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Case-mix payment in Japanese medical care

Shinichi Okamura*, Ryota Kobayashi, Tetsuo Sakamaki

Department of Medical Informatics and Decision Sciences, Gunma University Hospital, 3-39-15 Showa-machi, Maebashi, Gunma 371-8511, Japan

Abstract

The Japanese medical care system, highly rated internationally, has recently experienced a crisis that has placed a burden on all of its citizens, providers, and payers, due to the expansion of medical expenditures in rapidly aging society with the stagnant economy. To address this, in April 2003, Japan implemented a case-mix payment system, instead of conventional fee-for-service payment, based on an original case classification with 2552 groups (Diagnosis Procedure Combination: DPC), with inpatients from 82 special functioning hospitals. This system contains two parts: per diem prospective payment for hospital's fee with a three-level step down according to average length of stay for each diagnosis group, which is adjusted to secure the previous year's remuneration in each hospital; fee-for-service payment for doctor's fee based on national fee schedule. The payment system reduced average length of stay, but did not change inpatient expenditures and increased outpatient expenditures. The in-hospital mortality rate, although un-adjusted, did not changed, but the readmission rate increased mainly through an increase in planned, not accidental, readmissions. For the expansion of this system, ongoing program refinement, reflecting the results of data analysis, is indispensable.

Keywords: Diagnosis procedure combination; Case-mix payment; Japanese medical care; DRG; DPC

1. Introduction

Although Japan's fee-for-service medical care payment system was implemented successfully [1,2], in April 2003 Japan introduced an original case-mix payment system, which differs substantially from the payments in other counties. The present report, which provides an outline of this payment system and describes the current status of Japanese medical care, discusses the background and impact of the program introduction.

2. Japanese medical care

The Japanese medical care system, highly rated internationally, has recently experienced a crisis that has placed a burden on all of its citizens, providers, and payers, due to the expansion of medical expenditures in a stagnant economy.

According to a World Health Organization (WHO) survey, Japan was ranked first and tenth of 191 countries in health system attainment and performance,

* Corresponding author. Tel.: +81 27 220 8772; fax: +81 27 220 8770.
E-mail address: sokamura@showa.gunma-u.ac.jp (S. Okamura).

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respectively [3]. All Japanese citizens have had free access to facilities and insurance coverage in a good public health status and Japan enjoys the longest life expectancy in the world with smaller medical expenditures (national medical expenditures as % of gross domestic product (GDP) in 2001: 7.8 in Japan, 7.5 in the United Kingdom, 8.3 in Italy, 9.4 in France, 10.8 in Germany, and 13.9 in the United States; health expenditures per capita US $ in 2001: 2077 in Japan, 2012 in the United Kingdom, 2107 in Italy, 2588 in France, 2735 in Germany, and 4869 in the United States) [4].

The expansion of medical expenditures has been caused by a rapidly aging society, progress in medical technology, and the increased demand of people for medical care. Among these, the pressing issue is an aging society, which is also a global issue, with persons age 65 years or older accounting for 17.8% of the total population in Japan, 18.4% in Italy, 16.9% in Germany, 16.2% in France, 15.9% in the United Kingdom, and 12.4% in the United States in 2001 [4]. The aging issue is most serious in Japan because the elderly population, increasing at an unprecedented rate, is projected to reach 27.8% of the population by 2020, and 33.2% by 2040 [5]. Continued increases in aging population will exacerbate the prevalence of chronic diseases, and thus expand medical expenditures. Medical expenditures per capita for the elderly are larger by five-fold than for younger people in Japan, with annual medical expenditures for the elderly increasing by 9.1% (while the year-to-year growth in national medical expenditures was 5.8%) in 1996, 5.7% (1.9%) in 1997, 6.0% (2.6%) in 1998, and 8.4% (3.7%) in 1999.

This crisis has placed a bigger burden on citizens, who already bear as much as 45.3% (premium, 30.5%, co-payment, 14.8%) of Japanese medical care expenditures (¥ 30.4 trillion or US $ 260 billion in fiscal 2000), as a result of government increases in insurance premiums and co-payments in April 2003. The residual portion of the financing, 22.5 and 32.1%, was resourced from employers (premiums) and public subsidies (taxes), respectively [6].

