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High cost pool or high cost groups—How to handle high(est) cost cases in a risk adjustment mechanism?

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ABSTRACT

Competitive social health insurance systems (at least) in Western Europe have implemented systems of morbidity based risk adjustment to set a level playing field for insurers. However, many high cost insured still are heavily underfunded despite risk adjustment, leaving incentives for risk selection. In most of these health care systems, there is an ongoing debate about how to deal with such underpaid high cost cases. This study develops four distinct concepts by adding variables to risk adjustment or by setting up a high cost pool for underpaid insured besides the risk adjustment system. Their features, incentives and distributional effects are discussed. With a data set of 6 million insured, performance is demonstrated for Germany. All models achieve a substantial improvement in model fit, measured in terms of R^2 as well as CPM. As the results of the various models are different in different dimensions, the trade-offs that have to be dealt with and should be addressed, when implementing a model to reduce underfunding of high cost cases.

1. Introduction

A number of countries (e.g. Belgium, Switzerland, the Netherlands, Israel, and Germany) have established competition within social health insurance systems in the 1990s [1]. In all of these countries, the insured can switch regularly between health insurers, and a system of risk adjustment to arrange a level playing field for the insurers has been established. This is also true for Medicare and health insurance according to the Affordable Care Act in the US. Risk adjustment subsidies in these health insurance systems are differentiated according to the expected health expenditures of the insured, they are higher for the "chronically ill" than for the "healthy". Normally risk adjustment pays standardized subsidies not related to actual expenditure. Therefore in spite of risk adjustment, a considerable number of insured remain severely "underpaid" as standardized subsidies do not cover their actual expenditure.

The question, how to deal with the topic of high cost cases remains therefore on the agenda. In the Netherlands for instance, a group of risk adjusters has been included in the risk adjustment model for which insured with high expenditures in the last three years qualify [2]. In the US in the context of the Affordable Care Act, in the introductory phase, so called "risk corridors" are implemented, which transfer payments from plans with low costs to plans with higher costs [3,4].

In this paper we focus on the competitive social health insurance system in Germany where there is no relation to actual medical expenditure in the risk adjustment

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mechanism at the moment. Since 2009, insured and their employers pay a uniform contribution rate (at present 14.9%) to a central health fund, and sickness funds receive risk adjusted subsidies from the central health fund (see Fig. E-Component 1). On average, these subsidies do not cover total expenditure of a sickness fund, therefore sickness funds have to calculate additional sickness fund specific contribution rates which are to be paid by the insured in addition to the uniform contribution rate [21]. As these sickness fund specific contributions are income related, the income base of the insured is equalized by the central health fund for the calculation of the sickness fund specific contribution rates, to avoid distortion of competition due to different income levels of the insured between the funds [5].

When risk adjusted subsidies to the sickness funds were introduced in 1994, they were based on socio-demographic risk factors only; and it has been demonstrated that the performance of this scheme was poorly [6]. By a reform, which came into effect in 2002, a mandatory "risk pool" was added to the system. The official name of the mechanism is misleading as *expenditures* were pooled retrospectively, not *risks* [20]: For insured with annual expenditure above 20,450 € (threshold), 60% of the expenditure above the threshold were financed by the pool. The risk pool itself was financed equally among all sickness funds; as at that time the central health fund was not implemented yet and sickness funds received income related contributions from their insured, the financing of the risk pool was according to the income of the insured. The concept of the pool was based on an evaluation by a study group commissioned by the Ministry of Health [7], however the authors of that study had proposed a threshold of only 10,250 € and a reimbursement rate of 80% for expenditures above the threshold.

In the course of this 2002 reform it was decided to complement the socio-demographic risk adjustment by morbidity based risk adjusters from 2007 onwards. The law established that with the switch from socio-demographic to morbidity based risk adjustment, the "risk pool" should be transformed to a "high risk pool". However, when morbidity based risk adjustment finally was implemented with two years delay in 2009, parliament decided to cancel the "risk pool" altogether without replacing it by a "high risk pool".

However, the discussion on re-establishing a high risk/high cost pool has never ended [8,9]. It is argued that a high risk/high cost pool may compensate for the shortcomings of the morbidity based risk adjustment system, especially it may eliminate that undercompensated insured are in danger of risk selection. Also, small sickness funds might face considerable financial problems, if they happen to have some extremely underfunded insured; this is seen as problematic, because financial problems of sickness funds should be tolerated only if they are caused by inefficient behaviour of the funds and not by the structure of their insured. If risk adjustment were perfect, the problems of small insurers could be dealt with by reinsurance, which would cover the risks of having high cost cases by chance; as long as it is not perfect, however, reinsurance is not a sufficient solution.

In this paper, we present the results of a study, with which the authors contribute to the discussion on the implementation of a special funding mechanism for high cost cases which are underpaid after risk adjustment. Although our empirical analysis is done for Germany, there is a clear relevance for other countries, as shown above. Especially our general approach to underpaid high cost cases and the four models we develop, the discussion of their advantages and disadvantages and their empirical features, is of a more general interest. The remainder of the paper is structured as follows: In Section 2 we describe the models. In Section 3 we present the data and methods. The empirical results are presented in Section 4 and in Section 5 we discuss the results and draw some conclusions.

2. Concepts for insured with high costs

When health based risk adjustment was implemented in Germany, a political compromise was made that the number of diseases be taken into account was to be limited to 50–80. The classification system established within these diseases is fairly elaborated by using inpatient and outpatient diagnoses as well as information for drugs prescribed. The system leads to high risk adjusted subsidies for some insured. In 2013, for 23 of the 155 variables of morbidity (so called HMGs, Hierarchical Morbidity Groups), the incremental subsidy payment from the central health fund amounted to more than 10,000 € p.a., for the top 2 HMGs it was even more than 200,000 € [10]. Therefore, a simple model of a high cost pool which is based only on the actual costs and leads to subsidies for those insured generating costs above a certain threshold, as it was established from 2002 to 2008 in Germany ("classic high cost pool"), seems inadequate. The reason is that it may lead to additional subsidies even for insured with substantial overpayment through the risk adjustment system. Instead, models for dealing with high cost cases should address those insured with high expenditures who are still substantially underfunded under morbidity based risk adjustment as the subsidies from the central health fund are significantly lower than their expenditures. Therefore in this paper we propose to focus approaches of special treatment of high cost cases in health care systems with elaborated models of health based risk adjustment on those insured who after applying health based risk adjustment are still severely underpaid as these insured are vulnerable to risk selection by health insurers.

From this starting point, we studied two types of models (High Cost Group Models, HCG and High Cost Pool Models, HCP), each in two variants. In both models morbidity based risk adjustment is calculated first according to the status quo process. Then, insured with a high funding gap (FG) are identified and explicitly addressed in the models. The way we deal with these insured is, however, very different in both types of models. The High Cost Group (HCG) models augment the current German HMG risk adjustment model by including (one respectively three) dummy variables that equal one if ex post actual expenditure exceeds the risk adjustment target by more than (one respectively three) specified amounts. The two High Cost Pool (HCP) models use a pool approach: After initial risk