

Impacts of performance pay for hospitals:

The Readmissions Reduction Program

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Motivation

- In 2007, readmissions cost Medicare about \$15 billion out of the total \$105 billion payments
- Affordable Care Act (ACA) introduces the Hospital Readmissions Reduction Program (HRRP)

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 - Heart attack, heart failure, and pneumonia

Motivation

- In 2007, readmissions cost Medicare about \$15 billion out of the total \$105 billion payments
- Affordable Care Act (ACA) introduces the Hospital Readmissions Reduction Program (HRRP)
 - Performance pay contract to improve quality
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 - Heart attack, heart failure, and pneumonia
- Was the drop in readmissions due to HRRP?
- Is quality of care improved or is the readmissions rate being manipulated?

- Readmission declines due to HRRP explain about $2/3^{rds}$ of the observed decrease
- No evidence of up-coding, relabeling, or patient selection
- Standard shift for readmissions through emergency department (ED)
- Modest decrease in one-year mortality

- Medicare claims data — July 2006 to December 2014
- Almost 7 million admissions
- 3,250 acute care hospitals
- American Hospital Association (AHA) for hospital characteristics

TABLE 1—DESCRIPTIVE STATISTICS

	Heart attack (1)	Heart failure (2)	Pneumonia (3)
<i>Panel A. Readmissions</i>			
Index cases	1,234,894	3,140,914	2,499,537
Pr(readmission)	0.181 (0.057)	0.220 (0.035)	0.173 (0.035)
<i>Panel B. Quality of care</i>			
Pr(return)	0.254 (0.055)	0.288 (0.036)	0.241 (0.037)
Mortality			
30-day	0.143 (0.042)	0.107 (0.023)	0.119 (0.027)
One year	0.302 (0.077)	0.392 (0.042)	0.334 (.045)
Process of care	94.887 (5.798)	88.916 (14.275)	91.175 (9.140)
<i>Panel C. Admission decisions</i>			
Pr(admission)	0.990 (0.02)	0.880 (0.089)	0.840 (0.089)
Pr(readmission – return)	0.645 (0.107)	0.692 (0.083)	0.657 (0.09)
Pr(observation status – return)	0.076 (0.071)	0.059 (0.058)	0.054 (0.058)
<i>Panel D. Interquartile range of penalty incentive (Year 1)</i>			
Penalty likelihood, P	0.889	0.969	0.938
Penalty rate, p	0.055	0.049	0.051

$$Y_{iht} = \alpha_h + \delta_t + \beta P_{h1} \cdot \mathbf{1}(t \geq 2012)_t + X_i' \gamma + \epsilon_{iht} \quad (1)$$

$$P_{h1} \cdot \mathbf{1}(t \geq 2012)_t = \pi_{1h} + \pi_{2t} + \lambda Z_h \cdot \mathbf{1}(t \geq 2012)_t + X_i' \pi_3 + u_{iht} \quad (2)$$

- Y_{iht} : Outcome
- α_h : hospital fixed effects
- δ_t : time fixed effects
- X_i : Patient risk factors
- Z_h : Instrument (hospital characteristics)

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$$Y_{iht} = \alpha_h + \delta_t + \sum_{s \neq 2008} \beta_s \mathbf{1}(d_{Z_h} = 1) \cdot \mathbf{1}(t = s)_t + \epsilon_{iht} \quad (3)$$

Results

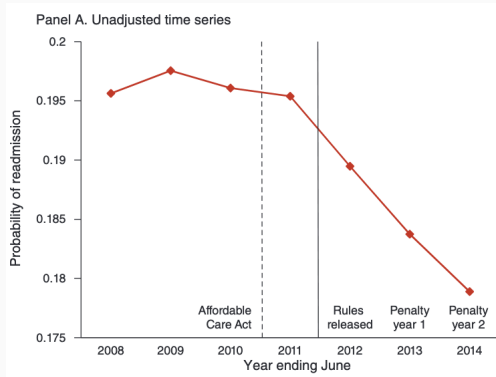
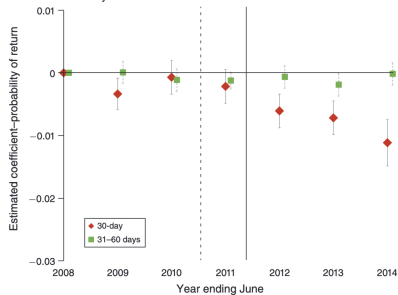


TABLE 2—IMPACT ON TARGETED METRIC (READMISSIONS)

