, 428.0 to 428.9, for AMI 410.xx, excluding 410.x2, and for pneumonia 480 to 486). Discharges occurring in December 2008 were excluded because we lacked a full 30 days of follow-up. We excluded all patients who died during that hospitalization. We then analyzed all-cause readmissions within 30 days of discharge using the Elixhauser adjustment scheme, where the likelihood of being readmitted was adjusted for patient characteristics including age, gender, race, and the presence or absence of up to 29 co-morbidities. The Elixhauser adjustment was developed for mortality and is widely accepted for its good predictive validity; it has been used in multiple prior studies using Medicare data and is available for download from the Agency for Health Care Research and Quality (AHRQ) Healthcare Cost and Utilization Project (H-CUP) website at http://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp.

There is no longstanding validated approach for risk-adjustment of readmissions. Krumholz and colleagues recently developed a Bayesian approach that is currently being used by the Centers for Medicare and Medicaid Services for public reporting. However, because it was designed for public reporting, it reduces variation, especially for smaller hospitals, leading to much greater homogeneity among all hospitals. The Elixhauser method, which has a C-statistic of 0.60, compares favorably with the Krumholz approach, which has a C-statistic of 0.61; because it also retains much of the natural variation that exists within the data, it may be better suited to research comparing patient outcomes across groups of hospitals. We therefore chose a priori to use the Elixhauser scheme for this study.
### eTable 1. Hospital Quality Alliance quality of care process measures

<table>
<thead>
<tr>
<th>Condition</th>
<th>Quality Measure</th>
</tr>
</thead>
</table>
| **Acute Myocardial Infarction (AMI)** | Aspirin within 24 hours of admission  
Aspirin at the time of discharge  
Angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) for left ventricular systolic dysfunction (LVSD)  
Beta-blocker within 24 hours of admission  
Beta-blockers at the time of discharge  
Fibrinolytic medication received within 30 minutes of hospital arrival  
Percutaneous coronary intervention (PCI) Received Within 90 Minutes of Hospital Arrival |
| **Congestive Heart Failure (CHF)** | Evaluation of left ventricular systolic function  
ACE inhibitor or ARB for LVSD  
Discharge instructions that address activity level, diet, medications, follow-up appointment, weight and symptom monitoring  
Smoking cessation advice or counseling among smokers |
| **Pneumonia**               | Oxygenation assessment  
Initial antibiotic therapy begun within 6 hours of arrival  
Pneumococcal vaccination status  
Influenza vaccination status  
Blood cultures performed prior to antibiotics being started  
Appropriate initial antibiotic selection  
Smoking cessation advice or counseling among smokers |

Summary scores for each condition were calculated as the total number of times a hospital performed the appropriate action for each measure divided by the total number of opportunities the hospital had to provide appropriate care for that condition.
**eTable 2. Description of readmission model coefficients**

