

PERFORMANCE CONTRACTING & CASEMIX PAYMENT

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Introduction



- Resource consumption is a widely used proxy for illness severity
- Casemix is a reflection of aggregate risk of all individual patients within a hospital
- Developed in the 1970s by Yale researchers
- Originally intended only as a performance measure, they are now widely used for:
 - ▣ Hospital payment mechanism
 - ▣ Increasing transparency
 - ▣ Improving efficiency
 - ▣ Supporting hospital management

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- Useful measure to compare performance using administrative data
 - Casemix using ICD is a valid and feasible alternative for countries not yet using DRGs

Countries using casemix

1. Albania
2. Australia
3. Austria
4. Belgium
5. Bosnia Herzegovina
6. Bulgaria
7. Canada
8. Croatia
9. Czech Republic
10. Estonia
11. Finland
12. France
13. Germany
14. Greece
15. Hong Kong
16. Hungary
17. Iceland
18. Indonesia
19. Ireland
20. Italy
21. Japan
22. Latvia
23. Lithuania
24. Macedonia
25. Malaysia
26. Malta
27. Mongolia
28. Montenegro
29. The Netherlands
30. New Zealand
31. Norway
32. Portugal
33. Poland
34. Singapore
35. Slovenia
36. Spain
37. Sweden
38. Switzerland
39. Thailand
40. Ukraine
41. UK
42. US

Casemix...



- Is a ***tool*** used to allocate funding depending on health policy, not a health policy by itself
- Is ***not*** used to cut healthcare budget or limit spending on individual patients
- Is used to increase the ***fairness*** of budget allocated to different hospitals
- Promotes ***transparency*** and ***accountability***

MoPH in brief

- 1962 – MoPH coverage of uninsured patients, ‘insurer of last resort’
- 1983 – Alpha-Star rating
- Late 1990s – Rating link to reimbursement rate
- 2001 – Accreditation I
- 2007 – Accreditation II
- 2011 – Accreditation III

- Current accreditation-based system likely, but not necessarily, reflects better performance in terms of total quality management

Re-examining links



- Our main goals were to:
 - ▣ Evaluate if accreditation-reimbursement link is appropriate
 - ▣ Apply casemix to Lebanese hospitals and investigate results



**Hospital accreditation, reimbursement and case mix:
links and insights for contractual systems**

BMC Health Services Research 2013, 13:505

Walid Ammar, Jade Khalife, Fadi El-Jardali, Jenny Romanos,
Hilda Harb, Ghassan Hamadeh and Hani Dimassi

Methodology



- Yang & Reinke (2006) have shown that where use of DRGs is not possible, ICD-derived CMI is a good alternative, especially when using ICD costs
- ICD-10 discharge code costs for all hospitalizations between June 2011 – May 2012

CaseMix Index (CMI) calculation

$$\text{CMI}_h = \frac{\frac{\sum_g [W_g * N_{gh}]}{\sum_g N_{gh}}}{\frac{\sum_g [W_g * N_{gn}]}{\sum_g N_{gn}}}$$

h is the hospital CMI being calculated

W_g is the weight calculated for each ICD

N_{gh} is the number of cases within each ICD in hospital h

N_{gn} is the number of cases within each ICD in the total population

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- A total of 217,550 cases across 122 hospitals (96.4% of all records) were included in our study population
 - Weight for each ICD code was determined by dividing the code average cost by the average cost of all codes: 2234 ICD weights in our system, ranging from 0.09-29.9
 - We applied the weights on all cases in all hospitals, resulting in a hospital CMI for each

Hospital characteristics

| | Hospitals | | Cases | |
|----------------------|------------|---------------|----------------|---------------|
| | n | % | N | % |
| Accreditation | | | | |
| A | 32 | 26.2% | 71,713 | 33.0% |
| B | 8 | 6.6% | 21,646 | 9.9% |
| C | 56 | 45.9% | 93,810 | 43.1% |
| D | 26 | 21.3% | 30,381 | 14.0% |
| Size | | | | |
| Small (<50 beds) | 34 | 27.9% | 41,390 | 19.0% |
| Medium (50-100 beds) | 53 | 43.4% | 89,795 | 41.3% |
| Large (>100 beds) | 35 | 28.7% | 86,365 | 39.7% |
| Ownership | | | | |
| Public | 24 | 19.7% | 66,844 | 30.7% |
| Private | 98 | 80.3% | 150,706 | 69.3% |
| Total | 122 | 100.0% | 217,550 | 100.0% |

