

Is More Information Better? The Effects of "Report Cards" on Health Care Providers

David Dranove, et al. 2003

Presented by

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Overview

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- 2 Research question and contribution
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Background

New York State's publication of physician and hospital coronary artery bypass graft (CABG) surgery mortality rates

Background

The health policy community disagrees

2 major observations

Motivations

- **Pros:** A tool for patients and an incentive for quality by providers
- **Cons:** An incentive for provider to game the system
 - i) The analyst who creates report cards need to adjust health outcomes for difference in patient characteristics
 - ii) Low quality providers may pool with high quality providers
 - iii) Utility loss from a bad outcome (publicity) is higher than the utility gain from a random positive shock

Motivations

A comprehensive empirical framework for assessing the competing claims about report cards

Research question and Contribution

Is the publication of information on health outcomes achieved by physicians and hospitals constructive or harmful?

Effects to consider

- The matching of patients to providers
 - Welfare improvement

Sick patients → Treatment from high quality providers

- The incidence and quantity of CABG surgeries
 - Provider selection
Can shift CABG incidence surgeries from sicker to healthier
 - Change in the total number of surgeries
Up or down

Effects to consider

- The incidence and quantity of complementary substitute treatments
- The net consequences of report cards for health care expenditures and patients' health outcomes

Contribution

- Consideration of the entire at risk population
- The impact of report cards on resources

Preview of findings

Report cards

- Improved matching of patients
- Increased quantity of CABG surgeries
- Changed the incidence of CABG surgeries from sicker to healthier
- Higher cost, outcomes deterioration (Overall)
(Especially among sicker)

Then, **welfare reduction.**

Assumptions

1) No correlation

Adoption of report cards VS Unobserved state-level trends
(trends in the treatments, costs, outcomes of cardiac patients)

- ## 2)
- AMI patients are a relevant at-risk population for CABG
 - The AMI population is not affected by report cards

*AMI population = **A**cute **m**yo**c**ardial **i**nfarction population
(Population of all elderly heart attack patients)*

Data

- Comprehensive longitudinal Medicare claims
 - Vast majority of elderly beneficiaries
 - With a new primary diagnosis of AMI or CABG surgery
 - 1987 → 1994
- Patient demographic characteristics
 - From HCFA's health skeleton eligibility write-off enrolment files
- Comprehensive information on US hospitals characteristics from AHA
 - Only nonfederal hospitals that have ever reported providing general medical or surgical services

Descriptive statistics

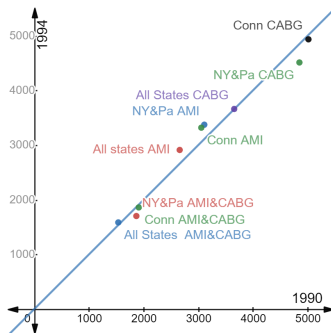


Figure: Mean expenditures in year prior to admission for AMI or for CABG surgery, elderly medicare beneficiaries

A. Hospital-Level Analysis

$$\ln(h_{lst}) = A_s + B_t + g \cdot Z_{lst} + p \cdot L_{lst} + q \cdot N_{st} + e_{lst}$$

h_{lst} = mean of the illness severity before admission or treatment of hospital l's elderly Medicare CABG patients

Z_{lst} = vector of hospital characteristics

N_{st} = number of hospitals and its square and cube in state s at time t

L_{lst} = 1 if the hospital is in New York in or after 1991 or Pennsylvania in or after 1993

Results A

TABLE 2

EFFECTS OF REPORT CARDS ON THE WITHIN-HOSPITAL COEFFICIENT OF VARIATION AND MEAN OF PATIENTS' HEALTH STATUS BEFORE
TREATMENT: MEDICARE BENEFICIARIES WITH AMI AND MEDICARE BENEFICIARIES RECEIVING CABG, 1987-94

DEPENDENT VARIABLE	BENEFICIARIES RECEIVING CABG		BENEFICIARIES WITH AMI	
	Assumes Report Cards Effective 1991 in N.Y. and 1993 in Pa. (1)	Assumes Report Cards Effective 1993 in N.Y. and Pa. (2)	Assumes Report Cards Effective 1991 in N.Y. and 1993 in Pa. (3)	Assumes Report Cards Effective 1993 in N.Y. and Pa. (4)
ln(mean of patients' total hospital expenditures one year prior to admission)	-3.92** (1.52)	-5.30** (1.10)	3.37** (1.52)	1.55 (2.26)
ln(mean of patients' total days in hospital one year prior to admission)	-3.74** (1.84)	-4.51** (1.54)	1.11 (2.76)	1.56 (2.95)
ln(CV of patients' total hospital expenditures one year prior to admission)	3.00** (1.39)	3.60** (1.77)	-2.32** (.64)	-2.43** (.66)
ln(CV of patients' total days in hospital one year prior to admission)	.94 (2.22)	2.74 (3.53)	-4.79** (1.79)	-4.98** (2.01)

NOTE.—Each table entry represents a separate model. Standard errors are based on an estimator of the variance-covariance matrix that is consistent in the presence of heteroscedasticity and of any correlation of regression errors within states over time. Coefficients and standard errors are multiplied by 100 to facilitate interpretation. Each observation is weighted by the number of patients admitted to the hospital in the cohort in question. Sample sizes: for AMI patients, coefficient of variation of expenditures, 37,611; coefficient of variation of length of stay, 37,681; mean expenditures, \$8,066; mean of length of stay, 38,084. Regressions also include controls for number of hospitals in state residence.

