Analysis of hospital activity in Yunnan province using Thai DRG model

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What is DRG?

- DRG is a patient classification system for acute inpatient care that provide a clinically meaningful way of relating the types of patients to the resources required by the hospital. (Australian Department of Health and Ageing, 2010)
- DRG helps to control the cost expenditure for caring for inpatients.
- Used in both developed and developing countries

China is undergoing a profound healthcare reform.
Although 1.2 billion people recently covered by urban workers and urban residents and rural medical insurance, the level of reimbursement is limited.
China need to obtain proper instruments to manage financial issues of the payment standards in the future.
Valuable experiences on diagnosis related group from other countries may prove helpful.
Thailand has used DRG for financing inpatient service in the national health care reform for more than 10 years.
Introduction

- Yunnan province is a strategic site for healthcare reform in China based on the strong local health system and available human resources.
- This study attempts to use the four Hospitals’ inpatient database in Yunnan province as a case study in implementing DRG in China, with the DRG Grouper software from Thailand.
Objective

- To study the principles and methods of Thai DRG
- To describe the four hospital’s activity in Yunnan province using Thai DRG version 5.2
- To compare and analysis the difference between Thailand and China in total-fee, length of stay, principle diagnosis etc.
- To explore and develop the model of Yunnan DRG
Method

- Data were obtained from the four different levels of public hospitals in Yunnan province, China.
  - Lijiang city hospital (500 beds)
  - Gejiu county hospital (500 beds)
  - Yuxi city hospital (901 beds)
  - Yanan city hospital (800 beds)

- Inpatient treatment dataset was extracted from the four Hospital’s information systems from 2002 – 2012
Method

- The health economical dataset contained total fees and all kinds of expenditure in hospital.
- The demographic and clinical information of the patient including age, gender, admission and discharge date, types of discharge; Principal diagnosis, co-morbidity and complications were coded in ICD10 and main surgical procedure coded in ICD-9CM were obtained.
- Categorical variables were analyzed using chi-square and two-sample test of proportions. Data were analyzed using R, excel and the Thai DRG Grouper software.
Group technology

Steps in DRG Grouping (DRG分组步骤)

1. Patient’s Data
2. MDC (Major Diagnostic Category)
3. DC
4. DRG
### MDC (Major Diagnostic Category):

<table>
<thead>
<tr>
<th>MDC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDC1</td>
<td>Diseases and Disorders of the Nervous System</td>
</tr>
<tr>
<td>MDC2</td>
<td>Diseases and Disorders of the Eye</td>
</tr>
<tr>
<td>MDC3</td>
<td>Diseases and Disorders of the Ear, Mouth and Throat</td>
</tr>
<tr>
<td>MDC4</td>
<td>Diseases and Disorders of the Respiratory System</td>
</tr>
<tr>
<td>MDC5</td>
<td>Diseases and Disorders of the Circulatory System</td>
</tr>
<tr>
<td></td>
<td>......</td>
</tr>
<tr>
<td>MDC25</td>
<td>Human immunodeficiency virus HIV infections</td>
</tr>
<tr>
<td>MDC28</td>
<td>Los 6 hours or less</td>
</tr>
</tbody>
</table>
Steps in DRG Grouping

1. Patient’s Data

2. MDC

3. DC (Disease Cluster)

DC (Disease Cluster):
三、方法---分组原理

Steps in DRG Grouping (DRG分组步骤)

1. Patient’s Data

2. MDC

3. DC

DRG
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01010</td>
<td>Craniotomy for trauma, no CC</td>
</tr>
<tr>
<td>01011</td>
<td>Craniotomy for trauma, w mild CC</td>
</tr>
<tr>
<td>01012</td>
<td>Craniotomy for trauma, w mod CC</td>
</tr>
<tr>
<td>01013</td>
<td>Craniotomy for trauma, w sev CC</td>
</tr>
<tr>
<td>01014</td>
<td>Craniotomy for trauma, w catas CC</td>
</tr>
<tr>
<td>01020</td>
<td>Craniotomy except for trauma, no CC</td>
</tr>
<tr>
<td>01500</td>
<td>Spinal disorders and injuries, no CC</td>
</tr>
</tbody>
</table>
Result

- A total of 559,944 records were grouped into 1,603 DRGs groups using Thai DRG model.
  - 711 groups in surgical DRG, accounting for 44% of total DRG,
  - 892 groups in medical DRGs, accounting for 56% of total DRG.
Result

- Approximately 7.6% of the total DRGs fell into ungroupable DRGs
- 13.1% of total records classified into major diagnostic category (MDC) 26.
- About 9.9% of total separations grouped into MDC04 (diseases and disorder of the respiratory system).
Result

For MDC04

- Average Length of stay in Yunnan is 11.9 days and in Thailand is 9.2 days.
- Average hospitalization charge in Yunnan is $424.5
Discussion

- Data handling procedures were crucial to successfully used the Thai DRG model
- Most of data modifications were related to compliances to international standards
  - ICD10 for diagnoses
  - ICD9CM for procedures
- No hospital costing data yet
- In relation to hospital activity in Yunnan vs. Thailand
  - Most patient groups were staying in hospital longer and cost a bit more
Conclusion

- Imperfect and inferior quality data undermines classification for DRG.
- This may require improvement in quality of data in hospital information system and home page of the medical record in Yunnan, China.
- It is necessary to use DRG for the efficient utilization of limited funding.
- Further study is required to find the influence factors that undermines grouping DRG.
Thank you!