

Health Care Funding, Cost-Containment, and Quality

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1. INTRODUCTION

Even a cursory reading of current health policy analysis and commentary leaves the unmistakable impression that funding reform is critical to improving quality and controlling costs. In the last decade pay-for-performance in particular has entered the pantheon of policy ideas (integrated health systems, report cards, managed care, etc.) that sweep through health policy circles promising to cure the various ills of modern health care. The logic behind pay-for-performance runs something like the following: *Quality in our health care systems falls below expected standards; traditional funding methods do not selectively reward quality; ergo, the way to improve quality is to pay for it.* The idea is compelling, drawing on deeply intuitive (if simplistic) economic and psychological views of motivation: if we want something, pay for it. And for policy makers, pay-for-performance's promises of better performance without requiring them to get involved in the difficult, messy work of changing the delivery system is attractive: give the providers the right incentives and let them figure out how best to achieve the stated objectives.

In this chapter we review the evidence regarding the effectiveness of pay-for-performance, and more generally to consider how funding reform can contribute to achieving the twin aims of improving the quality of care and restraining the growth in health care costs. This is, of course, part of the larger question regarding the use of financial incentives to guide behavior.

To start, funding *per se* should be distinguished from the active use of financial incentives as a policy instrument, or tool, for achieving specific policy objectives. Funding embodies the allocation of monies from a third-party payer (public or private) to health system organizations, providers, and programs that deliver health care services to individuals (Hurley 2010). As such, it is an essential health system activity that unavoidably creates financial incentives. These incentives influence the behavior of health system actors — health care providers, individuals, developers of medical innovations, and even the funders themselves. While any system of funding creates financial incentives, and any sensible design reflects a careful consideration of those incentives, the deliberate, active use of targeted financial incentives to communicate and induce specific desired behaviours is a distinct policy act (Giacomini et al. 1996). This distinction is not merely academic: in the one case a policy maker merely faces reality, and design choices need not be motivated by the desire to communicate policy objectives through financial incentives; in the second case, the policy maker actively chooses to use financial incentives as the instrument for communicating policy objectives and changing behavior.

Governments around the world, including Canada's provincial governments, emphasize funding reform as a pivotal part of efforts to improve quality, performance and cost control.¹ In Canada reform of physician funding emphasizes a shift from traditional fee-for-service payment to alternative methods of payment for primary care, while reform of hospital funding emphasizes a shift from global budgeting to case-based funding (often now called "activity-based" funding). Beyond these changes to base systems of funding, a number of provinces, including British Columbia, Alberta, Manitoba, Ontario, and Nova Scotia, have introduced targeted financial incentives aimed at improving quality of care, especially with respect to preventive services and the management of chronic diseases (Canadian Medical Association 2010). The designs of the initiatives differ across the provinces, but most target financial incentives to improve performance with respect to either preventive care or chronic disease management. It is timely, therefore, to review Canadian and international evidence regarding the effectiveness of funding reform, and targeted financial incentives in particular, on system performance.

The motivating question for this paper presumes that improved quality of care and reduced rates of cost growth are mutually compatible policy goals, asking only how funding reform might further both of these objectives. But it is important to consider briefly whether they are, in fact, mutually compatible goals. The concept of "quality" has many dimensions and interpretations in health care. By "quality," we follow the Institute of Medicine, which defines it as, "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Institute of Medicine 2001, p. 232). Importantly, this conception of quality is not limited to the skill with which a given medical act is performed, but includes the mix of services provided (or in some cases, not provided) to an individual or population, the coordination and appropriateness of those services, and therefore captures essential elements of *health system* quality and performance.

Incontrovertible evidence documents that higher expenditures (and even higher levels of service provision) do not necessarily lead to higher quality. Indeed, it often results in lower quality. Hence, reducing the rate of increase in costs need not negatively affect quality. Some of the most compelling evidence for this derives from studies of inappropriate health care utilization and geographic variations in health care utilization. Much of this comes from the United States (U.S.), but studies from Canada and other countries concur with U.S. findings. Reviews of appropriateness research estimate that up to one-third of all surgical procedures in the United States are clinically inappropriate or are of questionable value (McGlynn 1998; McKethan et al. 2009; Institute of Medicine 2012), and that between 21% and 47% of US health care expenditure is of little or of no value due to failures of care delivery, failures of care coordination, overtreatment, administrative complexity, pricing failures, fraud

¹As do health care analysts and commentators. See, for example, Drummond and Burleton (2010) and Falk *et al.* (2011) for recent Canadian commentaries that emphasize funding reform as part of an overall set of policies to improve quality and fiscal sustainability.

and abuse (Berwick and Hackbarth 2012). In Canada, Wright *et al.*'s widely cited study of elective surgery in British Columbia found that vision scores of approximately 25 percent of patients undergoing cataract surgery indicated that surgery was unwarranted. As documented by the Dartmouth Atlas of Health Care Spending, areas with large differences in medical expenditures show small differences in quality of care or outcomes. According to the Atlas, U. S. Medicare spending per beneficiary for people with severe chronic illness in the last two years of life varies dramatically by state and hospital referral region, even when controlling for underlying differences in patient populations. These spending differences were independent of the type or severity of the illness and were instead related to geographical variation in practice patterns (Fisher, Bynum, and Skinner 2009). Analogous studies document similar variations in countries outside the U.S. (Appleby et al. 2011).

But is the converse true? Will improved quality help restrain the growth in health care costs? Maybe. Following from the evidence cited above, higher quality in some cases calls for providing fewer services; and good quality primary care can reduce the specialist and hospital costs associated with treating ambulatory-care sensitive conditions. But in many areas of effective care, current rates of use fall well below that which would occur in a well performing, high-quality health care system. Improved quality in these areas will require increased service provision at increased cost in the short-term. Evidence from the U.S. indicates, for instance, that Americans receive just 55 percent of recommended treatments for preventive care, acute care, and chronic care management (McGlynn and al. 2003). The situation in Canada is no better in many of these areas — this is one of the major motivations for provincial pay-for-performance schemes targeted at preventive services and chronic care.² Many expect that higher quality will, over time, help control costs by eliminating inappropriate utilization, reducing complications, readmissions and related phenomena, and improving health. But in the end this is an empirical question. A recent review concluded that sometimes quality improvement initiatives that claim to generate savings do so, sometimes they do not, but mostly we do not know because good research is limited (Øvretveit 2009). Regardless, we should pursue improved quality because it is the right thing to do, knowing that sometimes it will lead to higher costs but also increased benefits sufficient to justify those costs.

In reviewing the evidence on how funding reform can contribute to the twin aims of higher quality and controlling costs, we begin with evidence regarding the effectiveness of pay-for-performance, examining first the limited Canadian evidence and then place that evidence in the context of international experience with pay-for-performance. We then consider the potential for broader funding reform to contribute to improving system performance.

