



Effects of Global Budget of Taiwan's NHI on Outpatient Visits and Expenditures, 2001-2005

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07/15/2009



Backgrounds

- Taiwan implemented the National Health Insurance (NHI) in March 1995
- To contain escalating medical care costs, the national health insurance implemented the Hospital Global Budget (HGB) in 2003
 - One of the purposes of this system: financial incentives
 - Encourage health care providers to exercise self-regulation
 - Reduce the proportion of cases that can be treated primarily in the clinics



Objective

- To examine whether there was any change in the proportion of primary care before and after the implementation of the HGB



Material and methods



Study design

- Longitudinal data analysis
- Data sources
 - Claims data: provided by the National Health Research Institute (NHRI) through an application procedure
- Indicator
 - Diseases could be classified into three types: ABC classification



ABC classification

- Based on the Clinical Classification Software (CCS) developed by Agency for Healthcare Research and Quality (AHRQ)
 - Type A disease : diseases should be treated at primary care clinics or non-teaching local hospitals
 - Type C disease: diseases should be treated at hospitals of district teaching or higher level
 - Type B disease: diseases could be treated at any level of health care institutes



Data process and analysis

- Step 1: Classified each disease into one of the ABC categories
- Step 2: Used monthly claims data of each facility as the unit of analysis and applied the generalized estimation equation (GEE) model to analyze the data.



Results

Number of visits and expenditure of outpatients and its growth rates, 2001-2005

year	Number of Visits (thousands)		Expenditure (millions)	
	Hospital	Clinics	Hospital	Clinics
2001	88595.11	163813.28	119327.11	99117.25
2002	90605.91	162673.38	130352.12	99299.6
2003	82237.45	165113.39	134395.03	100775
2004	89078.65	178189.57	152313.89	109707.6
2005	83774.95	184550.57	153179.12	117385.7
Growth rate				
2001-2002	2.27%	-0.70%	9.24%	0.18%
2002-2003	-9.24%	1.50%	3.10%	1.49%
2003-2004	8.32%	7.92%	13.33%	8.86%
2004-2005	-5.95%	3.57%	0.57%	7.00%



The changes of number of visits, by types ABC diseases and health care institutions

- Clinics

- Type A disease: the number of visits increased slightly
- The number of visits for type A decreased slightly during SARS epidemic while types B and C did not have significant change

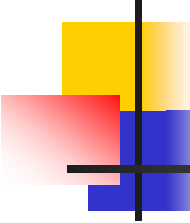
- Hospitals

- The number of visits of Type A decrease the most during SARS epidemic, while the decrease in types B and C were relatively small


The proportion of **outpatient visits**, by types of disease and health care institutions, 2001 - 2005

	Hospital (%)	Clinics (%)
Type A disease		
2001	48.97	91.08
2002	48.33	90.63
2003	47.13	89.86
2004	46.48	89.14
2005	43.81	88.26
Type B disease		
2001	29.44	6.89
2002	29.26	7.20
2003	29.26	7.72
2004	29.57	8.32
2005	30.09	8.91
Type C disease		
2001	21.59	2.03
2002	22.41	2.17
2003	23.61	2.42
2004	23.95	2.54
2005	26.10	2.82

The proportion of **outpatient expenditures**, by types of disease and health care institutions, 2001 - 2005



	Hospital (%)	Clinics (%)
Type A disease		
2001	28.12	77.17
2002	27.62	75.77
2003	25.79	73.63
2004	26.24	72.08
2005	23.95	70.34
Type B disease		
2001	25.05	10.30
2002	24.43	10.77
2003	24.11	11.44
2004	24.96	12.31
2005	24.24	12.93
Type C disease		
2001	46.83	12.53
2002	47.95	13.46
2003	50.10	14.93
2004	48.80	15.61
2005	51.81	16.73



Effects of HGB to outpatient visits and expenditures of three types of diseases

- Number of visits
 - The magnitude of decreasing of types B and C is greater than that of type A
- Expenditure
 - Type A increased by 10.18% after the global budget while types B and C decreased by 10.08% and 8.49%, respectively

Effects of HGB on monthly outpatient RVUs

Variables	Models	Type A diseases only			Type B diseases only			Type C diseases only		
		β	S.E.	Change	β	S.E.	Change	β	S.E.	Change
Clinics		-1.568	0.071	‡	-3.796	0.071	‡	-4.859	0.089	‡
Hospitals										
GB-hospital		0.097	0.016	‡ 10.18%	-0.106	0.021	‡ -10.08%	-0.089	0.026	‡ -8.49%
GB-hospital* clinic		-0.06	0.017	‡ -5.83%	0.094	0.021	‡ 9.82%	0.075	0.027	† 7.82%
GB-hospital* hospital										

1. Independent variable is the log transformed (ln) value of the monthly outpatient visits by facilities
2. Other control variables such as time trend, month, Chinese New Year, BNHI branch, institution ownership, outpatient co-payments, and SARS outbreak period (from May to June 2003) were not shown in the table.
3. The formula of Change is $(e^{\beta} - 1) \times 100\%$, which means the percentage of difference.
4. * p<.05 † p<.01 ‡ p<.001



Conclusion

- Hospitals did not reduce the proportion of primary care cases (type A) significantly after the HGB
- Future study should consider adopting more sensitive indicators or specific disease categories to examine whether patients shifted between clinics and hospitals after implementing the HGB



Thanks for your attention

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