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Does performance disclosure influence physicians' medical decisions? An experimental study[☆]

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ABSTRACT

Quality improvements in markets for medical care are key objectives in any health reform. An important question is whether disclosing physicians' performance can contribute to achieving these goals. Due to the asymmetric information inherent in medical markets, one may argue that changes in the information structure are likely to influence the environment in which health care providers operate. In a laboratory experiment with medical students that mimics a physician decision-making environment we analyze the effect of disclosing performance information to peers. Our results suggest that the information structure does influence the individual physician's supply of medical services. Under performance disclosure, choices that are in accordance with the medical norm or maximize the joint benefit become more frequent.

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1. Introduction

As proclaimed by Arrow (1963), asymmetric information between physicians on the one hand, and their patients and third party payers on the other hand, is a fundamental characteristic of the market for medical care. The doctor–patient relationship is often described as one of imperfect agency where the physician's objectives, to some extent, differ from the objectives of the patient or insurer and, further, the physician has superior information. Appropriately calibrating financial incentives

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addresses core aspects of asymmetric information as physicians may be encouraged to make decisions in accordance with the patient's and the payer's objectives. Hence, the information gap becomes less of a problem.

In this paper, we propose that information disclosure is a potential policy measure which, in itself, may influence medical decisions due to, for instance, physicians' concerns for social reputation and/or social and personal norms (see Bénabou and Tirole, 2006). A frequently used term in this context is *audit*, defined as "any summary of clinical performance of health care over a specified period of time, given in a written, electronic or verbal format" (Jamtvedt et al., 2006, p. 1). For audit purposes, processed aggregates of collected information are made available via internet and other information channels. Examples of this type of information disclosure include, for instance, the English National Health Service which publishes quality information on general practitioners that is collected through the so-called *Quality and Outcomes Framework* and the Office of the Patient Advocate in the state of California which publishes ratings of health care providers and health insurance plans.

We focus on disclosing performance information among peers. Physician reputation is not influenced by performance under a regime of private information. Performance disclosure among peers, however, may encourage improvement of medical practice. Knowing that information is made public may encourage more patient-regarding treatment decisions that correspond to the reputation a physician would like to attain. Effort is now more rewarding as it can influence one's reputation and social standing among colleagues and may also enhance one's self-image or self-respect as a good physician who adheres to the medical code of the Hippocratic oath (see e.g. Kesternich et al., 2015).¹

An undesired effect of performance revelation occurs, however, if physicians' reputation concerns personal standing in terms of income (see Bénabou and Tirole, 2006). Then performance disclosure may invoke some kind of competition for the highest income and more self-regarding behavior would be expected.

One may argue that introducing full or partial disclosure of provider performance implies a more transparent information structure, and hence, contributes to reducing the problems of asymmetric information in the market. Often, however, disclosure of performance information is introduced together with other health policy measures. For instance, both collecting and disclosing performance information are a necessary part of pay-for-performance schemes, and simultaneously are an important factor that influences the functioning of a market. Therefore, disentangling the effect of a change in the information regime from a change in financial incentives is difficult from observational data. Nevertheless, from the perspective of a social planner it might be valuable to distinguish between policies that target the information structure in the market and policies that are related to calibrating payment systems such as fee-for-service or pay-for-performance-type financial incentives. Understanding the causal impact of different information structures sufficiently well and identifying and quantifying their influence on market outcomes will provide the regulator with an additional policy instrument.

The research question addressed in this paper is whether disclosing physicians' performance information to their peers has an effect on their medical decisions and if so, in which direction. We are interested in choice dynamics and behavioral patterns that provide insights into physicians' motivations underlying their quantity/treatment choices. This is an important research topic because the optimal calibration of economic incentives in a physician payment scheme will depend partly on the impact the information regime itself has on performance. If, for example, introducing performance disclosure among physicians and their peers is already sufficient for inducing providers to deliver optimal quality of care, then, introducing a regime combining both – a new payment scheme and disclosure of performance measures – might be inefficient.

Different methodological approaches are used in the small but growing literature on information disclosure. In health economics, researchers have so far relied on field studies and surveys. An experimental economics literature exists on the general topic of information disclosure. Experimental economics studies on information disclosure in a physician decision-making context are rare, however, and to the best of our knowledge, our paper is currently one of the two only studies on this topic.²

The experimental method allows us to implement *ceteris-paribus* changes of the decision environment in a controlled way. Our experimental study will, therefore, enable us to draw inferences on the direction and strength of the effect of information disclosure on physicians' performance. As argued above, this might be difficult in a field setting, as the *ceteris-paribus* condition will rarely be fulfilled.

In our experiment, 51 medical students in the role of physicians choose quantities of medical services they want to provide for their patients under a fee-for-service payment system (FFS). Under FFS, physicians are paid for each medical procedure or service dispensed to a patient, i.e., the physician's remuneration increases in the quantity provided. The experimental subjects are exposed to two distinct information regimes: a regime of *private information* and a regime of *public information*. The number of patients and the patients' benefit functions are given and kept constant under both information regimes. The quantity a subject (she) chooses for a patient (he) determines her own profit and the patient's benefit. When making the quantity decision for a given patient, the subject knows about her own profits and the patient benefits for all choice alternatives.

The patient benefit is measured in monetary terms that represents a monetary equivalent for the benefit from the provision of medical services. For each patient, a unique quantity exists that indicates the best treatment for the patient;

¹ Other aspects include, for instance, patients' responses to disclosing performance information or how performance information influences which providers insurers prefer to contract with. Our paper will not deal with these aspects, though.

² The second study is Kairies and Krieger (2013).

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