² As noted below, for example, baseline rates of coverage for the preventive services targeted by Ontario's preventive care bonus scheme varied from 15 percent for colorectal cancer screening to 65 percent for mammography. Further, only 27 percent of diabetic Ontarians received the optimal number of monitoring tests for cholesterol, hemoglobin and retinopathy.

2. TARGETED FINANCIAL INCENTIVES

As its use and salience in policy has increased, the precise meaning of the term “pay-for-performance” has become less clear and it is now used to refer to a wide variety of funding arrangements, some of which only tangentially link pay and performance. We adopt a relatively narrow interpretation in which pay-for-performance refers to the explicit use of targeted financial incentives, usually in addition to a base payment scheme, to encourage specific behaviors intended to improve quality of care. Although the design of pay-for-performance schemes varies across jurisdictions (e.g., Canada, the U.S., the U.K., and Australia), a common element is explicit financial incentives designed to change specific quality-related behaviours. In the physician sector in particular, pay-for-performance is normally grafted on top of a base payments scheme (e.g., in the physician sector, fee-for-service, capitation, or blended payment) and pays performance bonuses to providers whose service provision meets or exceeds pre-specified thresholds (hospital-based schemes are more likely to employ a combination of both bonuses and penalties). By targeting the performance bonuses on areas of care for which good evidence links provision to high-quality care, the incentive is intended to increase compliance with evidence-based standards for high-quality of care. Pay-for-performance can target individual providers, provider groups or health care institutions such as hospitals and long-term care facilities, but it has been particularly prominent within primary care, targeting preventive services (e.g., flu shots, cervical cancer screening, colon cancer screening, breast cancer screening) or chronic conditions (e.g., diabetes) for which evidence indicates rates of uptake of effective services fall well below optimal levels.

Ontario was the first province in Canada to introduce physician pay-for-performance incentives, initially in the limited context of its capitation-funded Health Service Organizations in 1990. In 2004 Ontario expanded both the set of services included and the number of physicians eligible to receive the performance-based bonus payments. The Ontario scheme pays primary care physicians bonuses when their rates of provision of targeted services meet or exceed pre-specified thresholds. British Columbia, Alberta, Manitoba, and Nova Scotia have introduced targeted physician payments aimed at improving the quality of chronic disease management. These initiatives introduced new fee-service codes to support the delivery of a service associated with high quality that has not traditionally been reimbursed. British Columbia’s “Full Service Family Practice Incentive Program”, for example, includes a Chronic Disease Management fee code that provides an annual payment of \$125 to a physician for each patient with a confirmed diagnosis of diabetes or congestive heart failure whose care accords with the BC clinical guideline recommendations.

2.1 The Impact of Pay-for-performance on Quality: Evidence from Canada

The only current evaluations of Canadian incentive schemes examine the effectiveness of targeted financial incentives included within Ontario's primary care reform initiatives.³ Hurley et al. (2011) evaluated the "Cumulative Preventive Care Bonus Scheme," which targets preventive services (Pap smears, mammograms, flu shots for seniors, toddler immunizations, and colorectal cancer screening), and the "Special Payments Scheme," which targets designated services in each of six areas of care of interest to the Ontario Ministry of Health and Long-Term Care (obstetrical deliveries, hospital services, palliative care, office procedures, prenatal care, and home visits). Kiran et al. (2012) evaluated the introduction of a diabetes management assessment fee code intended to encourage regular, comprehensive management of diabetic patients.

Ontario's cumulative preventive care bonus payment scheme included two components: (a) a contact payment fee code of \$6.86 for each eligible patient that a practice contacts to schedule an appointment for one of the included preventive care services; and (b) a cumulative preventive care bonus paid when a physician's provision of a targeted service exceeds defined thresholds in the target population during a defined period (see Table 1). The special payments scheme uses a similar design but provides a fixed payment if service provision for a targeted service reaches a minimum absolute level during the preceding fiscal year.

The evaluation exploited variation in eligibility for the incentive payments to identify their impact on service provision. Only physicians enrolled in a "primary care reform (PCR)" practice were eligible to receive the incentive payments. Physicians who remained in traditional fee-for-service practices were not eligible to receive the incentive payments. Furthermore, the timing of eligibility varied across Ontario's different PCR models. The analysis focused on full-time, community-based family practitioners engaged in comprehensive practice and it employed a number of strategies to control for possible sources of bias (e.g., physicians were not randomly assigned to the PCR models, leading to possible selection bias) and confounding (e.g., PCR practices differ from the traditional fee-for-service practice with respect to more than just eligibility for the P4P incentives).

The study found no response to the contact payment or to the special payment scheme, no response for one of the preventive care services (toddler immunization) and only a modest response to the other four preventive care services (the absolute increases in coverage rates were 2.8, 4.1, 1.8 and 8.5 percentage points respectively for senior flu shot, Pap smear, mammogram, and colorectal cancer screening). The study also investigated how responses varied across physicians. Although the relationships were not strong and consistent across all preventive services, younger physicians tended to respond more than older physicians, physicians in larger practices tended to respond more than

³ We are not aware of any evaluations of performance-related incentives in Alberta, Manitoba and Nova Scotia. A series of reports provide descriptive information regarding the uptake of BC's performance-related codes but does not provide a rigorous evaluation of their effectiveness (the reports can be found at the General Practice Services Committee at: <http://www.gpsc.bc.ca>).

physicians in smaller practices, and physicians with middle levels of baseline compliance tended to respond more than those with either low or high levels of baseline compliance.

Kiran *et al.* (2012) examined physician responses to Ontario's diabetes incentive scheme introduced in 2002 for all family physicians. In 2002, the province created a new code — the Diabetes Management Assessment Fee Code — to encourage the regular, comprehensive management of diabetic patients. A physician could bill the code (value at \$37.00) up to three times per year per diabetic patient and required that the billing physician maintain a diabetes flow sheet that tracked cholesterol, haemoglobin, retinal eye examination, blood pressure, weight, and other parameters relevant to diabetes management (this fee is approximately \$6.00 larger than a standard intermediate assessment code that a physician might alternatively bill for a visit). The analysis found that uptake of the code was low (only 25% of patients with diabetes had a billing for the code during the two-year period 2006-2008), that its introduction was not associated with increased compliance with three evidence-based services (retinal eye exam, HbA.sub.1c and cholesterol measurement), and that physicians who had already been providing the best quality of care before the incentive's introduction were more likely to bill the code. The introduction of the code appears to have rewarded those who were already providing good care while having little or no effect on other physicians.⁴

Overall, Ontario's experience with targeted pay-for-performance incentives indicates that they are not an effective way to improve quality of care through the increased provision of services known to be consistent with good care. How do these findings compare with international experience with pay-for-performance?

