



# Paying for primary care: A cross-sectional analysis of cost and morbidity distributions across primary care payment models in Ontario Canada



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## ABSTRACT

Policy-makers desire an optimal balance of financial incentives to improve productivity and encourage improved quality in primary care, while also avoiding issues of risk-selection inherent to capitation-based payment. In this paper we analyze risk-selection in capitation-based payment by using administrative data for patients ( $n = 11,600,911$ ) who were rostered (i.e., signed an enrollment form, or received a majority of care) with a primary care physician ( $n = 8621$ ) in Ontario, Canada in 2010/11. We analyze this data using a relative distribution approach and compare distributions of patient costs and morbidity across primary care payment models. Our results suggest a relationship between being in a capitation-based payment scheme and having low cost patients (and presumably healthy patients) compared to fee-for-service physicians. However, we do not have evidence that physicians in capitation-based models are reducing the care they provide to sick and high cost patients. These findings suggest there is a relationship between payment type and risk-selection, particularly for low-cost and healthy patients.

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## 1. Introduction

Payment incentives are one intervention that policy-makers use to achieve reform objectives. With respect to primary care, there have been a number of recent examples: the Quality for Outcomes Framework (QOF) in the UK linked physician payment to measures of performance (Roland, 2004; Doran et al., 2006); and the Shared Savings Program for US Medicare has provided financial incentives for providers to work together to reduce costs and improve quality of care (Fisher et al., 2009). Despite the focus on incentives as a policy tool, there are gaps in our understanding about the success and failure of such policies, and about the optimal way to pay doctors. Robinson (2001) provides a comprehensive overview of physician payment models; he suggests the worst forms of

payment are 'pure' payment schemes (including fee-for-service (FFS), capitation (CAP), and salary), as opposed to blended models. It is well accepted, for instance, that FFS encourages increased service volume, but raises issues with respect to over-treatment, and generates budgetary uncertainty for funders (Evans, 1974; Léger, 2008). On the other hand, such prospective payment models as CAP and salary discourage over-treatment, but may result in under-treatment and risk selection based on patient complexity (Bloor and Maynard, 2006; Léger, 2008).

Risk selection has been an important issue in payment reform for primary care physicians; for instance, Gravelle et al. (2010) found evidence of general practitioner gaming based on patient characteristics after the introduction of the QOF in the UK. To some extent, this can be minimized by risk-adjusting payments, but the state of risk-adjustment is still under development; most rely on age and sex, which has been shown to be inadequate to adjust for patient morbidity (Sibley and Glazier, 2012). However, it is important to note that the relationship between payment and physician

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behavior predicted by economic models is often constrained by ethical and professional responsibilities (Ellis and McGuire, 1986). Nonetheless, payment models must find an optimal balance of incentives in order to avoid issues of overuse, underuse and misuse (Institute of Medicine, 2001; Deber et al., 2008). Some have proposed that the optimal payment model includes a mix of FFS and prospective payment (e.g., capitation, salary) (Ellis and McGuire, 1986; Ma, 1994).

Payment reform for primary care physicians (PCPs) in Ontario, Canada (Canada's most populous province), presents an interesting context to study the relationships between payment and physician behavior. The province of Ontario has undertaken a number of reforms to the way PCPs are compensated, adding mixed payment schemes to traditional FFS (Hutchison and Glazier, 2013). These payment schemes rely on formal patient rostering, which involves having patients sign an enrollment form that designates a particular PCP as their usual source of primary care. Formal rostering was introduced as a way of making the relationship between the PCP and their patients explicit and formalizing the obligations of both parties. It also allowed for the transition from FFS to alternative forms of payment, such as mixed capitation that is largely based on age and sex adjusted payments and on PCPs having a definable patient population (CHSRF, 2010). However, PCPs could still be underpaid for high complexity patients and overpaid for low complexity patients, further exacerbating incentives to risk-select. In addition, healthcare utilization and costs are highly skewed even within age-sex groups (Deber and Lam, 2009), with a small number of patients accounting for a disproportionate amount of healthcare costs. PCPs need only avoid a small number of patients to significantly reduce the demand on their resources.

