Sub-theme: Health Care Financing

Containing costs by controlling prices in Japan: The impact of introducing DRG type payment

Naoki Ikegami, MD, MA, PhD
Dept. of Health Policy & Management
Keio University School of Medicine
nikegami@a5.keio.jp

*Please do not distribute without authorization
*Any citation should be referred to the presenter for confirmation
What is appropriate treatment?

“Appropriate" depends on:
1) Each physician’s experience: training encounters with patients etc.
2) Where the physician practices
3) How the physician is paid: fee for service or inclusive
Five questions

1. Why are Japan’s health indices excellent?
   – Is it related to the healthcare system? ➞ Not taken up

2. Why are Japan’s health expenditures low?
   – Much more related to the healthcare system

3. Why and how did Japan introduce DPC based payment?

4. What impact has DPC had?

5. How have hospitals and the government responded?
## Comparison of health expenditures

**Per capita PPP US$, ratio to GDP (2006)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Expenditure</th>
<th>Ratio to GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>2581</td>
<td>8.1%</td>
</tr>
<tr>
<td>US</td>
<td>6933</td>
<td>15.8%</td>
</tr>
<tr>
<td>Canada</td>
<td>3696</td>
<td>10%</td>
</tr>
<tr>
<td>France</td>
<td>3423</td>
<td>11%</td>
</tr>
<tr>
<td>Germany</td>
<td>3464</td>
<td>10.5%</td>
</tr>
<tr>
<td>UK</td>
<td>2885</td>
<td>8.5%</td>
</tr>
</tbody>
</table>

Source: OECD Health Data 2009 - Version: June 09

8.1% of GDP, 20th among OECD
2. Why are Japan’s health expenditures low?

- Single form of payment applied to all social health insurance plans and virtually all providers
- Has allowed the government to maintain a de facto global budget despite fee-for-service (FFS) payment
- Three steps in the biennial tariff revision
  - 1. Prime minister sets global revision rate
  - 2. Drug prices individually reduced reflecting their volume weighted market price
  - 3. Service prices reduced on an item-by-item basis
    - If volume ↑, or cost price ↓, then tariff reduced: For example, in 2002, the global revision rate was -2.2%, but the MRI tariff was reduced by -30%
    - Impact of each price change calculated from its estimated volume
    - Cumulative effect of all revisions must be made equal to the global budget
Example: Changes in the tariff for MRI diagnostic imaging (Yen)

<table>
<thead>
<tr>
<th>Year</th>
<th>Head</th>
<th>Body</th>
<th>Limbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>16,600</td>
<td>17,800</td>
<td>16,900</td>
</tr>
<tr>
<td>2002</td>
<td>11,400</td>
<td>12,200</td>
<td>11,600</td>
</tr>
<tr>
<td>2006</td>
<td>10,800 if &lt;1.5 Tesla, 12,300 if &gt;1.5 Tesla*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>10,800 if &lt;1.5 Tesla, 13,000 if &gt;1.5 Tesla**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>10,000 if &lt;1.5 Tesla, 13,300 if &gt;1.5 Tesla**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30%↓, despite only 2.2% macro↓

* Differential fees according to equipment type introduced for the first time

**Successful lobbying by radiologists?
3. Why and how did Japan introduce DPC (Diagnostic Procedure Combination) based payment?

- **Why?** Payers insisted on introducing case-mix based payment because they thought that FFS was intrinsically inflationary.

- **How?** Constrains in introduction:
  - Providers insisted on retaining fee-for-service to maintain clinical autonomy.
  - Care not standardized: Big differences in average length of stay (ALOS) even among university main hospitals (25.1 days ~ 15.8 days in 2002).
  - Need to develop classification and payment system within one year → No time to conduct cost studies.

- **How?** Compromises made to accommodate constraints:
  - Payment is per diem, with the rate declining as length of stay (LOS) expands: NOT PER CASE.
  - FFS for surgical operations, endoscopies, rehab, devices etc. (amounting to about one-third of inpatient revenue).
  - Hospital specific coefficient: Adjusts for the difference between the FFS amount billed by the hospital and the DPC amount prior to the adoption.
  - Introduced initially only to the 82 university main hospitals.
# DPC per diem and DRG-PPS

<table>
<thead>
<tr>
<th>Focus of the developers</th>
<th>DPC per diem</th>
<th>DRG-PPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis based database of process</td>
<td>Review LOS differences</td>
<td></td>
</tr>
<tr>
<td>Number of groups</td>
<td>2,658 (1,880 used)</td>
<td>800</td>
</tr>
<tr>
<td>Payment</td>
<td>Per diem</td>
<td>Per case</td>
</tr>
<tr>
<td>Hospital coefficients</td>
<td>Nurse staffing level etc. Hospital specific adjustor</td>
<td>Regional cost of living differences Cost of education</td>
</tr>
<tr>
<td>Application</td>
<td>Initially: 82 hospitals</td>
<td>All Medicare patients</td>
</tr>
</tbody>
</table>
### Example shown for a patient coded for the following:

**Diagnosis:** *Stomach, malignancy*

**Procedures:** **Total gasterectomy (01), ***Total parental nutrition (1)**

* X: Code not used for this patient
DPC per diem rate:
Decreases by length of stay (LOS) periods