<table>
<thead>
<tr>
<th>Coefficient Description</th>
<th>ICD-9 codes used to identify each comorbidity</th>
<th>β, (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>n/a</td>
<td>-1.43 (0.12)</td>
</tr>
<tr>
<td>Age</td>
<td>n/a</td>
<td>0.00 (0.0)</td>
</tr>
<tr>
<td>White</td>
<td>n/a</td>
<td>0.04 (0.09)</td>
</tr>
<tr>
<td>Black</td>
<td>n/a</td>
<td>0.08 (0.10)</td>
</tr>
<tr>
<td>Others</td>
<td>n/a</td>
<td>-0.02 (0.11)</td>
</tr>
<tr>
<td>Asian</td>
<td>n/a</td>
<td>0.02 (0.11)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>n/a</td>
<td>0.13 (0.10)</td>
</tr>
<tr>
<td>Native American</td>
<td>n/a</td>
<td>0.11 (0.12)</td>
</tr>
<tr>
<td>Male</td>
<td>n/a</td>
<td>-0.03 (0.01)</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>398.91, 428.0-428.9</td>
<td>1.15 (0.01)</td>
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<tr>
<td>Valvular Disease</td>
<td>093.20-093.24, 394.0-397.1, 379.9, 424.0-424.99, 746.3-746.6, V422, V433</td>
<td>0.06 (0.02)</td>
</tr>
<tr>
<td>Pulmonary Circulation Disease</td>
<td>415.11-415.19, 416.0-416.9, 417.9</td>
<td>-0.19 (0.03)</td>
</tr>
<tr>
<td>Peripheral Vascular Disease</td>
<td>440.0-443.9, 444.21-444.22, 447.1, 449, 557.1, 557.9, V434</td>
<td>0.01 (0.02)</td>
</tr>
<tr>
<td>Paralysis</td>
<td>342.0-344.9, 438.20-438.23</td>
<td>0.18 (0.04)</td>
</tr>
<tr>
<td>Other Neurological Disorders</td>
<td>330.0-331.9, 332.0, 333.4, 333.5, 333.7, 333.71, 333.72, 333.79, 333.85, 333.94, 334.0-335.9, 338.0, 340, 341.1-341.9, 345.00-345.11, 345.2-345.3, 345.40-345.91, 347.00-347.01, 347.10-347.11, 649.40-649.44, 768.7, 780.3, 780.31, 780.32, 780.39, 780.97, 784.3</td>
<td>0.03 (0.02)</td>
</tr>
<tr>
<td>Chronic Pulmonary Disease</td>
<td>490-492.8, 493.00-493.92, 494-494.1, 495.0-505, 506.4</td>
<td>0.08 (0.01)</td>
</tr>
<tr>
<td>Diabetes without Chronic Complications</td>
<td>250.00-250.33, 648.00-648.04</td>
<td>-0.01 (0.01)</td>
</tr>
<tr>
<td>Diabetes with Chronic Complications</td>
<td>250.40-250.93, 775.1</td>
<td>0.01 (0.02)</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>243-244.2, 244.8, 244.9</td>
<td>-0.08 (0.02)</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>585.3-586, V420, V451, V560-V563.2, V568</td>
<td>0.57 (0.02)</td>
</tr>
<tr>
<td>Liver Disease</td>
<td>070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 456.0, 456.20, 456.21, 571.0, 571.2, 571.3, 571.40-571.49, 571.5, 571.6, 571.8, 571.9, 572.3, 572.8, V427</td>
<td>0.14 (0.05)</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>200.00-202.38, 202.50-203.01, 203.8-203.81, 238.6, 273.3</td>
<td>0.11 (0.05)</td>
</tr>
<tr>
<td>Metastatic cancer</td>
<td>196.0-199.9, 789.51</td>
<td>0.16 (0.04)</td>
</tr>
<tr>
<td>Solid Tumor without Metastasis</td>
<td>140.0-172.9, 174.0-175.9, 179-195.8, 258.01-258.03</td>
<td>0.05 (0.03)</td>
</tr>
<tr>
<td>Collagen Vascular Disease</td>
<td>701.0, 710.0-710.9, 714.0-714.9, 720.0-720.9, 725</td>
<td>-0.14 (0.04)</td>
</tr>
<tr>
<td>Coagulopathy</td>
<td>286.0-286.9, 287.1, 287.3-287.5, 649.30-649.34</td>
<td>0.16 (0.03)</td>
</tr>
<tr>
<td>Obesity</td>
<td>278.0, 278.00, 278.01, 649.10-649.14, V853.0-V853.9, V854, V855.4, 793.91</td>
<td>-0.28 (0.03)</td>
</tr>
<tr>
<td>Weight loss</td>
<td>260, 263.9, 783.21-783.22</td>
<td>0.31 (0.03)</td>
</tr>
<tr>
<td>Fluid and Electrolyte Disorders</td>
<td>276.0-276.9</td>
<td>0.25 (0.01)</td>
</tr>
<tr>
<td>Chronic Blood Loss, Anemia</td>
<td>280.0, 648.20-648.24</td>
<td>0.14 (0.04)</td>
</tr>
<tr>
<td>Deficiency Anemias</td>
<td>280.1-281.9, 285.21-285.29, 285.9</td>
<td>-0.02 (0.01)</td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>291.0-291.3, 291.5, 329.1, 291.8, 291.82, 291.89, 291.9, 303.00-303.93, 305.00-305.03</td>
<td>-0.24 (0.06)</td>
</tr>
<tr>
<td>Drug Abuse</td>
<td>292.0, 292.82-292.89, 292.9, 304.00-304.93, 305.20-305.93, 648.30-648.34</td>
<td>0.31 (0.12)</td>
</tr>
<tr>
<td>Psychoses</td>
<td>295.00-298.9, 299.10, 299.11</td>
<td>0.22 (0.04)</td>
</tr>
<tr>
<td>Depression</td>
<td>300.4, 301.12, 309.0, 309.1, 311</td>
<td>0.03 (0.03)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>401.0, 401.1, 401.9, 437.2, 642.00-642.04*</td>
<td>-0.30 (0.01)</td>
</tr>
</tbody>
</table>