2.2 The Impact of Pay-for-performance on Quality: International Evidence

The expanded use of pay-for-performance within health care systems internationally has witnessed a corresponding growth in the study of its effectiveness. The research itself is of mixed quality. Studies with the best research designs (i.e., randomized trials with strong internal validity) tend to be conducted on small samples assessing initiatives targeted at a small set of services, limiting their generalizability. The observational studies do not always control well for sources of bias and confounding. In general, however, most sources of bias (e.g., non-random selection into the pay-for-performance scheme) and confounding (the financial incentives were only one part of a larger initiative) would lead to over-estimates of the effectiveness of pay-for-performance. Hence, to the

⁴ In an evaluation of how physician responses to a second diabetes incentive code Ontario introduced in 2006 — The Diabetes Management Incentive (\$60 per patient), which a physician could claim if their care for a diabetic patient met defined standards —differed between PCR physicians paid by enhanced fee-for-service and PCR physicians paid by a capitation-based blended method, Kantarevic and Kralj (2012) found that those paid by the capitation-based blend were more responsive. Although the study does not document the effect of the incentive on quality of diabetes care, since it did not examine how compliance with the underlying care standards changed either among these physicians or compared to physicians not exposed to the incentive, it does highlight that responses to P4P can differ depending on the base payment method.

extent that bias is present, many studies will suggest that pay-for-performance is more effective than it really is. We first discuss previous reviews of the literature on pay-for-performance and then focus on some key studies from the U.S. and the U.K., where pay-for-performance has been embraced most enthusiastically.

The effectiveness of pay-for-performance has been assessed in a number of systematic reviews (Giuffrida et al. 1999; Armour et al. 2001; Town et al. 2005; Scott et al. 2011). The most recent, Scott et al. (2011), included seven studies that encompassed a variety of performance schemes (e.g., single-threshold target payments, fixed fee-per-patient achieving a given outcome, payments based on relative performance among medical groups) and service types (e.g., smoking cessation, cervical screening, mammography screening, HbA1c, childhood immunisation, chlamydia screening, and asthma medication). One study found no effect on quality and the remaining six showed positive but modest effects on quality of care for some, but not all, primary outcome measures. The review concluded that, “there is insufficient evidence to support or not support the use of financial incentives to improve the quality of primary health care (Scott et al. 2011; p. 2).”

Christianson et al. (2007) reviewed a large number of studies of the impact of financial incentives on health care performance. The review of published articles examining the impact of financial incentives to improve the quality of care delivered by institutional providers and health care practitioners (particularly physicians) concluded that evidence is mixed. Relatively few significant impacts are reported, and because payer programs often include quality improvement initiatives in addition to incentive payments, it is difficult to assess the independent effect of the financial incentives. Overall, the authors concluded that evidence was insufficient to inform the effective design and implementation of pay-for-performance initiatives.

The two countries with perhaps the most extensive experience with pay-for-performance are the U.S. and the U.K. Pay-for-performance in the U.S. is used by private health plans (Rosenthal et al. (2006) estimated that by 2005 over one-half of commercial health maintenance organizations (HMOs) used pay-for-performance, affecting care delivered to over 80 percent of HMO enrollees.), by state governments in Medicaid and children’s health programs, and by the federal government in the Medicare program. The 2010 Patient Protection and Affordable Care Act includes a number of provisions for pay-for-performance, and the Centre for Medicaid and Medicare has several on-going demonstration projects. A recent review of experience with pay-for-performance in the U.S. observed that programs evaluated to date have produced mixed results and that experimentation with their design continues in an effort to make them more effective (James 2012).

Two prominent hospital-based programs include the Premier Hospital Quality Incentive Demonstration Project, which tested the extent to which financial bonuses would improve the quality of care provided to Medicare patients and a Massachusetts-based Medicaid program that offered financial incentives for improving care for pneumonia and prevention of surgical infections. One

evaluation of the Premier demonstration project found no evidence of an improvement in performance scores for pay-for-performance hospitals compared to control-group hospitals (Werner et al. 2011); a second found no difference between pay-for-performance hospitals and control hospitals in 30-day mortality for patients with acute myocardial infarction, congestive heart failure, pneumonia, or coronary artery bypass graft surgery (Jha and Epstein 2011). An evaluation of the Massachusetts Medicaid hospital-based pay-for-performance program similarly found evidence of no improvement in quality (Ryan and Blustein 2011; Ryan, Blustein, and Casalino 2012).

Two of the strongest U.S.-based studies of pay-for-performance in the physician sector evaluated the Quality Incentive Programs introduced in 2002 by the PacifiCare Health Plan, a large network Health Managed Organization, to medical groups in California. Rosenthal et al. (2005) measured physician responses for three preventive care services — cervical cancer screening, mammography and haemoglobin A1c tests — and found that screening rates improved modestly for cervical cancer screening (an increase of 3.6 percentage points, or 10 percent, over baseline) but not for mammography and the haemoglobin A1c test. A follow-up study (Mullen, Frank, and Rosenthal 2010) that examined the effect of PacifiCare's Quality Incentive Program and another large pay-for-performance program by the Integrated Healthcare Association produced mixed results: a positive effect only for cervical cancer screening but no effect for mammography, the haemoglobin A1c test and asthma medication. Overall, the study concluded that the P4P scheme did not meaningfully improve quality.

In 2004, the U.K. National Health Service (NHS) introduced pay-for-performance as a central element of the Quality Outcomes Framework (QOF). The QOF was a complex initiative that included quality indicators with respect to clinical care for defined chronic diseases and specified services; practice organization and management; and patient experience. It also included support for computerized information technology and initiatives to promote team-based care. A number of studies have evaluated the impact of the QOF on quality of care (e.g., Campbell et al. 2007; Campbell et al. 2009; Millett et al. 2007; Vaghela and Thornhill 2009; Serumaga et al. 2011; Doran et al. 2006; Steel et al. 2007), and two recent reviews (Doran and Roland 2010; Gillam, Siriwardena, and Steel 2012) summarize the evidence to date.

The QOF improved certain aspects of processes of care. Practices have become more systematic and active in identifying and reviewing patients with conditions that were subject to the physician incentives, in developing protocols, and in renewing appointment systems. Computer systems now provide prompts during consultations if a target applies. While this is a positive development in many respects, it has also prompted complaints that patients presenting problems compete with framework-related computer alerts for the attention of the GP, that quantifiable aspects of care subject to incentives under the framework are prioritized over less quantifiable aspects of care

(Doran and Roland 2010), and that these and related changes risk creating a kind of “tick-box” medicine (McDonald, White, and Marmor 2009).

Quality-of-care, as measured by compliance with the clinical quality indicators, appears to have improved modestly during the first year in some areas, but to have then plateaued, with little or no continued increase after the second year. A number of analysts (e.g., Campbell et al. 2009) argue that the positive early results may largely reflect non-financial quality initiatives begun prior to the introduction of the incentives, or even contemporaneous other investments in complementary resources such as electronic medical record systems. The QOF appears to have narrowed the gap in performance between practices in the most-deprived and least-deprived regions within the U.K. The evidence that improvements in care processes led to improvements in outcomes is mixed. Improved control of epilepsy and diabetes is associated with fewer emergency admissions for complications, but improved performance with respect to coronary heart disease indicators did not lower hospital admission rates.

