European Economic Review 61 (2013) 43–58

Contents lists available at SciVerse ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eer

Cost incentives for doctors: A double-edged sword

Christoph Schottmüller*

Department of Economics, University of Copenhagen, Øster Farimagsgade 5, Bygn. 26, 1353 København K, Denmark

ARTICLE INFO

Article history:
Received 18 September 2012
Accepted 7 March 2013
Available online 16 March 2013

JEL classification:
D82
D83
I10

Keywords:
Cheap talk
Patient–doctor communication
Health insurance
Health market design

ABSTRACT

If doctors take the costs of treatment into account when prescribing medication, their objectives differ from their patients' objectives because the patients are insured. This misalignment of interests hampers communication between patient and doctor. Giving cost incentives to doctors increases welfare if (i) the doctor's examination technology is sufficiently good or (ii) (marginal) costs of treatment are high enough. If the planner can costlessly choose the extent to which doctors take costs into account, he will opt for less than 100%. Optimal health care systems should implement different degrees of cost incentives depending on type of disease and/or doctor.

1. Introduction

It is well known that insurance creates moral hazard: In the health sector, insured people would like to have more expensive treatments than socially optimal. On the other hand, treatments are normally prescribed by doctors. If doctors took the costs of treatment into account in their treatment decision, the moral hazard problem should disappear. The tradition in the medical profession, however, is to view oneself as advocate of one's patients. Consequently, the patient's well-being is put first and costs are only secondary. What is more, doctors are often explicitly hostile towards cost incentives in doctor remuneration. The German chamber of doctors, for instance, writes in its principles of health policy[1]

> […] the role of the doctor as advocate for his patient must not be restricted […] The state must not establish financial schemes (e.g. bonus-malus system) which could suggest to the patient that materialistic, self-serving aspects are also of importance for medical decisions.

It is important to understand whether the doctors' concerns are mainly self-interested, e.g. worries about reputation and pay, or whether financial incentives for doctors could have a negative impact on social welfare. Put differently, can patient advocacy be interpreted as an efficient institutional response to the particular structure of the health care market? Answering this question will also give some insight into the optimal design of health care markets. In particular, in which parts of the health care system should cost incentives for doctors be employed and where are cost incentives less likely to succeed?

* Tel.: +45 35323087.
E-mail addresses: christophschottmueller@googlemail.com, christophschottmueller@gmail.com.

[1] Translation by the author. Original title and source: "Gesundheitspolitische Leitsätze der Ärzteschaft—Ulmer Papier" Beschluss des deutschen Ärztetags 2008, Anlage 1, p. 6, http://www.bundesaerztekammer.de/downloads/UlmerPapierDAET111.pdf

0014-2921/$ - see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.euroecorev.2013.03.001

This paper focuses on the communication between patient and doctor. The patient's input, e.g. describing his symptoms and their intensity, is vital to reach the right diagnosis.[2] The main mechanism I explore in this paper is the following: Patients are (fully) insured. If doctors take costs into account in their treatment decision, their objectives and the objectives of their patients are no longer aligned.[3] Such a misalignment undermines the patient's trust in his doctor which in turn affects communication negatively.[4] More technically, in a setting where the patient has private information, e.g. about his symptoms and their intensity, he has the possibility to exaggerate his symptoms (or their intensity) in order to get a more expensive treatment. Of course, the doctor will anticipate such strategic exaggerating. This anticipation gives the patient further incentives to exaggerate and so on.

The appropriate model to analyze such a "rat race" is the cheap talk framework. This paper will therefore extend the canonical cheap talk model to the imperfect information setting typical for the health sector. Although a complete breakdown of communication can be prevented, communication will be worse in equilibrium because of the misalignment of interests, i.e. less information is transmitted from patient to doctor. It is shown that this communication effect can make a system without cost incentives preferable from a social welfare point of view. If the patient's collaboration is hardly needed, a system with cost incentives is preferable. For example, a doctor can easily establish that a patient has a broken leg by having an X-ray. The symptoms reported by the patient are less important in this case. If, on the other hand, an illness might have a psychological background, the patient's collaboration is essential and a system without cost incentives might be preferable.