Statistical analysis



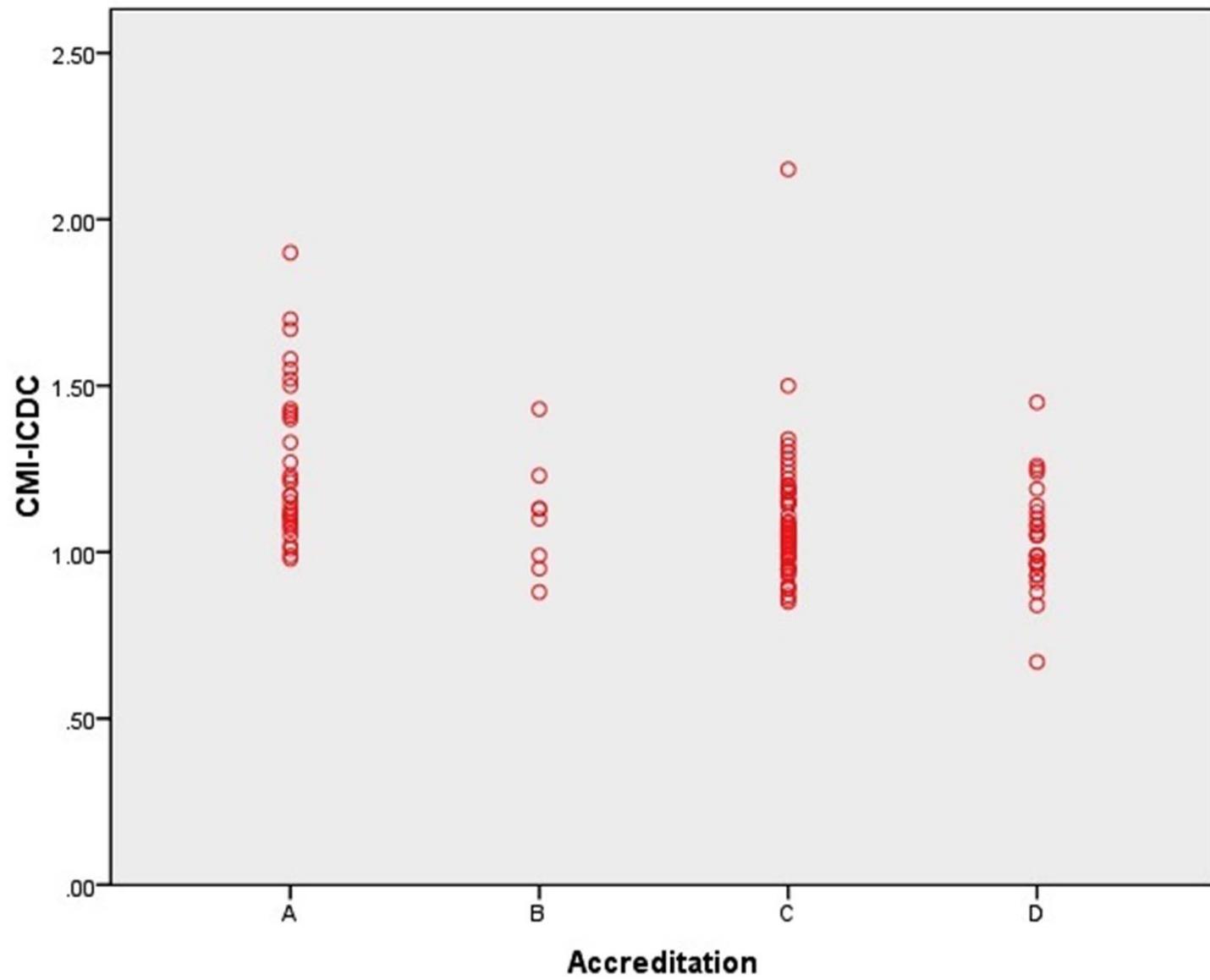
- Analysis of variance (ANOVA) calculated for CMI-ICDC by accreditation and size, and independent t-test used for analysis between public and private hospitals.
- For ANOVA, Levene's statistic was used to determine equality of variances, and where this was unequal, Welch's statistic was interpreted. Where a significant F-ratio was found, Tamhane's T^2 post-hoc comparison was done in all cases with unequal variance.
- Significance level was set at 0.05 for all statistical tests conducted.

Results

| | Mean | Std. Deviation | Minimum | Maximum | P value | Sig* |
|----------------------|------|----------------|---------|---------|---------|-------|
| Accreditation | | | | | | |
| A | 1.27 | 0.24 | 0.98 | 1.90 | <0.001 | C, D |
| B | 1.11 | 0.17 | 0.88 | 1.43 | | |
| C | 1.09 | 0.20 | 0.85 | 2.15 | | A |
| D | 1.04 | 0.16 | 0.67 | 1.45 | | A |
| Size | | | | | | |
| Small (<50 beds) | 1.04 | 0.16 | 0.67 | 1.45 | 0.001 | Large |
| Medium (50-100 beds) | 1.12 | 0.20 | 0.87 | 2.15 | | |
| Large (>100 beds) | 1.23 | 0.25 | 0.88 | 1.90 | | Small |
| Ownership | | | | | | |
| Public | 1.01 | 0.10 | 0.85 | 1.20 | 0.003 | |
| Private | 1.16 | 0.23 | 0.67 | 2.15 | | |
| All | 1.13 | 0.22 | 0.67 | 2.15 | | |

* Significance determined with Tamhane's T² post-hoc comparison

□



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- To address confounding, we repeated analysis after controlling for hospital size and volume (of cases); Results were unchanged
 - Category 'A' hospitals had higher CMI than others
 - No significant difference among category B, C, D

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- Absence of difference in CMI between the remaining three accreditation categories suggests that the payment system used by the MoPH which links reimbursement solely to accreditation ***is not appropriate.***
 - The presence of a few hospitals within categories (A and C) with considerably higher CMI than others in the same category implies that hospitals within the same category are ***not homogenous.***
 - Therefore the current system is unfair and induces inefficiency among and within accreditation categories.

Points to consider



- Current lack of financial incentives for improving performance
- Larger hospitals' results may be reflection of greater technical capabilities and thus more complex cases
- Overall, private hospital CMI larger than public hospital, but range was wider, suggesting some shifting of more complex cases

Policy implications



- Recognition that linking reimbursement to accreditation has contributed to better hospital adherence to the accreditation process.
- Current hospital re-imburement based solely on accreditation is not appropriate, and leads to unfairness and inefficiency in the system.
- MoPH should consider associating hospital case mix with reimbursement to enhance performance



Thank You