

## Supplementary Appendix

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

Supplement to: Lindenauer PK, Remus D, Roman S, et al. Public reporting and pay for performance in hospital quality improvement. *N Engl J Med* 2007;356:486-96.

Web Only Appendix Table 2a. Characteristics and comparison of hospitals that declined and those that volunteered for pay-for-performance.

Hospital characteristics	Hospitals that Declined to Participate in Pay-for-Performance (n=155)	Hospitals Participating in Both Pay-for-Performance + Public Reporting (n=207)	P value*
	n(%)	n(%)	
Bed size			
<200	83 (53.5%)	63 (30.4%)	<0.001
200-400	46 (29.7%)	77 (37.2%)	

>401	26 (16.8%)	67 (32.4%)	
Location			
Rural	44 (28.4%)	36 (17.4%)	0.01
Urban	111 (71.6%)	171 (82.6%)	
Teaching Status			
Teaching	38 (24.5%)	97 (46.9%)	<0.001
Non-Teaching	117 (75.5%)	110 (53.1%)	
Region			
Midwest	36 (23.2%)	45 (21.7%)	0.06
Northeast	18 (11.6%)	28 (13.5%)	

South	67 (43.2%)	109 (52.7%)	
West	34 (21.9%)	25 (12.1%)	
Ownership			
For-profit	7 (4.5%)	4 (1.9%)	0.27
Not-for profit	148 (95.5%)	203 (98.1%)	

- Chi-square test was performed for hospital characteristics between declined pay-for-performance and pay-for-performance + public reporting groups.

Web Only Appendix Table 3a Improvements in quality over 2 years among hospitals that declined and those that volunteered for pay-for-performance.

	Pay for Performance + Public Reporting (n=207)*			Declined Pay for Performance + Public Reporting (n=155)			Comparison	
	Start rate (Q4/2003)	End rate (Q3/2005)	Absolute change	Start rate (Q4/2003)	End rate (Q3/2005)	Absolut e change	Difference between absolute changes (95% CI)	P value#
<b>Acute MI</b>								
ASA on arrival	8,675 (92.6%)	7,148 (96.3%)	3.7%	2721 (94.3%)	2,256 (95.3%)	1.0%	2.7% (-0.7 - 6.0)	0.04
ASA at discharge	10,808 (93.9%)	8,867 (95.9%)	2.1%	2,817 (92.3%)	2,278 (94.0%)	1.7%	0.3% (-2.9 - 3.6)	0.85
ACE for LVSD	2,360 (77.5%)	2,101 (88.8%)	11.3%	594 (76.2%)	457 (84.4%)	8.1%	3.1% (-3.8 - 10.0)	0.37

BB on arrival	10,752 (88.4%)	9,194 (95.7%)	7.3%	2,838 (90.3%)	2,342 (94.7%)	4.4%	2.9% (-0.1 - 5.8)	0.06
BB at discharge	7,513 (87.6%)	5,644 (93.2%)	5.6%	2,426 (87.8%)	1,813 (92.2%)	4.4%	1.2% (-2.3 - 4.8)	0.48
<b>Heart failure</b>								
LV assessment	18,240 (83.3%)	15,704 (93.3%)	10.0%	6,023 (83.2%)	5202 (89.5%)	6.4%	3.7% (-0.0 - 7.4)	0.08
ACE for LVSD	6,079 (78.0%)	6,308 (86.5%)	8.5%	1,782 (73.3%)	1725 (84.5%)	11.2%	-2.7% (-8.1 - 2.7)	0.32
<b>Pneumonia</b>								
Antibiotic timing	19,406 (67.8%)	8,776 (79.6%)	11.8%	8,371 (72.7%)	3,804 (77.1%)	4.4%	7.4% (4.2 - 10.6)	<.001
Vaccination	10,490 (42.6%)	6,108 (72.7%)	30.0%	4,487 (38.4%)	2,609 (67.8%)	29.4%	0.6% (-5.8 - 7.0)	0.85
O2 assessment	20,546 (98.0%)	10,723 (99.6%)	1.6%	8,673 (98.1%)	4,572 (99.6%)	1.6%	0.1% (-0.9 - 1.0)	0.92

<b>Appropriate care measure</b>								
Acute MI	13,769 (77.4%)	11,720 (88.4%)	11.0%	3,893 (79.2%)	3,171 (85.9%)	6.7%	4.3% (-0.5 - 9.2)	0.08
Heart failure	18,274 (76.2%)	15,836 (88.2%)	12.0%	6,049 (75.6%)	5,204 (84.8%)	9.2%	2.9% (-1.3 - 7.0)	0.22
Pneumonia	20,554 (48.4%)	10,724 (70.5%)	22.2%	8,673 (48.2%)	4,573 (65.9%)	17.7%	4.4% (0.2 - 8.7)	0.03
<b>Composite process score</b>								
Acute MI	41,084 (88.5%)	33,707 (94.4%)	5.9%	12,056 (89.9%)	9,482 (93.5%)	3.6%	2.3% (-0.5 - 5.1)	0.13
Heart failure	24,576 (81.4%)	22,405 (91.5%)	10.1%	8,035 (80.8%)	6,991 (87.9%)	7.1%	3.0% (-0.6 - 6.6)	0.10
Pneumonia	50,779 (75.1%)	25,878 (86.3%)	11.2%	21,695 (75.7%)	11,021 (84.2%)	8.5%	2.7% (0.5 - 4.9)	0.01

All 10 measures	116,613 (81.0%)	96,695 (90.5%)	9.6%	41,846 (80.3%)	31,968 (87.8%)	7.5%	2.1% (0.1 - 4.0)	0.04
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Notes

ASA = aspirin

ACE = angiotensin converting enzyme inhibitor

LV = left ventricular

LVSD = left ventricular systolic dysfunction

BB = beta blocker

MI = myocardial infarction

- Because matching was carried out at the hospital, but not the measure level, the figures reported here differ slightly from those in Table 3.