From a technical point of view, the paper contributes to the cheap talk literature following the seminal paper by Crawford and Sobel (1982). Their model is extended in Chen (2009) and de Barreda (2010) to a setup where the decision maker receives a noisy signal. My paper generalizes further by substituting the perfect information on the sender/expert/patient side by a noisy signal.[5]

This paper complements existing literature on the design of health care systems. Early contributions as Arrow (1963) and Pauly (1968) already point out the moral hazard caused by health insurance: Insured patients might overconsume treatment from a social welfare perspective because they are insured. Ma and McGuire (1997) introduce the physician as an additional player and analyze contractual difficulties in the health market. In particular, health outcome and doctor's effort are non-contractible and even the quantity of care consumed can be subject to misreporting. Ma and McGuire (1997) analyze how these contractual constraints influence optimal contracts between insurance and patient as well as between insurance and physician. My paper focuses on a different kind of constraint, i.e. a constraint in information transmission arising in the communication between doctor and patient. It will be shown that the necessity of information transmission between patient and doctor might constrain the power of the incentive scheme offered to the doctor.

Obviously related is the literature on physician compensation and managed care. In his survey of the managed care literature, Glied (2000) mentions two problems of "supply-side cost sharing," i.e. cost incentives for physicians: (i) underprovision of necessary services and (ii) strong incentives to avoid costly cases. In this context, my paper adds a third problem: Hampered information transmission between doctor and patient. Furthermore, my paper provides one possible explanation for the ambiguous cost effect of managed care mentioned in Glied (2000).

Also related is the literature on physician agency with asymmetric information, see McGuire (2000) for a survey. However, this literature focuses mainly on the observability and contractibility of quality and effort choices while my paper analyzes communication between doctor and patient. An exception to this focus is the literature on supply induced demand, see Pitchik and Schotter (1987), Calcott (1999), De Jaegher and Jegers (2001). These papers model a doctor sending cheap talk messages concerning recommended treatments to the patient. A conflict of interest emerges as the doctor maximizes his income and not patient utility. To the best of my knowledge, my paper is the first one to model communication from the patient to the doctor.

The medical literature contains statements like "payment arrangements could significantly undermine patients' beliefs that their physicians are acting as their agents" (Mechanic and Schlesinger, 1996) and emphasizes that there should be no conflict of interest between patient and doctor (Emanuel and Dubler, 1995).[6] Kao et al. (1998) find that patients trust their physician less if the physician is capitated than when he is payed on a fee for service basis.[7] Physicians are also less satisfied with their relationships with capitated patients compared to their average patient (Kerr et al., 1997). My paper contributes

[2] The importance of communication is also stressed in the aforementioned document of the German chamber of doctors where it is stated that "health can neither be commanded nor produced since health depends crucially on the patient's collaboration." Also there is a whole string of the medical literature dealing with doctor-patient communication, see Stewart (1995) for a survey.

[3] Negative effects from cost incentives on the doctor–patient relationship are also established in the medical literature, see for example Rodwin (1995), Kao et al. (1998) or Gallagher and Levinson (2004).

[4] There is no doubt that patients understand this nexus: According to Gallagher et al. (2001) 73% of their respondents dislike the idea of a cost control bonus for their doctor and 91% favor disclosure to the patient if such a bonus was in place. Furthermore, 95% of those who dislike the bonus stated that the bonus would lower their trust in their physician.

[5] Ishida and Shimizu (2010) also considers a setting where both sides have noisy signals. They consider the case where the state of the world is binary and the signal space is discrete. My paper uses a continuum of health states and signals.

[6] See McGuire (2000) for more references on this point. The focus of these papers differs slightly from my paper as they concentrate on doctor's own income maximization as a reason for mistrust and diverging interests. I will abstract from this and focus directly on the discrepancy between welfare and patient utility caused by health insurance.

[7] It should be noted that doctors' and patients' incentives are also not aligned under a fee for service arrangement as a doctor has incentives to overtreat the patient, see the discussion in Section 2. However, patients appear to be less worried about overtreatment in practice. The reasons might be that many insurance plans actively try to prevent costly overtreatment, e.g. by utilization reviews, and also that patients do not bear the financial risk of overtreatment because of insurance. Therefore, objectives of doctor and patient are normally viewed to be closer in a fee-for-service contract.