ICD-9=International Classification of Diseases, Ninth Edition. β is the parameter estimate. SE is the Standard Error. Please note, precise betas will vary for each model; we have provided betas for the heart failure model as an example. *=special codes are also included in the software to create this comorbidity when overlapping with CHF or renal failure occurs. Please see full documentation at [http://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp) for details.
### eTable 3A. Risk-adjusted odds of 30-day same-cause readmission

<table>
<thead>
<tr>
<th></th>
<th>AMI</th>
<th>CHF</th>
<th>Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Readmission</td>
<td>Odds Ratio (95% CI)</td>
<td>N Readmission</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>42,401</td>
<td>3.6%</td>
<td>1.13 (1.07, 1.20)</td>
</tr>
<tr>
<td>White</td>
<td>537,091</td>
<td>3.2%</td>
<td>Reference</td>
</tr>
<tr>
<td>Minority-serving</td>
<td>50,107</td>
<td>3.6%</td>
<td>1.15 (1.06, 1.25)</td>
</tr>
<tr>
<td>Non-minority-serving</td>
<td>529,385</td>
<td>3.1%</td>
<td>Reference</td>
</tr>
</tbody>
</table>

Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care.

* = p value is nonsignificant at the 0.008 level. All other p values <0.001.
**eTable 3B. Risk-adjusted odds of 30-day same-cause readmission, grouped by race and site of care**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Black patients, minority-serving hospital</th>
<th>White patients, minority-serving hospital</th>
<th>Black patients, non-minority-serving hospital</th>
<th>White patients, non-minority-serving hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMI</td>
<td>17,212 3.8%</td>
<td>32,895 3.4%</td>
<td>25,189 3.3%</td>
<td>504,196 3.0%</td>
</tr>
<tr>
<td></td>
<td>1.34 (1.21, 1.49)</td>
<td>1.14 (1.04, 1.24)**</td>
<td>1.19 (1.11, 1.27)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.30 (1.17, 1.45)</td>
<td>1.15 (1.05, 1.25)</td>
<td>1.13 (1.06, 1.21)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.38 (1.24, 1.54)</td>
<td>1.21 (1.11, 1.32)</td>
<td>1.16 (1.08, 1.25)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.25 (1.11, 1.40)</td>
<td>1.11 (1.02, 1.21)</td>
<td>1.16 (1.08, 1.25)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.25 (1.11, 1.40)</td>
<td>1.11 (1.02, 1.21)**</td>
<td>1.15</td>
<td>Reference</td>
</tr>
<tr>
<td>CHF</td>
<td>65,596 11.8%</td>
<td>72,790 10.5%</td>
<td>84,162 10.5%</td>
<td>1,124,220 9.7%</td>
</tr>
<tr>
<td></td>
<td>1.23 (1.18, 1.28)</td>
<td>1.07 (1.03, 1.12)**</td>
<td>1.10 (1.08, 1.13)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.24 (1.19, 1.29)</td>
<td>1.09 (1.04, 1.13)</td>
<td>1.09 (1.07, 1.12)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.22 (1.18, 1.27)</td>
<td>1.08 (1.03, 1.12)</td>
<td>1.09 (1.07, 1.12)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.20 (1.15, 1.25)</td>
<td>1.05 (1.01, 1.09)*</td>
<td>1.09 (1.06, 1.12)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.14 (1.09, 1.18)</td>