#Student T test was performed to compare the difference in absolute percentage change between Pay for Performance + Public

Reporting and Declined groups.

Table 4a. Effect of teaching status and hospital size on improvement among hospitals engaged in pay-for-performance and public reporting initiatives.

	Hospital characteristics	Pay-for-performance + Public Reporting			Public Reporting			Comparison	
		Start rate (Q4/2003)	End rate (Q3/2005)	Absolute change#	Start rate (Q4/2003)	End rate (Q3/2005)	Absolute change#	Difference between absolute changes	P value§
Composite Process Score	Teaching status								
<b>Acute MI</b>	Teaching	30,556 (90.7%)	24,279 (94.8%)	4.1%*	52,363 (92.6%)	42,336 (94.7%)	2.1%	2.0%	0.007

	Non Teaching	10,528 (86.2%)	9,428 (94.0%)	7.8%	20,237 (89.8%)	16,607 (91.7%)	1.9%	5.9%	<0.001
<b>Heart failure</b>	Teaching	15,852 (84.9%)	14,333 (92.2%)	7.4% **	26,060 (85.9%)	23,664 (90.7%)	4.8%	2.6%	0.02
	Non Teaching	8,724 (78.3%)	8,072 (90.8%)	12.5%	14,543 (80.8%)	13,145 (86.7%)	5.9%	6.6%	<0.001
<b>Pneumonia</b>	Teaching	29,698 (73.3%)	15,154 (85.5%)	12.2%	41,778 (74.5%)	21,638 (82.3%)	7.8%	4.4%	<0.001
	Non Teaching	21,081 (76.6%)	10,724 (87.0%)	10.4%	37,067 (76.9%)	17,790 (83.7%)	6.8%	3.6%	0.003
<b>All 10 measures</b>	Teaching	76,106 (82.6%)	63,793 (91.2%)	8.6%	120,208 (84.8%)	106,388 (89.9%)	5.1%	3.5%	<0.001

	Non Teaching	40,507 (79.6%)	32,902 (90.0%)	10.4%	72,173 (81.2%)	59,417 (86.6%)	5.5%	4.9%	<0.001
Composite									
Process Score	Bed size								
<b>Acute MI</b>	<200	2,636 (83.6%)	2,095 (92.8%)	9.1%	4,463 (88.2%)	3,830 (90.3%)	2.2%	6.9%	0.01
	200-400	13,248 (90.0%)	11,293 (94.8%)	4.8%	25,853 (91.2%)	21,256 (93.6%)	2.5%	2.3%	0.04
	>400	25,200 (90.1%)	20,319 (95.1%)	5.0%	42,284 (93.6%)	33,857 (94.9%)	1.4%	3.6%	<0.001
<b>Heart failure</b>	<200	2,518 (73.7%)	2,200 (90.2%)	16.5%***	4,129 (78.9%)	4,024 (84.3%)	5.4%	11.1%	<0.001
	200-400	8,455 (82.7%)	7,556 (91.7%)	9.0%	16,048 (84.1%)	14,309 (89.4%)	5.3%	3.7%	0.01

	>400	13,603 (86.3%)	12,649 (92.3%)	6.0%	20,426 (86.1%)	18,476 (91.5%)	5.4%	0.6%	0.65
<b>Pneumonia</b>	<200	10,133 (78.0%)	5,225 (88.0%)	10.1%	13,665 (78.1%)	7,064 (85.0%)	6.8%	3.3%	0.04
	200-400	19,735 (74.9%)	9,916 (86.5%)	11.6%	35,786 (75.8%)	17,272 (83.4%)	7.6%	4.0%	0.003
	>400	20,911 (72.0%)	10,737 (84.0%)	12.0%	29,394 (73.3%)	15,092 (80.5%)	7.2%	4.8%	<0.001
<b>All 10 measures</b>	<200	15,461 (77.7%)	10,795 (89.6%)	11.9%**	22,590 (80.4%)	19,162 (85.4%)	5.0%	6.9%	<.001
	200-400	41,438 (81.9%)	33,735 (91.0%)	9.1%	77,687 (83.1%)	63,607 (88.9%)	5.8%	3.3%	0.001
	>400	59,714 (83.0%)	52,165 (90.9%)	7.9%	92,104 (85.1%)	83,036 (89.9%)	4.9%	3.0%	0.002

# Student t test was performed to compare the absolute percentage change between teaching and non teaching hospitals. ANOVA was performed to compare the absolute percentage change among bed size groups.

\*  $p \leq 0.05$

\*\*  $p \leq 0.01$

\*\*\*  $p \leq 0.001$

§ Student t test was performed to compare the difference in absolute percentage change between pay-for-performance + public reporting and public reporting hospitals for each teaching or bed size group.