Both of the recent reviews (Doran and Roland 2010; Gillam, Siriwardena, and Steel 2012) conclude that the impact of the QOF framework in quality has been modest at best, and caution policy makers about expanding the program further or introducing similar schemes.

2.3 The Impact of Pay-for-performance on Costs

Only a few studies have examined the impact of pay-for-performance on system costs, and even then the assessment of costs was secondary to the assessment of their effectiveness and often incomplete. A recent systematic review of studies that attempted to assess the efficiency of pay-for-performance, and even broadening the criteria to include studies that were not formal economic evaluations, yielded nine studies (Emmert et al. 2012). Further, the combination of mixed findings and poor methodological design (e.g., a number of did not include control groups or include administration costs), led to the conclusion that we do not have sufficient evidence at this time to make any conclusions regarding the efficiency of pay-for-performance. A common observation about bonus-based pay-for-performance is that the cost per unit of change achieved can be high because a large share of bonus payments goes toward providers who already meet the target standards (e.g., Rosenthal et al (2005) found that 75% of all payments went to providers who already met the performance targets at baseline), providing them a windfall gain while doing nothing to improve quality and raising substantially the cost of inducing change among those physician below the target.⁵ At this

⁵ Although a small number of hospital-based schemes have used penalties, pay-for-performance for physicians almost universally entails the payment of bonuses to those who meet targets rather than the imposition of penalties on those who fail to meet performance targets. The evidence behavioural economics and psychology from many contexts reveals that people are more sensitive to losses than to gains (Kahneman 2011), suggesting that penalties would be more effective in changing behaviour. Further, a penalty scheme sends the signal that the current payment system presupposes the delivery of high-quality care, providing full payment to those who

time, however, the evidence base is simply too limited to draw any strong conclusions about the impact of pay-for-performance on system costs.

2.4 Can Pay-for-performance Drive Quality Improvement and Help Bend the Cost Curve?

In summary, current evidence indicates that pay-for-performance schemes that target incentive payments on particular aspects of care are, at best, of mixed effectiveness for improving quality. They induce increased provision in only some services some of the time, and when they do the responses are of modest size. We do not have a good understanding of why providers do not respond. Advocates argue that these disappointing results reflect poor design of pay-for-performance schemes, and in particular that the bonus incentives in many plans have often been too small.⁶ Larger payments may elicit larger responses — though this does not follow automatically (Ariely et al. 2009) — but they would also make the programs more costly. The evidence of generally poor effectiveness alone should caution policy makers that pay-for-performance cannot be the foundation for efforts to improve quality while controlling costs.⁷

We would argue, however, that the effectiveness of such incentive schemes is not even their central deficiency: even if they were effective such pay-for-performance incentives cannot be the foundation for a serious, comprehensive effort to improve quality. As conventionally conceived, pay-for-performance links bonus payments to achieving specific quality targets, most commonly associated with the delivery of a specific service and less commonly with a specific health outcome. The set of services to which such bonuses can be tied, consequently, is small (it is notable that the same, small set of services appear repeatedly across pay-for-performance schemes internationally). A large proportion of what constitutes high-quality care can't be equated with a specific action or the delivery of a specific service to which a bonus payment can be tied. Again, even if the set of such services was large, such pay-for-performance would require a parallel system of hundreds of individual bonus indicators and associated payments — essentially a confusing, administratively cumbersome parallel fee schedule. Finally, such schemes have questionable long-run properties. Attempts to revise quality thresholds over time are resisted by the medical profession. In 2009 NICE recommended increasing maximum levels for the threshold scheme, but GPs rejected this during

meet reasonable standards of care and penalizing only those who fall short. Finally, a penalty scheme has obvious fiscal appeal.

⁶ While the bonuses in many schemes have been relatively small, the UK QOF the payments were large. Between 2002–3 and 2005–6, the average income of a GP who was also a senior practice partner increased nearly 60 percent, or by about £41,600, or \$66,600. By 2005-06 more than one fourth of average GP income stemmed from payments received under the QOF. The bigger problem for QOF may have been that the performance thresholds were set too low.

⁷ Such is the appeal such incentives, however, that the Institute of Medicine, after observing that “most studies [of pay-for-performance] have failed to demonstrate any significant effects on processes of care,” (Institute of Medicine, 2007), nonetheless recommended the introduction of financial incentives for quality (cited in McDonald et al. (2009)).

negotiations with the government over a new contract, so approach thresholds were kept below most practices' level of performance, removing the financial incentive for further quality improvement. Removing bonuses for services once quality has improved can cause performance to fall below pre-incentive levels. In the UK, for example, influenza immunization rates for asthmatics, for example, fell after the corresponding indicator was removed from the framework in 2006–7. This finding is consistent with Kaiser Permanente's experience with the introduction and removal of performance incentives for retinopathy, cervical screening and diabetes blood sugar control. While the introduction of financial incentives was associated with modest improvements in rates of provision for each, the subsequent removal of the incentives caused the rates of provision of retinopathy and cervical screening to fall below the pre-incentive baseline levels of provision (Lester et al. 2010). Such effects are consistent with a concern that, over time, the use of such incentives can erode internal, intrinsic professional motivation (Bowles and Polania-Reyes 2012; Giacomini et al. 1996).

3. FUNDING SCHEMES, COST AND QUALITY

The generally negative findings regarding the effectiveness of targeted incentives embodied in pay-for-performance schemes should not obscure the broader truth that *incentives matter*. Funding schemes create financial incentives and decades of research on fee-for-service, capitation and other payment mechanisms confirm that these incentives shape provider behavior, system costs and (less well documented) quality (Rosen 1989; Gosden et al. 2000). Providers consistently (though not always) respond in predictable ways to the incentives embodied in these basic payment mechanisms. In those instances when they do not respond as expected, consideration of institutional context or some other factors often reveals why.⁸

Improving quality of care and cost control requires careful attention to the incentives within a funding scheme. The financial incentives within a funding scheme should first and foremost not get in the way of good performance, and ideally they should reinforce complementary non-financial approaches to improve performance. Many policy analyses of the impact of fee-for-service on quality, for example, emphasize more the problem that fee-for-service inhibits providers from practicing in a way known to represent better quality than that providers lack incentive to provide high quality. The first order of business, therefore, should be the removal of such incentives so that providers committed

⁸ For example, capitation is often promoted as providing incentive for physicians to care about the health of their enrollees and to therefore provide more preventive care than physicians paid by fee-for-service. Evidence documents that capitation-funded providers do not do so. Why? Because in a world of highly mobile patients, it makes no financial sense for a physician to incur costs today to prevent illness that will occur long in the future when a patient is unlikely to still be enrolled in his or her practice.

to providing high-quality care are not penalized for doing so. With this in mind, it is useful to consider the incentives of basic funding methods on costs and quality.

