

Development of risk adjustment and risk sharing scheme for Hungarian Managed Care Organizations

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Introduction

In the Hungarian Managed Care Program 16 health plans cover a wide range of health care benefits for 2,3 million people. The annual budget is allocated by the National Health Insurance Fund through capitation. The capitation formula is weighted by three variables age, sex, and chronic dialysis condition. This formula is not accurate enough to fulfill the requirements of equitable and efficient resource allocation. A wide fluctuation is experienced among the expenditure of the health plans. A previous study showed that the 6,5 % of the beneficiaries are responsible for the 50 % of all incurred costs and 33% percent of them for 90% of costs. Therefore the prospect of risk to bear and the financial pressure on health plans not to exceed the capitation endorments can be significant. The improvement of the capitation formula with risk adjustment and also the use of risk sharing arrangements are required. The aim of this study was to examine these methods.

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Figure 1:
The process of risk sharing during resource allocation for health plans

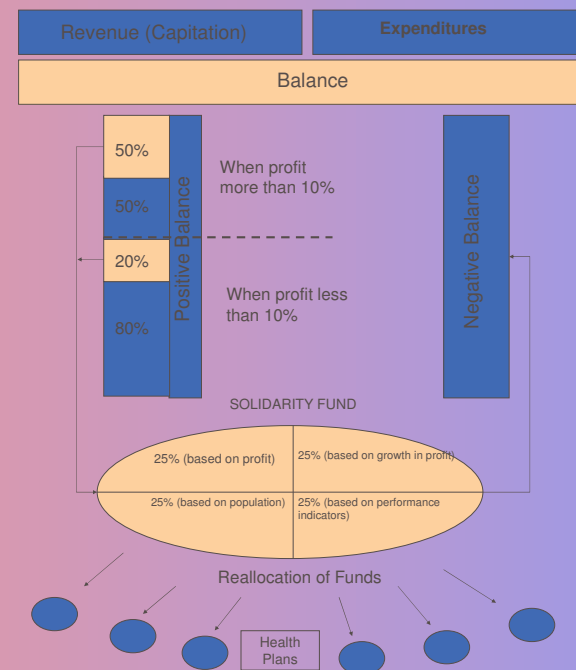


Table 1:
Services that are covered and services that are not covered in the capitation payment formula

Covered provisions	Carve outs
Primary care provided by GPs and pediatricians	Catastrophic interventions, experimental treatments, implants
Dental care	GP communal service (e.g. weekend duties, substitution for vacation)
Outpatient specialist care	Family nurses, preventive care for pregnant women, babies, etc.
Inpatient care	Transport of patients and dead corps
CT, MRI diagnostics	Reimbursement of travel costs, related medical treatment
Dialysis	Pharmaceuticals distributed under special rationing regimes
Home care	
Out-patient pharmaceuticals (except for rationed very high, cost drugs)	
Medical appliances	
Balneology	
Specialized institutionalized care (e.g. tuberculosis prevention, lunatic asylum)	

Table 2:
Results of a regression to test variables that predict the cost of COPD patients

Variable	Coefficient (Euro)	Standard Error	t-
Constant	-47,8	0,8	-58,6
number of inpatient visits	293,3	0,6	468,1
number of pharmacy visits	15,8	0,1	168,6
age	0,7	0,0	56,1
number of outpatient visits	5,5	0,2	31,1
number of inpatient diagnosis types	12,8	0,4	28,6
days spent in chronic/respite care	-1,7	0,1	-24,0
inpatient outlier (longest stay in days)	4,3	0,3	12,6
gender (1 male, 2 female)	6,0	0,6	9,9
number outpatient interventions to average (if <= than 0)	6,7	0,7	9,1
more than 180 days pharmaceutical therapy (if <= than 0)	6,2	0,9	6,8
R-squared	64,3%	Mean dependent var	124,45
Adjusted R-squared	64,3%	S.D. dependent var	245,64
S.E. of regression	146,82	Akaike info criterion	23,86
Sum squared resid	5216000000	Schwarz criterion	23,86
Log likelihood	-2888577	F-statistic	43563,11
Durbin-Watson stat	0,87	Prob(F-statistic)	0

Studied population: 232 000
Year: 2003

Figure 2:
The effect of risk sharing on health plans' budget (Oct. 2002 – Sep 2003)