There is considerable empirical literature on the relationship between payment and healthcare provider behavior. A number of studies consider the relationship between payment and health system outcomes. For instance, Hutchison et al. (1996) conducted a retrospective cohort study to determine the impact of capitation payment on hospital utilization; they found physician payment did not have an effect on utilization rates. In addition, there is considerable literature on physician productivity under different forms of remuneration (e.g., Evans, 1974; Brown and Lapan, 1979; Ellis and McGuire, 1986; Thornton and Eakin, 1997; Conrad et al., 1998, 2002; Fortin et al., 2008; Dumont et al., 2008). There has also been a significant amount of research done, particularly in the US, on risk selection and adverse selection amongst hospitals and insurance plans (e.g., Ellis, 1998; Frank et al., 2000; Luft and Miller, 1988).

To our knowledge, there are comparatively fewer studies on the relationship between payment and physician selection of patients. Sorbero et al. (2003) examined patient selection of PCPs using case mix, payment type, and healthcare utilization as explanatory variables in three independent practice associations in the US. The authors found that high users of healthcare services were more likely to change physicians if their current physician received capitation than if they received FFS payment. The authors conjectured that this was either due to PCP risk selection of their "high cost" patients, or that high users were more sophisticated consumers of care and were more easily dissatisfied.

Glazier et al. (2009) compared patient and practice characteristics across compensation schemes in Ontario. The authors used cross-sectional administrative data to find that PCPs in CAP models serve patient populations with higher income, and lower morbidity and co-morbidity levels.

Devlin and Sarma (2008) and Sarma et al. (2010) conducted studies in the Canadian context using data from a cross-sectional national survey of physicians to determine the impact of remuneration on the quantity of visits provided. They compared FFS

remuneration with alternative remuneration schemes and found that PCPs compensated via FFS have significantly higher levels of output, even after controlling for the self-selection of physicians into different payment schemes.

As mentioned earlier, Gravelle et al. (2010) found a relationship between the introduction of pay for performance incentives through the QOF in the UK, and gaming based on patient characteristics. Specifically, they found GPs would report a higher number of patients that were eligible for treatments targeted by financial incentives.

Kralj and Kantarevic (2013) compared the quantity and quality of primary care services in mixed CAP and mixed FFS schemes in Ontario. The authors used a longitudinal administrative dataset to follow a cohort of physicians between 2006 and 2009. They found PCPs who receive CAP payment provide approximately 6% fewer services and visits per day, and were 8%–15% more likely to obtain bonuses for preventative care (e.g., payment for cancer screening), which the authors associate with high quality care. The authors also considered differences in the complexity of formal patient rosters (measured by age and sex adjusted multipliers) and found no significant difference across payment models. However, age and sex does not fully capture complexity (Sibley and Glazier, 2012; Deber and Lam, 2009).

In this paper we examine the extent to which selection is occurring and study its implications for physician costs. The existing evidence, particularly in the Canadian context, seems inconclusive with respect to the existence of patient selection by providers. We also conduct this analysis to determine if there is sufficient evidence to further model and empirically analyze physician behavior under different forms of remuneration. While local context certainly plays a role, we believe the results of this study will have important implications for payment reforms for healthcare providers, particularly in jurisdictions contemplating the introduction of multiple voluntary payment schemes. This includes the UK and the US, where payment reforms are frequent and ongoing, as well as such jurisdictions as Norway, where physicians also receive combinations of FFS and capitation payment (Lindahl and Ringard, 2013).

## 2. Ontario's payment models

In Canada, healthcare falls under provincial jurisdiction, and there can be considerable variation in how care is delivered and paid for within and between provinces/territories (Marchildon, 2013). To receive full federal transfer payments, all provincial/territorial insurance plans must fully cover all "insured services" provided to all "insured persons" (defined as Canadian residents). For historical reasons, the definition of insured services includes all medically necessary care delivered in hospitals or by physicians; provinces/territories can insure beyond these requirements, but are not required to. Canada uses what the OECD calls a public contracting model, whereby private providers (including physicians) receive public payment for insured services (Docteur and Oxley, 2003). Ontario thus uses a single payer insurance model, where all legal residents of the province are enrolled into the Ontario Health Insurance Plan (OHIP); patients must provide their OHIP number to receive insured services. Traditionally, most physicians in Canada were paid on a FFS basis, using a fee schedule jointly negotiated by the provincial ministry of health and the provincial medical association. The fee schedule did not incorporate financial incentives to maintain ongoing relationships with patients, practice in groups or hire multidisciplinary providers, although physicians were able to do so should they so desire.

Although non FFS models had long existed in Ontario, they involved only a small proportion of PCPs. Starting in the early

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