Medical providers have also been burdened by repeated price reductions in the national fee schedule, uniformly applied to all Japanese regardless of insurance type; providers in Japan have been paid on a fee-for-service basis through the schedule, in which the prices of all medical services (5500), pharmaceuticals (17,000) and medical materials (700) are biennially revised by the Ministry of Health, Labour, and Welfare (MHLW) through negotiations with the Central Social Insurance Medical Council (CSIMC), representatives of the public, payers, and providers [2]. Prices of pharmaceuticals, in particular, have been strictly curtailed because the amount of pharmaceutical expenditures as a part of national medical expenditures had expanded through an incomplete separation of prescribing and dispensing functions, which give an incentive for over-prescription. This amount has been successfully contained (38.2% in 1980, 29.6% in 1990, and 19.9% in 2001) by the biennial reduction in pharmaceuticals prices on the fee schedule (an average biennial reduction of 8.0%) [7].

The increase in reimbursement for medical remuneration, together with the leveling off of premium income in the stagnant economy since the collapse of the bubble economy in the early 1990s, has resulted in financial difficulties for payers. Almost all of the 5000 payers, facing a shortfall, should be integrated or restructured to strengthen their operational foundation.

3. Introduction of case-mix payment

Facing a medical care financial crisis, MHLW has tried to introduce prospective payment instead of fee-for-service payment to improve efficiency in medical care.

First, MHLW introduced prospective payment for chronic care, paid perdiem and unadjusted for case-mix, to geriatric hospitals in 1990. This introduction successfully reduced excess laboratory tests and medication in the hospitals [2].

Next, MHLW launched a prospective payment system pilot program for acute care, paid per discharge, based on the Japanese Diagnosis-related Groups, which had 183 groups at startup and 532 groups since 2001, at 10 selected hospitals in 1998. The pilot program, which applied to only 30–50% of inpatients, still has not provided conclusive results favoring this payment system, according to tentative reports to CSIMC.

Finally, in April 2003, MHLW started a case-mix payment system for acute care called the Diagnosis Procedure Combination (DPC) payment system. This system was based on DPC case classification originally prepared by analyzing data of 267,000 patients collected from targeted hospitals in July–October 2002.

The targeted hospitals consisted of 82 special functioning hospitals selected among 8000 general hospitals: the facilities of 80 university hospitals, and 2 national center hospitals for advanced medical care, education, and research, which have the strong influence on the whole Japanese medical care system through their functions as well as their affiliations with most large hospitals by dispatching physicians. The subjects, inpatients in the general wards of the hospitals, were assigned, upon discharge, to one of 2552 DPC groups (16 Major Diagnostic Categories, 575 diseases) by combining three elements: diagnosis corresponding to the most resource-consuming disease (coded using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision: ICD-10); procedures (coded using Japanese code on the national fee schedule); and diagnoses corresponding to complications and comorbidities.

DPC payment was applied to 1860 groups and the conventional fee-for-service payment to the residual 692 groups in the DPC classification. DPC payment contains two parts, prospective and fee-for-service payment. Prospective payment, roughly corresponding to the payment for hospital's fee and covering 71.7% of total payments for admission, is the sum of: hospitalization, 38.9%; injection, 11.0%; laboratory tests, 10.4%; diagnostic imaging, 6.6%; medication, 2.9%; procedures priced below 1000 points (1 point = ¥ 10), 1.9% [7]. Fee-for-service payment, corresponding to the payment for doctor's fee and covering the residual 28.3%

Table 1
Examples of payment for diagnosis procedure combination (DPC)

Colon cancer, 27 days stay in Hospital A
MDC: 6 (digestive system diseases)
DPC: 0600353 × 060 × × ×
Malignancy, colon, laparoscopic colectomy, no additional procedures

Total DPC payment: 71,410 + 49,800 = 121,210 points (1 point = ¥ 10)
Prospective payment part
(2920 × 13 + 2158 × 13 + 1834 × 1) × 1.0525 = 71,410 points
Prospective payment per diem for DPC 0600353 × 060 × × ×
−13 days: 2920 points
14–26 days: 2158 points
27–45 days: 1834 points
Coefficient for Hospital A
1.0525
Fee-for-service payment part
49,800 points (laparoscopic colectomy, etc.)