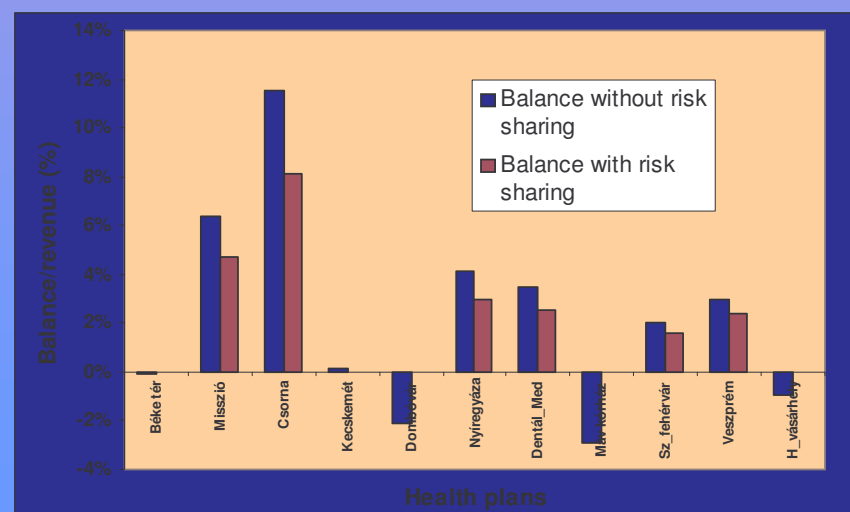


Table 3:
Results of testing distance variables in the chronic dialysis treatment to explain variation in costs

Regression (Ordinary Least Squares)			
R-squared	Adjusted R-squared	F-statistic	Significance
0,2%	0,2%	12,50	0
Coefficients (Euro)			
	t statistic	Significance	
Constant	8724	75,00	0
10 km	-587	-3,54	0
Excluded variables			
	t-statistic	Significance	
20 km	-0,31	0,756	
30 km	-0,67	0,5	
40 km	-2,81	0,005	
50 km	-1,79	0,074	

Year 2004, Studied population: 5382

Methods

The current system to handle risk is a mixture of rudimentary risk adjustment and a high level of risk sharing. To assess risk adjusters the potential supply side effect of the chronic dialysis adjuster was tested with dummy distance variables in a simple regression model. To further refine the capitation payment formula with risk adjustment individual level diagnoses and pharmaceutical data were scrutinized for COPD patients with high-cost chronic conditions.

Risk sharing arrangements between the health plans and National Health Insurance Fund were also analysed. These arrangements compensate those risk elements that cannot be captured with the current capitation payment formula. This incorporates a soft budget constraint where health plans are compensated for their losses; the method of outlier risks sharing where surpluses and deficits are handled in a solidarity fund (Figure1); also carve outs of high cost, high risk services where financial responsibility for particular services reverts to the payer (Table 1). These arrangements aimed to prevent extreme variations in health plan's budgets.

Results

When examining risk adjustment results show that distance from dialysis treatment centers does not have a significant effect on costs. Distance variable (10km) with the highest statistically significant power can explain only 0,2% of the variation in costs (Table 3). Therefore, it is clear that supply side effect is not an issue in the case of at least one risk adjuster, the chronic dialysis treatment. Also the improvement of the capitation payment scheme with risk adjustment can be successful with a regression model built for COPD patients that consider a mixture of inpatient, outpatient and pharmaceutical care variables. This model performed a 64% predictive power for COPD patients and incorporated 10 factors that significantly determined expenditures of COPD patients (Table 2). These results show that the development of risk adjustment scheme has the potential to improve both equitable and efficient resource allocation.

Current system of risk sharing is very strongly present in the allocation of capitation payments. The introduction of risk sharing arrangements especially the application of the solidarity fund (Figure 1) successfully reduced the variation in health plans' balance. Figure 2 shows the consequence of reallocating a certain percentage of health plans' profits.

Conclusions

It has been shown that the resource allocation system is capable to utilize a wide range of individual level data for risk adjustment purposes. It is suggested to combine health based adjusters (e.g. COPD adjusters) to other, non-health based variables (e.g. geographical variables). Risk sharing is supplementary along with risk adjustment, since this method successfully eases the financial pressure on health plans until risk adjustment fails to handle excess risk. Since risk sharing reduces health plans' incentives to efficiency a priority on risk adjustment has to be recognized. The improvement of risk adjusted capitation is to be balanced in line with the reduction of risk sharing arrangements on the long run.