	Heart attack (1)	Heart failure (2)	Pneumonia (3)	Aggregate (4)
<i>Panel A. OLS</i>				
30-day	−0.043 (0.002)	−0.0275 (0.001)	−0.0345 (0.001)	−0.033 (0.001)
31–60 days	0.0016 (0.001)	0.0024 (0.001)	−0.0004 −0.001	0.001 (0.001)
<i>Panel B. IV</i>				
30-day	−0.0349 (0.006)	−0.01 (0.003)	−0.0281 (0.003)	−0.021 (0.002)
31–60 days	0.0021 (0.003)	0.0000 (0.002)	−0.01 (0.002)	−0.003 (0.002)
First stage	5.5116 (0.289)	11.3697 (0.373)	9.8632 (0.357)	
F-statistic	91.4	172.5	179.7	
Observations	900,399	2,276,911	1,778,537	4,955,847
Y mean (30-day)	0.18	0.22	0.17	0.20
Y mean (31–60 days)	0.06	0.07	0.07	0.07

Results

Panel A. Probability of return



Panel B. Mortality

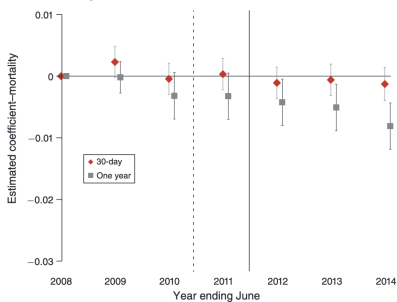


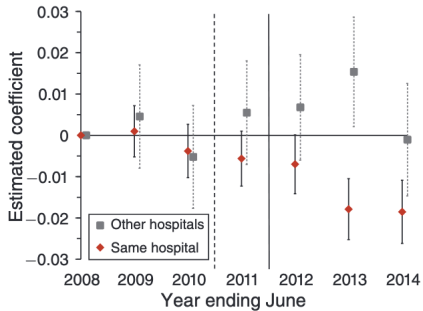
FIGURE 5. IMPACT ON QUALITY OF CARE

TABLE 3—IMPACT ON QUALITY OF CARE

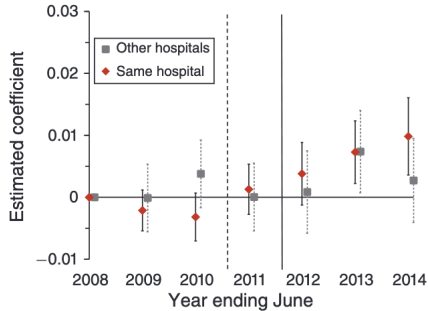
	Heart attack (1)	Heart failure (2)	Pneumonia (3)	Aggregate (4)
<i>Panel A. Impact on return</i>				
A1: OLS				
30-day	-0.0368 (0.002)	-0.0211 (0.002)	-0.0328 (0.002)	-0.028 (0.001)
31–60 days	0.0043 (0.001)	0.0037 (0.001)	0.0001 (0.001)	0.003 (0.001)
A2: IV				
30-day	-0.0286 (0.006)	-0.0061 (0.003)	-0.0268 (0.004)	-0.018 (0.002)
31–60 days	0.0044 (0.003)	0.0016 (0.002)	-0.0053 (0.002)	0.000 (0.001)
Observations	900,399	2,276,911	1,778,537	4,955,847
Y mean (30-day)	0.25	0.28	0.24	0.26
Y mean (31–60 days)	0.08	0.09	0.09	0.09
<i>Panel B. Impact on mortality</i>				
B1: OLS				
30-day	-0.0033 (0.002)	-0.0026 (0.001)	-0.0052 (0.001)	-0.004 (0.001)
One year	-0.0098 (0.002)	-0.0048 (0.002)	-0.0097 (0.002)	-0.007 (0.002)
B2: IV				
30-day	-0.0093 (0.005)	-0.0035 (0.002)	-0.0021 (0.003)	-0.004 (0.007)
One year	-0.0266 (0.006)	-0.0029 (0.004)	-0.0086 (0.005)	-0.009 (0.005)
Observations	994,504	2,727,898	2,273,045	5,995,447
Y mean (30-day)	0.14	0.11	0.12	0.12
Y mean (one year)	0.30	0.39	0.33	0.35

Results

Panel A. Readmission on return



Panel B. Observation status on return



- For mortality, the decrease started in 2010
- Instrument is based on hospital characteristics from 2009
- Assumed that patients are returning to hospital at the same rate
- Extra half-year of data