<td>1.02 (0.96, 1.04)*</td>
<td>1.09 (1.06, 1.12)</td>
<td>Reference</td>
</tr>
<tr>
<td>PNA</td>
<td>34,703 4.9%</td>
<td>61,227 4.7%</td>
<td>49,819 4.8%</td>
<td>1,091,002 4.8%</td>
</tr>
<tr>
<td></td>
<td>1.01 (0.91, 1.12)*</td>
<td>0.99 (0.89, 1.10)*</td>
<td>0.98 (0.93, 1.02)*</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.04 (0.94, 1.15)*</td>
<td>0.99 (0.89, 1.09)*</td>
<td>1.02 (0.92, 1.14)*</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.04 (0.93, 1.16)*</td>
<td>1.02 (0.92, 1.14)*</td>
<td>0.96 (0.92, 1.01)*</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.10 (0.99, 1.23)*</td>
<td>1.06 (0.95, 1.17)*</td>
<td>0.99 (0.94, 1.05)*</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>1.02 (0.92, 1.14)*</td>
<td>0.99 (0.89, 1.10)*</td>
<td>0.99 (0.94, 1.05)*</td>
<td>Reference</td>
</tr>
</tbody>
</table>

Model 1 = age alone  
Model 2 = Model 1 plus patient comorbidities  
Model 3 = Model 2 plus discharge destination (home, nursing home or rehabilitation facility, hospice, or other) and length of stay  
Model 4 = Model 3 plus hospital characteristics (size, membership in a system, teaching status, ownership, location, and region)  
Model 5 = Model 4 plus percent Medicaid at each hospital and each hospital’s Disproportionate Share Index  
Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care, broken into four categories. AMI=acute myocardial infarction; CHF=congestive heart failure; HQA=Hospital Quality Alliance; LOS=length of stay; PNA=pneumonia.  
†=readmission rates are based on Model 2, the fully risk-adjusted model. *=p value is nonsignificant at the 0.008 level. **=p<0.008. All other p values <0.001.

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eTable 4A. Risk-adjusted odds of 30-day all-cause readmission, excluding Hispanics, Asian-Americans, and other non-white, non-black racial/ethnic groups

<table>
<thead>
<tr>
<th></th>
<th>AMI</th>
<th></th>
<th></th>
<th>CHF</th>
<th></th>
<th></th>
<th>Pneumonia</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>42,401</td>
<td>1.14 (1.11, 1.17)</td>
<td>149,758</td>
<td>1.04 (1.03, 1.06)</td>
<td>84,522</td>
<td>1.14 (1.12, 1.17)</td>
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<tr>
<td>White</td>
<td>511,849</td>
<td>Reference</td>
<td>1,139,178</td>
<td>Reference</td>
<td>1,095,837</td>
<td>Reference</td>
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<td>Site of care</td>
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<td></td>
</tr>
<tr>
<td>Minority-serving hospital</td>
<td>48,075</td>
<td>1.22 (1.17, 1.25)</td>
<td>133,322</td>
<td>1.14 (1.11, 1.17)</td>
<td>91,919</td>
<td>1.18 (1.14, 1.22)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-minority-serving hospital</td>
<td>506,175</td>
<td>Reference</td>
<td>1,155,614</td>
<td>Reference</td>
<td>1,088,440</td>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care. P<0.001 for all comparisons.