Acute myocardial infarction, 24 days stay in Hospital B
MDC: 5 (cardiovascular diseases)
DPC: 0500303 × 010000
Acute myocardial infarction, percutaneous transluminal coronary angioplasty, no additional procedures, no complications and comorbidities, first operation

Total DPC payment: 77,146 + 106,089 = 183,235 points (1 point = ¥ 10)
Prospective payment part
(3599 × 10 + 2703 × 11 + 2298 × 2) × 1.0971 = 77,146 points
Prospective payment per diem for DPC 0500303 × 010000
−10 days: 3599 points
11–21 days: 2703 points
22–38 days: 2298 points
Coefficient for Hospital B
1.0971
Fee-for-service payment part
106,089 points (percutaneous transluminal coronary angioplasty, etc.)

of the fee, is the sum of surgery and its material costs, 18.2%; and other services and treatments (procedures priced at 1000 points or larger, cardiac catheterization, endoscopy, radiotherapy, rehabilitation and so forth), 10.1% [7].

Fee-for-service payment is paid based on the national fee schedule. Prospective payment is paid per diem with a three-level step down according to average length of stay (ALOS) for each diagnosis group. Moreover, the prospective payment is adjusted by hospital coefficient (0.9613–1.1744; mean 1.0642), securing the previous year's remuneration in each hospital. This adjustment has a buffering action against drastic changes in the payment system. Payment per discharge was not selected because standardization of medical care at targeted hospitals was still delayed, which was revealed by analysis of survey data. The payments for atypical cases that generate extremely high costs are not compensated. Examples of DPC payment are shown in Table 1.

4. Impact of case-mix payment

The DPC payment system has impacted ALOS, medical expenditures, and the quality of medical care over the short term.

ALOS has shown a 4.5% decline at the special functioning hospitals under the DPC payment system, whereas a 1.5% decline has been seen at all medical hospitals under the conventional fee-for-service payment system in April–October 2002 when compared with the same term in 2003 [8]. The ALOS of targeted hospitals decreased from 20.4 days in July–August 2002 to 18.8 days in the same term 2003 [9]. This decrease was caused not by changes in the constitution of DPC group patients, but by changes in the ALOS for each DPC group [9]. Aiming for ALOS levels similar to those in other countries (France, 5.7 days; the United States, 5.8 days; the United Kingdom, 6.9 days; Italy, 6.9 days; Germany, 11.6 days in 2001) [4] is unrealistic and not feasible at present for the following reasons. First, hospital staff shortages are serious in Japan: for example, physicians and nursing staff per bed are one-fifth of those in the United States, which is mainly derived from the excessive bed supply (bed per population is 3.5-fold of that in the United States) [4,10]. Second, delayed functional differentiation in Japanese hospitals causes a mixture of acute and chronic care. Third, a stringent shortening of ALOS is negatively rewarded in the present per diem payments.

Unexpectedly, medical expenditures in the targeted hospitals increased more than those in all medical hospitals from April–October 2002 to the same term 2003: the 2.8% increase in inpatient expenditures (2.2% increase for all medical hospitals); 4.1% increase in outpatient expenditures (0.3% decrease); 3.2% increase in total medical care expenditures (1.5% increase) [8]. The increases in inpatient expenditures were caused by the concentration of medical care, which generated a 5.7% increase in expenditures per diem (3.3% increase), due to the shortening of the ALOS while sustaining bed utilization [8]. The expansion of outpatient care, incorporating parts of formerly inpatient care, further increased outpatient expenditures. It is noteworthy that inpatient expenditures would have been contained without the aforementioned adjustment by hospital coefficient.

In special functioning hospitals, the un-adjusted in-hospital mortality rate before and after the introduction of the DPC payment system was 2.11 and 2.16%, respectively [9]. However, the readmission rate increased from 4.66 to 5.56%, which was mainly caused by an increase in planned, not accidental, readmissions based on the examination of additionally collected data [9]. Close scrutiny and interpretation of this increase is imperative because quality assurance is crucial to the implementation of the prospective payment system [11,12].

5. Perspectives and conclusions

April 2004, the DPC payment system was first revised together with the refinement of DPC case classification, more appropriately reflecting the use of expensive pharmaceuticals and materials, disease severity, and comorbidities. Then, a 2-year trial of the system was also launched in 51 general hospitals. This system may be expanded in all acute care hospitals in the near future.

Two large associations, the Japan Medical Association and the Japan Hospital Association, are concerned about the deterioration of both quality of medical care and revenue in cases where this system is applied to their hospitals.

For the expansion of this system, intensive assessment of its effects on both efficiency and quality in medical care are indispensable. Cost analysis is also essential for the refinement of the system whose price list poorly reflects actual cost including labour cost. Without these, this system cannot develop to provide medical care satisfactory for all of patients, providers, and payers.

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