



Galina Besstremyannaya, CEFIR
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Pay-for-Performance and Quality of Health Care: Lessons from the Medicare Reforms

Health care attracts major attention in terms of hospital and physician reimbursement, owing to the large share of public expenditures and the presence of welfare issues demanding regulation. The focus of this policy brief is quality adjustments of prospective payments in the health sector. Using the data on the 2013 reform in Medicare, we show differential effects of value-based purchasing, where price setting is related to benchmark values of quality measures. The theoretical and empirical evidence indicates that unintended effects appear for acute-care U.S. hospitals at the best percentiles of quality. The findings provide insights into benchmarking within pay-for-performance schemes in health care.



Overview

The Russian national project “Health”, started by the federal government a decade ago, is an example of a public remuneration scheme targeted at increasing health care efficiency. The project emphasized the role of the primary sector and raised salaries of general practitioners. A part of salaries was linked to patients’ assessment of the quality of health care. The reimbursement was seen as a means to stimulate higher quality.

However, cautiousness is required in introducing such payment mechanisms. Indeed, international experience shows that quality-related pay in health care may lead to heterogeneous effects across different groups of providers. A recent study by CEFIR uses administrative panels of the U.S. hospitals to analyze the changes in quality owing to the introduction of the quality-pay.

The U.S. Health Care Sector

Pilots of pay-for-performance

In the early 2000s, numerous private and public programs linking quality and reimbursements in health care existed in the U.S., mostly at employer or state level (Ryan and Blustein, 2011; Damberg et al., 2009; Pearson et al., 2008). A nationwide pilot of quality-performance reimbursement started with the Hospital Quality Incentive Demonstration, where quality measures for five clinical conditions (heart failure, acute myocardial infarction, community-acquired pneumonia, coronary-artery bypass grafting, and hip and knee replacements) were accumulated from voluntarily participating hospitals. Some of these quality-reporting hospitals opted for the pay-for-performance project (initially established for 2003-2006, and later extended to 2007-2009). The project provided respectively 2% and 1% bonus payments for hospitals in the top and second top deciles of each quality measure (as of the end of the third year of the project). Hospitals in the bottom two deciles, on the other hand, were to receive 1-2% penalties (Kahn et al., 2006). Overall, the financial

incentives helped improving the quality of the participating hospitals, but the improvement was inversely related to baseline performance (Lindenauer et al., 2007). Moreover, low-quality hospitals required most investment in quality increase; yet, they were not financially stimulated (Rosenthal et al., 2004).

The accumulation of the measures within the Hospital Quality Incentive was followed by the launch of the Surgical Care Improvement Project (SCIP) and Hospital Consumer Assessment of Healthcare Providers (HCAHPS). HCAHPS was the first national standardized survey with public reporting on various dimensions of patient experience of care. The measures of the clinical process of care domain are collected within the Hospital Inpatient Quality Reporting (IQR) program. These are measures for acute clinical conditions stemming from the Hospital Quality Incentive (i.e. acute myocardial infarction, heart failure, pneumonia), as well as measures from the Surgical Care Improvement Project and Healthcare Associated Infections.

The 2013 reform of Medicare

The success of the pilot project in the U.S. in terms of average enhancement of hospital quality has resulted in the nationwide introduction of these reimbursement policies. Namely, a value-based purchasing reform started at Medicare’s acute-care hospitals in the fiscal year of 2013. The reform decreased Medicare's prospective payment to each hospital by a factor α and redistributes the accumulated fund. As a result of this rule, all hospitals performing below the mean value of the aggregate quality are financially punished, as their so-called adjustment coefficient is less than unity. At the same time, hospitals above the mean value are rewarded (See details in the Final Rule for 2013: Federal Register, Vol.76, No.88, May 6, 2011.)

The aggregate quality – called the total performance score – is a weighted sum of the



scores of the measures in several domains: patient experience of care, clinical process of care, outcome of care, and efficiency. The scores on each measure are based on the hospital's position against the nationwide distribution of all hospitals. In short, positive scores are given to hospitals above the median, and higher scores correspond to performance at the higher percentiles. The scores are a stepwise function, assigning flat values of points to subgroups within a given percentile range. Hospitals above the benchmark (the 95th percentile or the mean of the top decile) are not evaluated according to their improvement relative to the performance in the previous year.

If one assumes that hospitals are only maximizing profit, then such a linear payment schedule should stimulate quality increases across all spectrums of hospitals. However, the theoretical literature generally separates the hospital management, interested in profits, from the physicians who make decisions affecting the level of quality. In particular, physicians are treated as risk-averse agents, who have a decreasing marginal utility of money; that is, their valuation of monetary gains of a certain size decreases as their income increases. In such behavioral model (Besstremyannaya 2015, CEFIR/NES WP 218) physicians' decisions about the quality of care is shaped by the trade-off between the potential losses they may incur if fired in case of hospital budget deficit and/or bankruptcy and their own costly effort to maintain and improve quality.

In this respect, the reform introduced two mechanisms: (1) it decreased the level of reward for low-quality hospitals and increased it for high-quality hospitals; and (2) it established a positive dependence of reward on quality. We show that the two forces compete, and the first one may outweigh the second for physicians at hospitals with high quality. Indeed, in these hospitals improved budget financing makes the bankruptcy, and probability of firing, less likely. As a result, physicians may be satisfied with a given sufficient level of a positive reward and not willing to exert

any further efforts to raise the amount of this reward. Furthermore, physicians may even become de-stimulated. As a result, in these higher quality hospitals, the quality of care stabilizes or even goes down after the reform.

To sum up, we hypothesize that quality scores increase at the lowest tails of the nationwide distribution, while it may stay stable or fall among the highest quality hospitals. The sign of the mean/median effect is ambiguous.