eTable 4B. Risk-adjusted odds of 30-day all-cause readmission, grouped by race and site of care, excluding Hispanics, Asian-Americans, and other non-white, non-black racial/ethnic groups

<table>
<thead>
<tr>
<th></th>
<th>AMI</th>
<th></th>
<th></th>
<th>CHF</th>
<th></th>
<th></th>
<th>Pneumonia</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black patients, Minority-serving hospital</td>
<td>17,212</td>
<td>1.36 (1.29, 1.43)</td>
<td>65,596</td>
<td>1.20 (1.16, 1.24)</td>
<td>34,703</td>
<td>1.35 (1.30, 1.40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White patients, Minority-serving hospital</td>
<td>30,863</td>
<td>1.23 (1.18, 1.29)</td>
<td>67,726</td>
<td>1.13 (1.10, 1.17)</td>
<td>57,216</td>
<td>1.18 (1.13, 1.23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black patients, Non-minority-serving hospital</td>
<td>25,189</td>
<td>1.15 (1.12, 1.19)</td>
<td>84,162</td>
<td>1.04 (1.02, 1.06)</td>
<td>49,819</td>
<td>1.14 (1.12, 1.17)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White patients, Non-minority-serving hospital</td>
<td>480,986</td>
<td>Reference</td>
<td>1,071,452</td>
<td>Reference</td>
<td>1,038,621</td>
<td>Reference</td>
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</tbody>
</table>

AMI=acute myocardial infarction; CHF=congestive heart failure. Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care, broken into four categories. P<0.001 for all comparisons.
eTable 5A. Risk-adjusted odds of 30-day all-cause readmission, excluding patients that died between discharge and 30 days

<table>
<thead>
<tr>
<th>Race</th>
<th>AMI N</th>
<th>Odds Ratio (95% CI)</th>
<th>CHF N</th>
<th>Odds Ratio (95% CI)</th>
<th>Pneumonia N</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>40,371</td>
<td>1.12 (1.09, 1.15)</td>
<td>145,413</td>
<td>1.03 (1.01, 1.04)</td>
<td>80,481</td>
<td>1.14 (1.12, 1.19)</td>
</tr>
<tr>
<td>White</td>
<td>508,203</td>
<td>Reference</td>
<td>1,136,291</td>
<td>Reference</td>
<td>1,092,796</td>
<td>Reference</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site of care</th>
<th>AMI N</th>
<th>Odds Ratio (95% CI)</th>
<th>CHF N</th>
<th>Odds Ratio (95% CI)</th>
<th>Pneumonia N</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority-serving hospital</td>
<td>47,770</td>
<td>1.21 (1.16, 1.26)</td>
<td>133,366</td>
<td>1.14 (1.11, 1.17)</td>
<td>91,211</td>
<td>1.19 (1.16, 1.23)</td>
</tr>
<tr>
<td>Non-minority-serving hospital</td>
<td>500,804</td>
<td>Reference</td>
<td>1,148,338</td>
<td>Reference</td>
<td>1,082,066</td>
<td>Reference</td>
</tr>
</tbody>
</table>

Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care. P<0.001 for all comparisons.

Appendix eTable 5b: Risk-adjusted odds of 30-day all-cause readmission, grouped by race and site of care, excluding patients that died between discharge and 30 days

<table>
<thead>
<tr>
<th>Race</th>
<th>AMI N</th>
<th>Odds Ratio (95% CI)</th>
<th>CHF N</th>
<th>Odds Ratio (95% CI)</th>
<th>Pneumonia N</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black, Minority-serving hospital</td>
<td>16,426</td>
<td>1.32 (1.26, 1.39)</td>
<td>63,800</td>
<td>1.18 (1.14, 1.21)</td>
<td>33,030</td>
<td>1.36 (1.30, 1.41)</td>
</tr>
<tr>
<td>White, Minority-serving hospital</td>
<td>31,344</td>
<td>1.23 (1.17, 1.28)</td>
<td>69,566</td>
<td>1.13 (1.10, 1.17)</td>
<td>58,181</td>
<td>1.18 (1.14, 1.23)</td>
</tr>
<tr>
<td>Black, Non-minority-serving hospital</td>
<td>23,945</td>
<td>1.14 (1.11, 1.18)</td>
<td>81,613</td>
<td>1.02 (1.00, 1.04)*</td>
<td>47,451</td>
<td>1.14 (1.11, 1.17)</td>
</tr>
<tr>
<td>White, Non-minority-serving hospital</td>
<td>476,859</td>
<td>Reference</td>
<td>1,066,725</td>
<td>Reference</td>
<td>1,034,615</td>
<td>Reference</td>
</tr>
</tbody>
</table>