** Significantly different from zero at the 5 percent level.

B. Patient-Level: Quantity and Incidence effects

$$C_{kst} = A_s + B_t + g \cdot Z_{kst} + p \cdot L_{kst} + e_{kst} (+q \cdot w_{kst} + r \cdot L_{kst} \cdot w_{kst})$$

$C_{kst} = 1$ if patient k from state s at time t received CABG surgery within one year of admission to hospital for AMI

Z_{kst} = vector of patients characteristics

w_{kst} = a measure increasing in patient k 's illness severity

$L_{kst} = 1$ if patient k 's residence is in New York in or after 1991, or in Pennsylvania in or after 1993

Results B

TABLE 4
EFFECTS OF REPORT CARDS ON CABG, PTCA, AND CATHETERIZATION RATES: MEDICARE BENEFICIARIES WITH AMI, 1987-94

DEPENDENT VARIABLE	A. ASSUMES REPORT CARDS EFFECTIVE 1991 IN N.Y. AND 1993 IN PA.			B. ASSUMES REPORT CARDS EFFECTIVE 1993 IN N.Y. AND PA.		
	Effect of Report Cards (1)	Admission to Hospital in Year before AMI (2)	Report Cards × Prior Year Admission (3)	Effect of Report Cards (4)	Admission to Hospital in Year before AMI (5)	Report Cards × Prior Year Admission (6)
CABG within one year of admission (1 = yes) [14.76, 9.10] ^a	.60** (.21) .81** (.15) - .78** (.29)	-3.80** (.15)	-.65 (.44)	.91** (.44) 1.39** (.42) - .59** (.23)	-3.78** (.16)	-1.52** (.19)
CABG within one day of admission (1 = yes) [5.40, 2.97]	-.97** (.40)	-1.73** (.13)	.72* (.41)	-.66** (.30)	-1.71** (.14)	.29 (.30)
PTCA within one year of admission (1 = yes) [13.94, 8.76]	-1.69 (1.22) -1.73 (1.55)	-3.50** (.17)	.23 (1.15)	-1.22 (1.17) -.96 (1.46)	-3.46** (.19)	-.76 (.99)
PTCA within one day of admission (1 = yes) [7.81, 4.82]	-2.21** (.85) -2.55** (1.05)	-2.05** (.16)	1.22* (.70)	-2.06** (.91) -2.22** (1.07)	-2.00** (.18)	.59 (.57)
Cath within one year of admission (1 = yes) [40.65, 26.77]	-.81 (1.02) -.88 (1.48)	-9.55** (.34)	.48 (1.64)	.24 (.56) .72 (.89)	-9.47** (.38)	-1.37 (1.16)
Cath within one day of admission (1 = yes) [26.81, 16.25]	-3.75** (1.51) -4.28** (.75)	-7.54** (.17)	2.02 (1.15)	-2.77** (1.17) -2.86* (.75)	-7.45** (.38)	.56 (.57)

C. Patient-Level: Outcomes and Welfare effects

$$X_{kst} = A_s + B_t + g.Z_{kst} + p.L_{kst} + q.w_{kst} + r.L_{kst}.w_{kst} + e_{kst}$$

y_{kst} = Patient's total hospital expenditure in the year after the admission with AMI

O_{kst} = 1 if patient experienced an adverse health outcome

Z_{kst} = vector of patients characteristics

w_{kst} = a measure increasing in patient k's illness severity

L_{kst} = 1 if patient k's residence is in New York in or after 1991, or in Pennsylvania in or after 1993

Results C

TABLE 5
EFFECTS OF REPORT CARDS ON HOSPITAL EXPENDITURES AND HEALTH OUTCOMES: MEDICARE BENEFICIARIES WITH AMI, 1987-9

DEPENDENT VARIABLE	A. ASSUMES REPORT CARDS EFFECTIVE 1991 IN N.Y. AND 1993 IN PA.			B. ASSUMES REPORT CARDS EFFECTIVE 1991 IN N.Y. AND PA.		
	Effect of Report Cards (1)	Admission to Hospital in Year before AMI (2)	Report Cards × Prior Year Admission (3)	Effect of Report Cards (4)	Admission to Hospital in Year before AMI (5)	Report Cards × Prior Year Admission (6)
ln(total hospital expenditures in year after admission)	3.92** (1.08)			3.95** (1.52)		
	2.89** (.73)	7.33** (.48)	3.35* (1.75)	3.31** (1.16)	7.44** (.53)	1.93 (1.49)
Readmission with AMI within one year of admission (1=yes)	.02 (.08)			.06 (.07)		
	-.15 (.10)	1.70** (.06)	.55** (.13)	-.11 (.09)	1.72** (.06)	.52** (.14)
Readmission with heart failure within one year of admission (1=yes)	.50** (.10)			.54** (.10)		
	-.20** (.08)	4.89** (.10)	2.27** (.26)	-.18** (.08)	4.93** (.11)	2.30** (.36)
Mortality within one year of admission (1=yes)	.45 (.32)			.45* (.26)		
	.37 (.41)	11.90** (.09)	-.02 (.44)	.13 (.27)	11.88** (.10)	.69** (.13)

NOTE.—Standard errors are based on an estimator of the variance-covariance matrix that is consistent in the presence of heteroscedasticity and of any correlation of regression errors within states over time. Coefficients and standard errors are multiplied by 100 to facilitate interpretation. For expenditure models, $N = 1,770,452$.

* Significantly different from zero at the 10 percent level.

Threats

- This analysis is short-run short-run

The End

Thank You