3.1 The Impact of Funding Methods on Costs and Quality

3.1.1 Payment Method and Health Care Costs

A provider's incentive to control costs varies directly with the extent to which the payment received is set prospectively, before services are provided. Prospectiveness gives a provider incentive to produce services in the least cost way and to use services efficiently to produce health among his or her patients since no additional payment is received for additional activity. In contrast, under retrospective payment the amount of funding received depends on the volume of services provided, creating incentive to provide more services since additional activity attracts additional payment.

Among the traditional funding methods, prospectiveness increases as we go from fee-for-service to case-based payment, capitation, and fully prospective global budget. Fee-for-service is highly retrospective because a provider receives payment for each additional service provided, which is the basis for the widespread concern that fee-for-service leads to overprovision of services. Case-based funding, which is used most extensively in the hospital sector, is more prospective because the payment for an episode of care is set ahead of time and does not vary with the amount of services provided within an episode of care. A provider, therefore, has incentive to reduce the costs associated with treating a given case (but, among other things, also has incentive to increase the number of cases treated since each case attracts additional payment). Capitation extends prospectiveness by fixing the amount a provider receives to assume responsibility for the care of an individual during a defined period of time. A provider therefore has incentive to minimize costs associated with all services covered by the capitation payment. Capitation is used most commonly to fund primary care only, but it can be used for a wide range of physician, hospital and other services. The more services that are included in the capitation rate, the greater is the provider's incentive to control costs across service areas and the lesser is the provider's ability to shift costs off their budget. Finally, fully prospective global budgets, which are used most commonly for hospitals, sets the total funding at the start of the funding period.

While prospectiveness encourages greater cost-consciousness, it also creates incentive for providers to skimp on care, to selectively attract individuals whose costs can be expected to fall below the prospectively set payment, and to shift costs from the settings paid prospectively to settings paid retrospectively. Case-based funding, for example, encourages a hospital to admit less severe patients within a diagnostic category and to discharge patients as soon as possible (perhaps too quickly) to alternative settings. And capitation encourages physicians to enroll lower-risk patients within a risk category and, when used in primary care, encourages physicians to (over) refer patients to specialists.

Blended funding methods that mix prospective and retrospective payment in a single funding scheme, such as a base of capitation with partial fee-for-service, mitigate the unwanted incentives of each, ideally leading to an optimal balance of incentives with respect to service provision and risk-selection (Newhouse 1996).

Evidence from a wide variety of settings confirms that, in general, prospective payment leads to greater cost control while greater retrospective payment leads to higher costs while. A review of costs under capitation in the context of managed care (Hellinger 1996) found significantly lower spending and utilization under capitation. Similarly, the RAND health insurance experiment found two striking results: that annual spending on patients assigned to a capitation-funded HMO was 28 percent lower; and that days in the hospital were 41 percent fewer than patients assigned to a FFS plan with a zero percent coinsurance rate (Newhouse 1993). In both cases it would be incorrect to attribute all of the cost differences to capitation *per se*, since more differed than just payment, but this evidence is consistent with a large body of research. Physicians paid by fee-for-service order substantially more tests, elective procedures, and consultations than physicians paid by capitation; they also hospitalize their patients more (Goodson 2001; Miller 2009). Finally, a randomized control trial of funding found that physicians paid fee-for-service provided more services than physicians paid by salary, and more than recommended by clinical guidelines (Hickson, Altemeier, and Perrin 1987).

Although the evidence clearly indicates that prospective payment provides greater cost control, if poorly designed even a prospective payment scheme can be inflationary. Expenditures are the product of the quantity and price and analyses of alternative payment methods generally take prices as given. Unless a funder pays careful attention to prices, any funding scheme can generate cost increases.⁹ This can play out in a number of ways. Ontario, for instance, has in recent years been a leader among provinces at integrating capitation payment into blended funding for primary care, but has also experienced large growth in physician expenditures (Henry et al. 2012). The reasons are many, but one factor has been a strategy to entice physicians into reformed primary care practices by making such practices financially attractive through generous payments for activities beyond those reimbursed by traditional fee-for-service. Funders also commonly set capitation rates in a manner that links them to expenditures in the FFS sector, thereby transmitting the inflationary pressures of fee-for-service into the capitation sector.¹⁰ Finally, a prospective global budget can be inflationary if it

⁹ One might ask as well about the relationship between price and quality. Payment rates below a minimum level, such as the cost of providing a service, likely have a detrimental effect on quality, but there is no evidence or reason to believe that increasing payment rates above certain reasonable levels leads to higher quality.

¹⁰ Because capitation payment requires a provider to both deliver services and bear financial risk, the capitation payment rate has to reflect both of these activities through the inclusion of a risk premium. Hence, the per-patient capitation rate should exceed the pure expected costs of services themselves. While this raises the costs slightly, the funder benefits because it has transferred financial risk to the provider, so the funder has a fully predictable cost for services included in the capitation rate.

is in reality soft, so that each time a funded institution runs a deficit the funder provides incremental funding, a phenomenon familiar to Canadians.

Other factors beyond price-setting can generate inflationary tendencies even within largely prospective payment systems. A funding scheme that offers providers the free choice among multiple payment methods (e.g., fee-for-service or capitation) induces non-random selection that can lead to higher costs. If offered the choice between fee-for-service and capitation, physicians with high-cost practice styles will tend to choose fee-for-service while physicians with low-cost practice styles will tend to choose capitation, leading to overall costs higher than with a purely fee-for-service system. Separate payment streams across sectors create opportunities for cost-shifting and potentially increased costs. As noted, capitated-funded physicians have incentive to lower the threshold for referral to specialists, thereby shifting costs off their capitated budget and onto the fee-for-service budget, while hospitals in the U.S. responded to case-based payment by discharging patients earlier to skilled nursing facilities (reimbursed retrospectively).

The key message from both theoretical and empirical analyses of alternative funding methods is that putting providers at financial risk (even if only partial) for their actions through funding models that include a larger component of prospective payment provides greater cost control, but that policymakers must pay careful attention to system design to avoid adverse unintended consequences for both quality and cost-control.