AMI=acute myocardial infarction; CHF=congestive heart failure. Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care, broken into four categories. *=p value is nonsignificant at the 0.008 level. All other p values <0.001.
### eTable 6A. Risk-adjusted odds of 30-day all-cause readmission or death

<table>
<thead>
<tr>
<th>Race</th>
<th>AMI</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
<th>CHF</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
<th>Pneumonia</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>AMI</td>
<td>42,401</td>
<td>1.09 (1.07, 1.12)</td>
<td>CHF</td>
<td>149,758</td>
<td>0.99 (0.98, 1.01)*</td>
<td>Pneumonia</td>
<td>84,522</td>
<td>1.11 (1.09, 1.13)</td>
</tr>
<tr>
<td>White</td>
<td>AMI</td>
<td>537,091</td>
<td>Reference</td>
<td>CHF</td>
<td>1,197,010</td>
<td>Reference</td>
<td>Pneumonia</td>
<td>1,152,229</td>
<td>Reference</td>
</tr>
</tbody>
</table>

Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care. *=p value is nonsignificant at the 0.008 level. All other p values <0.001.

### eTable 6B. Risk-adjusted odds of 30-day all-cause readmission or death, grouped by race and site of care

<table>
<thead>
<tr>
<th>Race</th>
<th>AMI</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
<th>CHF</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
<th>Pneumonia</th>
<th>N</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black patients, Minority-serving hospital</td>
<td>AMI</td>
<td>17,212</td>
<td>1.21 (1.15, 1.27)</td>
<td>CHF</td>
<td>65,596</td>
<td>1.12 (1.09, 1.15)</td>
<td>Pneumonia</td>
<td>34,703</td>
<td>1.29 (1.24, 1.34)</td>
</tr>
<tr>
<td>White patients, Minority-serving hospital</td>
<td>AMI</td>
<td>32,895</td>
<td>1.16 (1.11, 1.21)</td>
<td>CHF</td>
<td>72,790</td>
<td>1.10 (1.07, 1.13)</td>
<td>Pneumonia</td>
<td>61,227</td>
<td>1.15 (1.11, 1.19)</td>
</tr>
<tr>
<td>Black patients, Non-minority-serving hospital</td>
<td>AMI</td>
<td>25,189</td>
<td>1.12 (1.08, 1.15)</td>
<td>CHF</td>
<td>84,162</td>
<td>0.99 (0.97, 1.00)*</td>
<td>Pneumonia</td>
<td>49,819</td>
<td>1.11 (1.09, 1.13)</td>
</tr>
<tr>
<td>White patients, Non-minority-serving hospital</td>
<td>AMI</td>
<td>504,196</td>
<td>Reference</td>
<td>CHF</td>
<td>1,124,220</td>
<td>Reference</td>
<td>Pneumonia</td>
<td>1,091,002</td>
<td>Reference</td>
</tr>
</tbody>
</table>

AMI=acute myocardial infarction; CHF=congestive heart failure. Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care, broken into four categories. *=p value is nonsignificant at the 0.008 level. All other p values <0.001.
**eTable 7A. Number of admissions in the previous year and procedures during index admission, by race and condition**