- **Average per diem amount**
  - **A**
  - **B**
  - 15%

- **Per diem inclusive rate**
  - **A = B**
  - 15%

- **LOS I**
  - 25\(^{th}\) percentile

- **LOS II**
  - 50\(^{th}\) percentile

- **LOS III**
  - (Average LOS+2 SD)

- **FFS**
Hospital coefficients

- Following coefficients applied to all patients paid by DPC
- Functional coefficient 1: Mainly for nurse staffing levels; for the highest level, the coefficient is 1.1705
- Functional coefficient 2: Based on the capacity to treat heavy care patients and provide high-tech care
  - Original goal was to replace Hospital specific coefficient
- Hospital specific coefficient: Adjusts for the difference between the FFS amount paid to the hospital prior to the adoption of DPC and the amount paid by the DPC rate
  - Hospitals that had provided intensive care (more diagnostic procedures and drugs) would have higher coefficients
  - Coefficient ranges from 1.3263~0.8770
**Importance of coding for comorbidity**  
**Bacteria pneumonia: DPC based payment in Yen**

<table>
<thead>
<tr>
<th>DPC code</th>
<th>Comorbidity* —</th>
<th>Comorbidity*+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>040080XX99X00X</td>
<td>040080XX99X01X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOS I</th>
<th>26,520 X 5 days = 132,600</th>
<th>29,330 X 9 = 263,970</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS II</td>
<td>18,730 X 9 days = 168,570</td>
<td>21,200 X 17 = 360,400</td>
</tr>
<tr>
<td>LOS III</td>
<td>15,920 X 12 days = 191,040</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>492,210**</td>
<td>624,370**</td>
</tr>
</tbody>
</table>

*Comorbidity conditions: Type 2 diabetes, congestive heart disease etc.*  
**Difference would be greater if functional and hospital coefficients are >1.0**
How new drugs are dealt in DPC

• If the use of the newly approved drug has been estimated to increase drug costs by more than one standard deviation of the drug currently used, then all services for the patient using the new drug will be paid FFS, and not by DPC

• At the time of the biennial tariff revision, a new DPC group is formed, if the FFS equivalent amount is greater than the threshold, and if the coefficient of variation in the length of stay and FFS equivalent amount is less than one
4. What impact has DPC had? (1)

- Hospitals meeting the following conditions have been given the option of being paid by DPC based per diem, and not by FFS
  - Nurse staffing levels above threshold
  - Computerized billing of claims
  - Medical records standards: ICD coding, staff for coding etc.
  - Agreeing to submit detailed data on patient characteristics and services
- Hospitals opting for DPC have increased enormously by 2010
  - From 82 in 2003, to 1,391 hospitals (one-fifth of all general hospitals)
  - Half (50.4%) of acute hospital beds are now paid by DPC
- Why has DPC been so enthusiastically adopted?
  - Recognition as an acute care hospital (not LTC)
  - Hospitals can keep any efficiency savings made because of the hospital specific coefficient
What impact has DPC had? (2)

- Average LOS shortened from the year that the hospital had adopted DPC based payment
  - In the 82 hospitals which had DPC introduced in 2003, ALOS has shortened from 21.22 days (02) to 16.15 days (08)
  - In the 216 hospitals which had DPC introduced in 2005, ALOS has shortened from 15.48 days (05) to 14.19 days (08)
- But, readmission rates for the same disease within 6 weeks of discharge in the same hospital have increased
  - In the hospitals which had DPC introduced in 2003, readmission rates have increased from 6.83% (05) to 7.93% days (08)
  - In the hospitals which had DPC introduced in 2005, readmission rates have increased from 5.68% (05) to 6.43% days (08)
5. How have hospitals responded?

• Improve efficiency in inpatient care
  – Reduce hospital stays to within LOS Periods I & II (higher rate)
  – Decrease diagnostic procedures and drugs
  – Switch from brands to generics
  – Better management of admission and discharge for non-emergency care patients

• Stepped up efforts to increase revenue
  – Transfer diagnostic procedures and drugs that had been made while hospitalized to before admission and/or after discharge so that they can be billed FFS in outpatient care
  – Code DPC more “appropriately” (up-coding)
  – Increase new admissions: DPC has led to shorter lengths of stay, but number of beds remains same: Bed occupancy rate ↓→ Pressure to admit more patients→ Admission threshold↓
How has government responded?

- Monitor under-provision of diagnostic procedures, drugs → Mandated hospitals to submit detailed data on their use while the patient is hospitalized
- Contain up-coding → Increased frequency of audit in DPC hospitals
  - DPC code listed in claims cross-checked with medical records
- Contain readmissions → If readmitted within 3 days after discharge, then LOS period is not reset
- Contain costs → LOS periods reset and generally shortened at every revision
- Gradually change the basis for calculating the hospital specific coefficient
My recommendations

• Gradually move from per diem to per case
  – Start from DPC groups that have low standard deviations in their average lengths of stay

• Audit hospitals based on their case-mix profile (percentage of patients coded in comorbidity groups); not based on individual claims data

• Develop and publicize data which compare hospital admission rates for the main DPC groups to show how they differ across prefectures
Conclusion

• Costs have been controlled despite FFS by making item-by-item revisions in the tariff
• DPC based per diem payment was gradually introduced from 2003 because payers were convinced that FFS was intrinsically inflationary
• Compromises had to be made in introducing DPC, which has contributed to its enthusiastic adoption by hospitals
• Pursuing efficiency at the hospital level may not have resulted in efficiency at the societal level
• Government should revise rules to reflect new conditions