3.1.2 Payment Method and Quality of Care

Analyses of the incentives embedded within alternative funding methods offers few clear predictions regarding their comparative impact on quality care, and the limited empirical literature investigating the relationship between funding method and quality offers mixed findings. Because traditional payment mechanisms do not explicitly link payment to quality, they have little direct impact on quality. Any such impact works indirectly through mediating factors. The payment method, for example, influences not only the volume and mix of services as we have emphasized, but also how a practice organizes the production of services. Because the capitation payment received does not depend on who delivers a service or even what specific service is provided, capitation provides greater scope for innovative delivery arrangements that integrate both non-physician providers and selected specialist providers (e.g. psychiatrists) to provide greater access to specialized services such as nutrition and mental health care. Because payment does not depend on the delivery of a service for which a fee code exists, capitated practices can more easily use technologies such as phone- or e-mail consults to interact with patients. And because capitated practices have well-defined, enrolled practice populations, they are better able to create disease registries or contact identifiable groups of patients. None of these, or related features, guarantee higher quality; but they do support wider range of quality-focused activities.

The greatest quality-related concern with prospective payment is its possible detrimental effect on quality of care due to skimping — providing less care than that associated with high quality treatment. A review of the evidence regarding the impact of capitation and case-based funding and quality concluded that the evidence for such a negative impact is “not compelling” (Christianson et al, 2007). There are several possible reasons. The prospective incentives studied were designed, for the most part, to reduce utilization of services, and the link between service reduction and quality in the studies is not clear, especially when utilization may have been excessive prior to the introduction of different payment arrangements. In addition, the literature reports results for a wide range of quality and outcome measures, making it difficult to detect patterns in the findings. And although the use of multiple indicators of quality and patient outcomes, as was the case in many studies, enables a richer interpretation of findings, when results across indicators are conflicting no clear overall picture of the impact of payment method emerges.

4. DIRECTIONS IN PAYMENT REFORM TO SUPPORT IMPROVED QUALITY AND COST-CONTROL

Public and private insurers around the world are experimenting with novel funding arrangements designed to simultaneously improve quality and control costs. In the U.S., passage of the Patient Protection and Affordable Care Act has spurred numerous demonstration projects, pilot programs and other initiatives in innovative payment arrangements (McClellan 2011). The principal aim of much funding reform is to control costs and improve quality by increasing coordination across providers within the health care system. Many of the commonly cited, well-performing health systems — Kaiser Permanente, Group Health of Puget Sound, Virginia Mason, etc. — are unified, fully integrated systems that coordinate care through all parts of their systems. The hope is that better designed funding methods can induce such coordination even in the absence of full organizational integration. A corollary to this is greater appreciation that effective policy requires integrating the design of the funding scheme and the delivery organization so that they jointly reinforce each other toward achieving key system goals. This contrasts with historical approaches, which viewed the design of funding schemes and of delivery organizations as almost independent activities, whereby different funding methods could in principle be mixed and matched with different delivery models. The push toward full capitation during the 1990s in the context of managed care, which was in part aimed at achieving greater integration, is viewed as a failed experiment (McClellan 2011). Providers and patients (perhaps encouraged by providers) alike rebelled against managed care, with both its “interference” in clinical practice and its restrictions on patient choices. Further, many health plans were unable to manage the full financial risk transferred to them.

The new funding methods therefore emphasize blended approaches that combine traditional funding mechanisms in novel ways, transferring some, but not all, financial risk to providers, and linking payment to both cost-savings and quality. This basic idea manifests itself in many ways (e.g., gainsharing between physicians and hospitals, condition-specific capitation (Miller 2009)), but the two most prominent approaches are bundled payment and shared savings models. We therefore focus on these. Each builds on a different element of the current system. Bundled payment builds on extensive experience internationally with case-based funding for inpatient hospital services, and extends the payment bundle to include services delivered by a number of providers and organizations across a full episode of illness. Shared-savings models build on the predominance of fee-for-service payment among physicians, and impose over a patient population a form of global budget that includes both physician and hospital services. Each model, in its own way, attempts to force coordination of care across providers by bringing them under a single funding stream.

Bundled payment represents a case-, or episode-based method of payment that, as noted, combines payment for care across multiple providers and settings, often with explicit links to quality and performance standards. The intent is to create incentive to reduce costs (in part by better coordination) across the providers and services in the bundle, while the linkage to quality measures is intended to guard against skimping on care.

Many health care systems internationally have extensive experience with case-based funding methods in the inpatient hospital sector (Sutherland 2011; Busse et al. 2012), and case-based funding has been used to a lesser extent outside hospitals. Bundled payment, however, is far more challenging to develop than traditional case-based funding methods. The payment must cover a more diverse set of services, provided by multiple providers to a more heterogeneous patient population and, ideally, all linked to explicit quality standards. US-based public and private payers have the greatest experience creating bundled payment, although in 2010 the Netherlands introduced bundled payment for three conditions — coronary pulmonary heart disease, diabetes and cardiovascular risk management — as part of a three-year experiment with bundled payment (Mosca 2012; Struijs and Baan 2011).

Evidence regarding the effectiveness of bundled payment is limited. An early U.S. Medicare demonstration project in the 1990s found that bundled payment for cardiac bypass surgery found that it reduced expenditures on bypass surgery by ten percent and had little or no effect on patient outcomes (Nelson 2012). The Medicare program currently has one demonstration under way and another is to start in 2013. In the private sector the most prominent trial of bundled payment is that by the Geisinger's ProvenCare program. Geisinger is a fully integrated health care plan that first offered bundled payment for bypass surgery and has since expanded it to include selected other surgeries such as hip replacement and cataract removal. In its first year, Geisinger's bundled payment for cardiac surgery led to reductions in adverse events, including a 10 percent drop in readmissions,

shorter average length-of-stay, and reduced hospital charges; more recent data presented by Geisinger executives suggest a 44 percent readmission reduction over eighteen months (Mechanic and Altman 2009).

Perhaps the most ambitious effort to develop bundled payment is the U.S.-based PROMETHEUS (Provider Payment Reform for Outcomes, Margins, Evidence, Transparency, Hassle Reduction, Excellence, Understandability, and Sustainability) Payment Model (de Brantes, Rosenthal, and Painter 2009; Hussey, Ridgely, and Rosenthal 2011). PROMETHEUS is designed to pay for all of the care required to treat a defined clinical episode based on recommendations derived from clinical guidelines and experts. The payment rates for these bundles are called “evidence-informed case rates.” It has thus far defined twenty-one bundles that include chronic medical conditions such as diabetes, acute medical conditions such as acute myocardial infarction, and procedures such as hip replacement. It distinguishes two sources of variation in the total cost of care: variation caused by random factors not controllable by the provider and variation related to “care production” under the control of the provider. PROMETHEUS transfers financial risk for controllable costs to the provider while insurers retain responsibility for financial risk due to random factors. PROMETHEUS has required investment in robust quality measures, creation of new arrangements among providers for assigning accountability, defining episodes, identifying “potentially avoidable costs”, and development of data systems to meet the large demands on data. These challenges have proved formidable. In the case of the PROMETHEUS pilot, as of mid-2011, after three years of work none of the pilot sites had actually executed a bundled payment.