<table>
<thead>
<tr>
<th></th>
<th>Acute Myocardial Infarction</th>
<th>Congestive Heart Failure</th>
<th>Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black (n=42,401)</td>
<td>White (n=537,091)</td>
<td></td>
</tr>
<tr>
<td>Number of admissions in the year prior to the index admission (median, IQR)</td>
<td>1 (0, 2)</td>
<td>0 (0, 1)</td>
<td>1 (0, 3)</td>
</tr>
<tr>
<td></td>
<td>Black (n=149,758)</td>
<td>White (n=1,197,010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>White (n=84,522)</td>
<td>White (n=1,152,229)</td>
<td></td>
</tr>
<tr>
<td>Percutaneous coronary intervention</td>
<td>11,289 (27%)</td>
<td>196,607 (37%)</td>
<td>NE</td>
</tr>
<tr>
<td>Coronary artery bypass grafting</td>
<td>2,838 (7%)</td>
<td>50,279 (9%)</td>
<td>NE</td>
</tr>
<tr>
<td>Cardiac catheterization</td>
<td>15,610 (37%)</td>
<td>213,568 (40%)</td>
<td>8,299 (6%)</td>
</tr>
<tr>
<td>Echocardiogram</td>
<td>NE</td>
<td>NE</td>
<td>7,052 (5%)</td>
</tr>
<tr>
<td>Implantable cardioverter defibrillator</td>
<td>NE</td>
<td>NE</td>
<td>5,051 (3%)</td>
</tr>
<tr>
<td>Mechanical or noninvasive ventilation</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Central line</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

IQR=interquartile range; NE=not evaluated.

* p is nonsignificant at the 0.008 level. All other p values < 0.001. Comparisons performed using chi-square tests for categorical variables and Wilcoxon tests for continuous variables.
### eTable 7B. Risk-adjusted odds of 30-day all-cause readmission, accounting for the number of admissions in the previous year and procedures during index admission

<table>
<thead>
<tr>
<th></th>
<th>AMI</th>
<th>CHF</th>
<th>Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>42,401</td>
<td>1.09 (1.06, 1.12)</td>
<td>149,758</td>
</tr>
<tr>
<td>White</td>
<td>537,091</td>
<td>Reference</td>
<td>1,197,010</td>
</tr>
<tr>
<td><strong>Site of care</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority-serving hospital</td>
<td>50,107</td>
<td>1.20 (1.15, 1.24)</td>
<td>138,386</td>
</tr>
<tr>
<td>Non-minority-serving hospital</td>
<td>529,385</td>
<td>Reference</td>
<td>1,208,382</td>
</tr>
</tbody>
</table>

Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care. *=p value is nonsignificant at the 0.008 level. All other p values <0.001.

### eTable 7. Risk-adjusted odds of 30-day all-cause readmission, grouped by race and site of care, accounting for the number of admissions in the previous year and procedures during index admission

<table>
<thead>
<tr>
<th></th>
<th>AMI</th>
<th>CHF</th>
<th>Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Odds Ratio (95% CI)</td>
<td>N</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black patients, Minority-serving hospital</td>
<td>17,212</td>
<td>1.28 (1.22, 1.35)</td>
<td>65,596</td>
</tr>
<tr>
<td>White patients, Minority-serving hospital</td>
<td>32,895</td>
<td>1.21 (1.17, 1.26)</td>
<td>72,790</td>
</tr>
<tr>
<td>Black patients, Non-minority-serving hospital</td>
<td>25,189</td>
<td>1.11 (1.08, 1.15)</td>
<td>84,162</td>
</tr>
<tr>
<td>White patients, Non-minority-serving hospital</td>
<td>504,196</td>
<td>Reference</td>
<td>1,124,220</td>
</tr>
</tbody>
</table>

AMI=acute myocardial infarction; CHF=congestive heart failure. Table displays risk-adjusted odds of all-cause 30-day readmission, in a single model for each condition. Odds of readmission are examined as a function of both race and site of care, broken into four categories. *=p value is nonsignificant at the 0.008 level. All other p values <0.001.
References: