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Do patients choose hospitals with high quality ratings? Empirical evidence from the market for angioplasty in the Netherlands

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ABSTRACT

A necessary condition for competition to promote quality in hospital markets is that patients are sensitive to differences in hospital quality. In this paper we examine the relationship between hospital quality, as measured by publicly available quality ratings, and patient hospital choice for angioplasty using individual claims data from a large health insurer. We find that Dutch patients have a high propensity to choose hospitals with a good reputation, both overall and for cardiology, and a low readmission rate after treatment for heart failure. Relative to a mean readmission rate of 8.5% we find that a 1%-point lower readmission rate is associated with a 12% increase in hospital demand. Since readmission rates are not adjusted for case-mix they may not provide a correct signal of hospital quality. Insofar patients base their hospital choice on such imperfect quality information, this may result in suboptimal choices and risk selection by hospitals.

1. Introduction

An increasing number of countries are implementing competition-based health care reforms. A necessary condition for competition in health care to promote quality is that patients are sensitive to quality differences among providers. In the literature, several studies estimate the relationship between public quality information and hospital demand using cross-sectional data. Overall, these studies find that patients are more likely to choose providers with high quality levels, all else equal. Tay (2003) used nationwide Medicare claims data from 1994 for all heart attack patients over 65 for analysing patients' choice of hospital. From her estimates, changes in hospital quality are predicted to have substantial effects on hospital demand. Howard (2006) also found that patients take quality into account when choosing hospitals. His study sample comprised all adult patients who had to choose a hospital when registering for the national kidney transplantation waiting list in the period 2000–2002. Analysing the choice behaviour of Medicare pneumonia patients in the greater Los Angeles market in 2002, Goldman and Romley (2008) found that amenities such as good food, attentive staff, and pleasant surroundings play an important role in hospital demand. They showed that an increase in amenities substantially raised a hospital's demand.

In many health care markets, quality report cards are published to convey information about providers. These quality ratings are intended to facilitate and enhance patients' ability to compare the quality of competing providers through easy access to direct and indirect measures of quality. A growing body of literature is investigating the impact of report cards on patient choice using panel data. Most of these studies find a positive effect. On a state level, Mukamel et al. (2004/2005) examined the effect of the first New York State Cardiac Surgery Reports in 1992 on patients' selection of cardiac surgeons, finding that published quality rankings have an impact on surgeon selection. Using data from New York State in 1989–1991, Dranove and Sfekas (2009) showed that when hospital report cards provide information that differs from patients' beliefs, patient response is to move to higher quality hospitals. Using data of all hospitalised Medicare patients in California from 1998 to 2004 and a sample of other US hospitals from 1994 to 2002, Pope (2009) found that annually published hospital rankings had a significant impact on patient decisions. An improvement within a given

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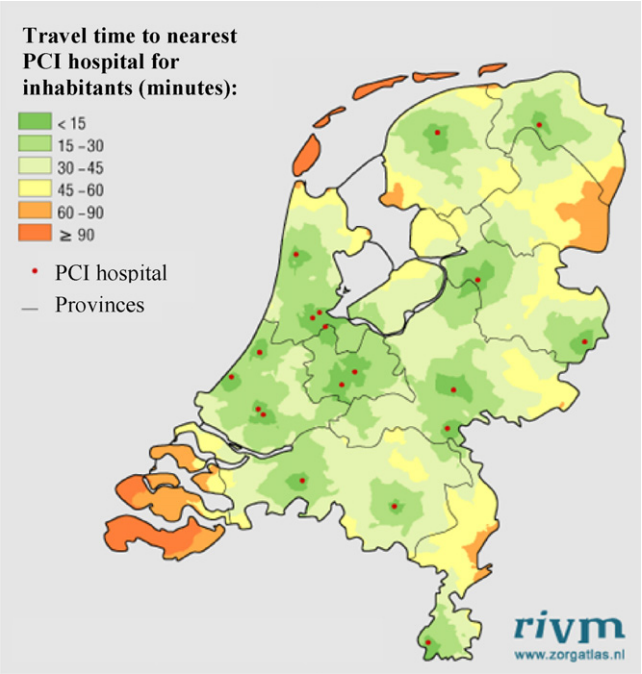
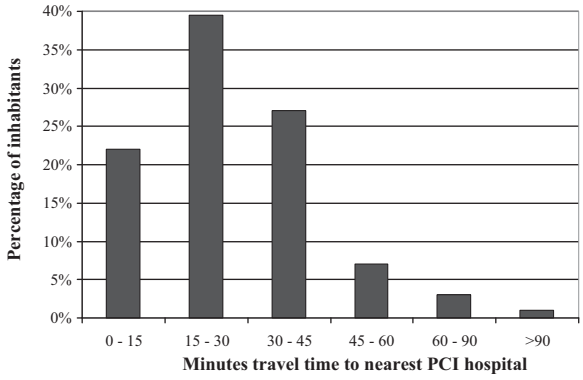


Fig. 1. PCI hospitals in the Netherlands (2006). *Note*: the longest distance from west to east is 260 km, from north to south the longest distance is 320 km.



Source: www.zorgatlas.nl

Fig. 2. Travel time to nearest PCI hospital in the Netherlands (2006).

hospital's specialty led to a significant increase in the number of (non-emergent) patients treated and the relevant sector's revenue. Bundorf et al. (2009) examined the effect of providing consumers with quality information in the context of fertility clinics, finding that public reporting of quality significantly affected patients' choice of clinic. Epstein (2010) found that the publication of coronary artery bypass graft (CABG) surgery report cards in 2002 in Pennsylvania did not have a large effect on patient–surgeon sorting. This finding is partly confirmed by Wang et al. (2011). Examining the impact of the same report cards, they found a negative effect on the utilisation of poor performing and unrated surgeons but no effect on the utilisation of more highly rated surgeons or hospitals of any rating.

To maximise the benefits of public reporting, certain preconditions must be met (Marshall et al., 2003). For example, quality information should be tailored to the needs of users and be broad in scope. An adequate case-mix adjustment is required for meaningful comparability, particularly when data on outcomes are reported. Inadequate case-mix adjustment gives hospitals the opportunity to improve measured quality by discriminating against higher-risk patients (risk selection or "cream skimming"). Dranove et al. (2003) have empirically shown that report cards may indeed encourage hospitals to "game" the system by avoiding sick patients or seeking healthy patients. They found that the adoption of mandatory CABG surgery report cards in New York and Pennsylvania in the early 1990s led to substantial risk selection by providers.

In this paper, we examine the relationship between hospital quality, as measured by public quality ratings, and patient hospital choice for angioplasty in the Netherlands.[1] It is among the first studies in this field outside the United States.[2] In the Netherlands, the costs of angioplasty are insured under the mandatory basic health insurance scheme (Health Insurance Act) and reimbursements to hospitals are fixed by the government. Consequently, price competition is absent in this market, providing an opportunity to focus on quality competition. An important quality indicator available to patients is the percentage of heart failure patients that was readmitted to the same hospital within 12 weeks of discharge. This indicator, however, is not adjusted for case mix and may therefore be vulnerable to manipulation by the hospitals if provided with incentives to do so.

For the analysis, we use individual claims data from a large health insurer for all enrolees admitted to a hospital for non-emergency angioplasty in 2006. Using these data, we estimate a mixed logit model of patients' hospital choices. We use the estimated coefficients to predict changes in hospital demand caused by changes in reported quality ratings with a focus on the readmission rate.

2. Market for angioplasty in the Netherlands

In the Netherlands, only hospitals with a government-granted permit are allowed to perform angioplasty, also known as percutaneous coronary intervention (PCI). As a result, the Dutch government exercises control over specialised cardiac procedures to safeguard the care provided in terms of quality, capacity, and geographical distribution.[3] In 2006, 19 of about 100 Dutch general hospitals were allowed to perform PCI procedures and about 95 percent of the Dutch population was able to reach at least one of these hospitals within 60 min travel time (Figs. 1 and 2).

Each patient admitted to a Dutch hospital or visiting a hospital's outpatient clinic is categorised into a Diagnosis and Treatment Combination (DTC), which includes all inpatient and outpatient hospital activities and services associated with the patient's care from the initial consultation to the final check-up. Although for some routine services hospitals and insurers are allowed to negotiate prices per DTC, prices for angioplasty are determined by the Dutch Healthcare Authority (NZa) and do not vary across hospitals. In 2006 the fixed prices (including reimbursement for

[1] Note that, because we did not have panel data, our study used cross-sectional data and therefore did not test the impact of the release of quality information on patient hospital choice.

[2] Sivey (forthcoming) examined patients' choice of hospital for cataract surgery in the UK NHS. He focused on the trade-off between travel time and waiting time and found the first to have a much stronger effect on the probability of hospital choice than the latter.

[3] In the US certificate of need (CON) regulation was imposed mainly to prevent a costly medical arms race. As in the Netherlands, it also required hospitals to obtain approval from the state government before establishing certain services, such as angioplasty. Because prospective payment and managed care lessened the need for such controls, many states have repealed CON regulation for angioplasty (Vaughan Sarrazin and Rosenthal, 2004).