The shared savings approach, in contrast, defines an annual global budget for the care of a defined population, and if at the end of the year actual costs are less than the budget, the savings can be shared between the funder and the providers. The providers, however, only get the savings if their care meets defined quality standards. At the heart of this approach are accountable care organizations (ACOs), networks of physicians and other providers that provide a full continuum of care for a group of patients (Berenson 2012). Providers in the ACO are paid by fee-for-service, and the global budget is based on the historical costs of providing care to the individuals associated with ACO primary care providers.¹¹ In one version of shared savings, providers bear no up-side risks: if expenditures come in below the budget the funder shares savings with the ACO, but if expenditures exceed the budget, the funder bears the full cost. In a second version, the ACO bears both up-side and down-side risk: in addition to sharing savings, if the ACO exceeds the budget it bears a share of

¹¹ Importantly, there is no roster of enrollees. Patients are free to seek care from any provider they wish (inside or outside the ACO). Patients (and their costs and quality indicators) are assigned to an ACO provider based on a patient's patterns of usage. At the end of the year, an ACO provider is assigned those patients who received a plurality of their primary care services from him or her. Note also that the budget is based purely on historical expenditures for associated patient, whether those costs are high or low compared to similar patients who seek patients from other providers.

the excess. There is also considerable variation in how the savings/overruns are shared between the ACO and the funder. Finally, many shared savings models try to distinguish “legitimate” increases in costs from those argued to represent unnecessary/inappropriate care that is the responsibility of the ACO. The ACO is only liable for that portion for which it is held responsible. But the basic approach essentially sets up two funding tracks: the first track is traditional payments based on the volume and intensity of services produced (or whatever existing payment system is in place) and the second track is based on overall cost reductions with improvements in quality. The goal is to provide financial incentives for providers to work together to deliver better care at a lower cost at the person level in a manner that is not possible through fee-for-service or bundled payments (McClellan et al. 2010).

Currently there is no evidence regarding the effectiveness of these types of ACO-based shared savings models either in generating cost savings or improving quality. The Center for Medicaid and Medicare Services is currently testing alternative ACO shared-savings models within the Medicare program, and their use by private health plans is growing (Berenson 2012). The most relevant evidence at present is that from the Medicare Physician Group Practice demonstration project, which involved nine multispecialty group practices and one physician-hospital organization that were eligible to retain a portion of the savings they generated for Medicare, relative to a projected spending target, and they could increase their share of savings depending on how well they performed on a set of 32 quality measures. The results of this demonstration project were mixed. Of the 10 large medical groups participating in the demo, three received no financial bonus at all. Of those that did earn a bonus, the average annual amount was \$5.4 million and ranged from a few hundred thousand dollars to about \$16 million. Only two participants reduced health spending enough to receive bonuses in all five years. The bottom line is that the Physician Group Practice demonstration did not meaningfully reduce spending growth (\$121 per beneficiary over 5 years for Medicare). Each of the physician organizations was able to meet performance benchmarks for the majority of the quality measures.

5. CONCLUSIONS

This review leads to the somewhat paradoxical conclusion that although targeted incentives in the form of conventional pay-for-performance are ineffective in improving quality and controlling costs, incentives do matter, so funding reform an essential part of the overall reforms needed to improve quality in our health care system while reigning in rising costs. We focus on implications of this for research on the use of financial incentives and on approaches to funding reform.

A key research implication is that we need to understand better why providers respond to financial incentives the way they do (or don't). Research on their responses has to go beyond simply documenting the magnitude of any such response to probe provider motivation and how aspects of

the context influence provider responses. As highly functioning professionals with considerable autonomy, strong professional norms and complex responsibilities, it shouldn't be surprising that physician responses to pay-for-performance are more nuanced and variable than are responses of low-skilled workers for which such incentives appear to elicit large, predictable responses.

A key policy implication is that funding reform should be viewed as an enabler rather than the primary driver of change. Achieving a high-quality, low-cost system will require better information, more and better measurement, greater accountability, and stronger integration and coordination. Hence, funding reform must be combined with and support a full range of initiatives — organizational, regulatory, managerial, informational — that mutually reinforce each other in creating a culture of quality improvement and cost-consciousness.

Internationally, efforts to use funding to support improved quality and reduced costs focus on creating funding streams that create accountability across providers, care settings and sectors. Many of the most serious quality and cost problems arise from fragmentation of care and lack of continuity across parts of the system. This is particularly true for the most challenging complex patients with multiple chronic conditions, an ever-growing share of patients. Prominent features of the emerging funding approaches include blended funding that puts providers at some, but not full, financial risk for the costs of the services they provide, and explicit linkages between cost-reduction and quality improvement. In some cases, these linkages are designed primarily to prevent skimping — in a sense, they are defensive. But in others quality improvement is a primary objective of the reform. Though much experimentation is underway regarding the design of such payment systems, currently little evidence exists on the effectiveness of these approaches, either with respect to cost control or quality improvement. So while there is broad agreement about the general approach and the goals, there is no strongly prescriptive evidence to guide specific aspects of the design of funding systems.

What are the implications for Canada? The two foci of funding reform in Canada have been primary care and hospitals. In primary care, provinces are moving away from full fee-for-service payment toward blended approaches incorporating a mix of capitation, partial fee-for-service, programmatic funding, and other minor elements. The shift toward capitation-based blended funding should continue as it has at least two desirable features. It provides much greater scope for alternative practice organizations that incorporate non-physician providers, novel care process, and a greater focus on the health and needs of a defined, rostered patient population. While this shift will not, in and of itself, necessarily lead to quality improvements (indeed, the evidence suggests that it alone will not), it lays a foundation on which other initiatives can be built. Further, given the dramatic growth in medical school enrolment over the decade and the pending growth in physician supply, controlling costs for physician services demands a much smaller role for open-ended fee-for-service payment.

Funding reform in the Canadian hospital sector has emphasized a shift from global budgets to case-based payment for inpatient care (under the label of activity-based payment). The precise goals of this shift are not always well articulated, but they include increased hospital throughput, decreased average length of stay, increased admissions, increased efficiency in the production of hospital-based care, and reduced costs. While the evidence of its impact on volume and length-of-stay is strong, evidence on productive efficiency is equivocal, and evidence of its impact on costs suggests that the opposite is more likely (for a discussion of these issues, see Sutherland (2011) and Sutherland et al. (2011)).¹²

Neither of these reforms represents will create the kinds of accountability and coordination across providers that characterize trends in funding reform outside of Canada. But they represent a shift in this direction. Pushed further and combined with complementary non-financial quality initiatives, such funding reform can move us closer to realizing the vision of improved quality within a fiscally sustainable system.

¹² Even if it creates greater incentive for efficiency in the production of hospital services, the larger source of inefficiency is in the use of hospital services (i.e., in appropriate care), which activity-based funding address in only a limited way.