Empirics

Data on quality measures and hospital characteristics such as urban/rural location and ownership come from *Hospital Compare*. The panel covers the period from July 2007 to December 2013, and consists of 3,290 hospitals (12,701 observations). We exploit first-order serial correlation panel data models - longitudinal models where the value of the dependent variable in the previous period (lagged value) becomes one of the explanatory variables (see notations and definitions of analyzed measures in Tables 1-2.) The empirical part of the study evaluates the impact of the reform on changes of the quality scores of hospitals belonging to different percentiles of the nationwide distribution of each quality measure.

Table 1. Patient experience of care

| | |
|----------------|---|
| Comp-1-ap | Nurses always communicated well |
| Comp-2-ap | Doctors always communicated well |
| Comp-3-ap | Patients always received help as soon as they wanted |
| Comp-4-ap | Pain was always well controlled |
| Comp-5-ap | Staff always gave explanation about medicines |
| Clean-hsp-ap | Room was always clean |
| Quiet-hsp-ap | Hospital always quiet at night |
| Hsp-rating-910 | Patients who gave hospital a rating of 9 or 10 (high) |

Notes: Score on each measure is the percent of patients' top-box responses to each question.



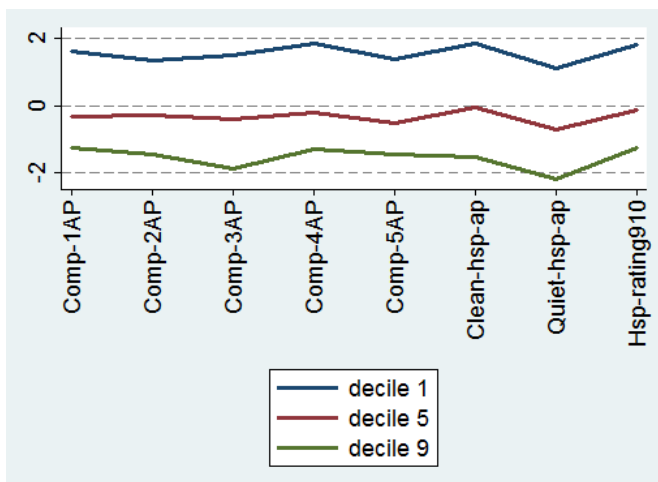
Table 2. Clinical process of care

| | |
|-----------|---|
| AMI-8a | Primary PCI received within 90 minutes of hospital arrival |
| HF-1 | Discharge instructions (heart failure) |
| SCIP-Inf1 | Prophylactic antibiotic received within 1 hour prior to surgical incision |
| SCIP-Inf3 | Prophylactic antibiotics discontinued within 24 hours after surgery end time |
| SCIP-Inf4 | Cardiac surgery patients with controlled 6 a.m. postoperative blood glucose |
| SCIP-VTE2 | Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery |

Notes: Score on each measure is the percent of percent of cases with medical criteria satisfied.

The results of the estimates offer persuasive evidence for a non-rejection of our hypotheses: quality goes up at 1-5th deciles and falls at the 6-9th deciles (see Figures 1-2).

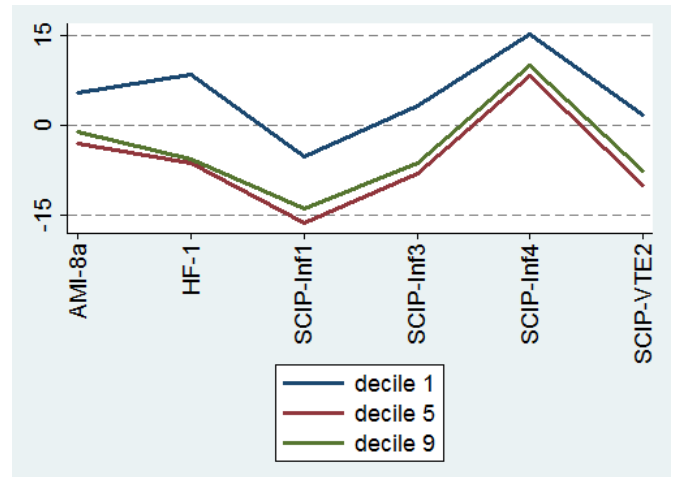
Figure 1. Mean change of scores owing to value-based purchasing across percentile groups of hospitals



It should be noted that the hypotheses concerning differential effects also rely on the fact that there is a certain population of hospitals to which each of the step-rates apply (Monrad Aas, 1995). Hence, the threshold and/or benchmark value in the

national schedule may be worse than the value in a given hospital. Therefore, reimbursement with benchmarking becomes an additional cause of undesired effects.

Figure 2. Mean change of scores owing to value-based purchasing across percentile groups of hospitals



Conclusion

Our analysis confirms the presence of adverse effects of quality performance pay in health care. A remedy may be found in establishing benchmark at the value of the best performing hospital or employing 'episode-based' payment, which rewards a hospital for treating each patient case with corresponding criteria satisfied (Werner and Dudley, 2012; Rosenthal, 2008).

While the above results are based on the US data, they suggest that cautiousness is required in applying the pay-for-performance schemes to healthcare financing also in transition countries, and much attention should be paid to the potential adverse effects.



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Galina Besstremyannaya

Centre for Economic and Financial Research (CEFIR)

gbesstremyannaya@cefir.ru

www.cefir.org

Galina Besstremyannaya holds a Ph.D. in Economics from Keio University (Tokyo) and Ph.D. in Math methods in Economics from the Russian Academy of Sciences. She has been working as a Lead economist at CEFIR since 2010, specializing in microeconomics and applied econometrics.

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