Table 1: Ontario's Performance-based Incentive Payments

Service	Payment Criterion	Bonus Payment (as of 2006)
Preventive Care Service Enhancement Payments		
<i>Payment for Contacting Eligible Patients to Obtain the Preventive Service</i>		
		<ul style="list-style-type: none"> • \$6.86 for each documented contact for eligible patients
<i>Cumulative Care Preventive Service Bonus</i>		
Seniors' influenza immunization	Proportion of a FP's rostered patients aged 65 or over who received a flu shot during the previous flu season (generally August to December)	<ul style="list-style-type: none"> • 60% of target population: \$220 • 65% of target population: \$440 • 70% of target population: \$770 • 75% of target population: \$1,100 • 80% of target population: \$2,200
Toddler immunization	Proportion of a FP's rostered children aged 30-42 months who received a set of 5 child immunizations by the age of 30 months	<ul style="list-style-type: none"> • 85% of target population: \$440 • 90% of target population: \$1,100 • 95% of target population: \$2,200
Pap smear	Proportion of FP's rostered female patients aged 35-69 who received a Pap smear for cervical cancer screening during the previous 30 months	<ul style="list-style-type: none"> • 60% of target population: \$220 • 65% of target population: \$440 • 70% of target population: \$660 • 75% of target population: \$1,320 • 80% of target population: \$2,200
Mammogram	Proportion of FP's rostered female patients aged 50-69 who received a mammogram for breast cancer screening during the previous 30 months	<ul style="list-style-type: none"> • 55% of target population: \$220 • 60% of target population: \$440 • 65% of target population: \$770 • 70% of target population: \$1,320 • 75% of target population: \$2,200
Colorectal cancer screening	Proportion of FP's rostered patients aged 50-74 who received a colorectal screening test by Fecal Occult Blood Testing during the previous 30 months	<ul style="list-style-type: none"> • 15% of target population: \$220 • 20% of target population: \$440 • 40% of target population: \$1,100 • 50% of target population: \$2,200
Annual Special Payments		
Obstetrical deliveries	5 or more specified obstetrical services to 5 or more patients in a fiscal year	\$3,200 (increased to \$5,000 in October 2007)
Hospital services	Specified hospital services totaling \$2,000 in any fiscal year provided to all patients	\$5,000, increased to \$7,500 in April 2005 for those with a Rurality Index of Ontario score greater than 45
Palliative care	Specified palliative care services provided to four or more palliative care patients in a fiscal year	\$2,000
Office procedures	Specified office procedures totaling \$1,200 in a fiscal year provided to rostered patients	\$2,000
Prenatal care	Specified prenatal care services provided to five or more rostered patients in the previous fiscal year	\$2,000
Home visits	100 or more home visits provided to rostered patients in the previous fiscal year	\$2,000

See Hurley et al (2011) for additional details.

References

- Appleby, J., V. Raleigh, F. Frosini, G. Bevan, H. Gao, and T. Lyscom. 2011. *Variations in health care: The good, the bad and the inexplicable*. London: The King's Fund.
- Ariely, D., U. Gneezy, G. Loewenstein, and N. Mazar. 2009. "Large Stakes and Big Mistakes." *Review of Economic Studies* no. 76 (2):451-469.
- Armour, B., M. Pitts, R. Maclean, and et al. 2001. "The Effect of Explicit Financial Incentives on Physician Behavior." *Archives of Internal Medicine* no. 161 (10):1261-1266.
- Berenson, R. 2012. "Health Policy Brief: Next Steps for ACOs." *Health Affairs* no. January 31.
- Berwick, D., and A. Hackbarth. 2012. "Eliminating Waste in U.S. Health Care." *JAMA* no. 307 (14):1513-1516.
- Bowles, S., and S. Polania-Reyes. 2012. "Economic Incentives and Social Preferences: Substitutes or Complements?" *Journal of Economic Literature* no. 50 (2):368-425.
- Busse, R., A. Geissler, W. Quentin, and M. Wiley. 2012. *Diagnosis-Related Groups in Europe: Moving towards transparency, efficiency and quality in hospitals*. Berkshire, England: Open University Press.
- Campbell, S. M., D. Reeves, E. Kontopantelis, B. Sibbald, and D. M. Roland. 2009. "Effects of Pay for Performance on the Quality of Primary Care in England." *New England Journal of Medicine* no. 361 (4):368-378.
- Campbell, S., D. Reeves, E. Kontopantelis, E. Middleton, B. Sibbald, and M. Roland. 2007. "Quality of primary care in England with the introduction of pay for performance." *New England Journal of Medicine* no. 357 (2):181-190.
- Canadian Medical Association. 2010. *Health Care Transformation in Canada: Change that Works, Care that Lasts*. Ottawa: Canadian Medical Association.
- Christianson, J., S. Leatherman, and K. Sutherland. 2007. *Financial incentives, healthcare providers and quality improvements; A review of the evidence*. London: The Health Foundation.
- de Brantes, F., M. Rosenthal, and M. Painter. 2009. "Building a Bridge from Fragmentation to Accountability—The Prometheus Payment Model." *New England Journal of Medicine* no. 361 (11):1033-1036.
- Doran, T., C. Fullwood, H. Gravelle, and et al. 2006. "Pay-for-performance programs in family practices in the United Kingdom." *New England Journal of Medicine* no. 355 (18):375-384.
- Doran, T., and M. Roland. 2010. "Lessons from Major Initiatives to Improve Primary Care in the United Kingdom." *Health Affairs* no. 29 (5):1023-29.
- Drummond, D., and D. Burleton. 2010. *Charting a Path to Sustainable Health Care in Ontario: 10 proposals to restrain cost growth without compromising quality of care*. Vol. TD Economics Special Report, May 27. Toronto: TD Bank Financial Group.
- Emmert, M., F. Eijkenaar, H. Kemter, A. S. Esslinger, and O. Schoffski. 2012. "Economic Evaluation of Pay-for-performance in Health Care: A Systematic Review." *European Journal of Health Economics* no. 13 (6):755-767.
- Falk, W., M. Mendelsohn, and J. Hjartarson. 2011. *Fiscal Sustainability and the Transformation of Canada's Health Care System*. Toronto: Mowat Centre and the School of Public Policy and Governance at the University of Toronto.
- Fisher, E. A., J. P. Bynum, and J. S. Skinner. 2009. "Slowing the Growth of Health Care Costs --- Lessons from Regional Variation." *New England Journal of Medicine* no. 360 (February 26):849-852.

- Giacomini, M., J. Hurley, J. Lomas, V. Bhatia, and L. Goldsmith. 1996. *The Many Meanings of Money: A Health Policy Analysis Framework for Understanding Financial Incentives*. Hamilton, ON: McMaster University Centre for Health Economics and Policy Analysis Working Paper 96-6.
- Gillam, S., A. Siriwardena, and N. Steel. 2012. "Pay-for-Performance in the United Kingdom: Impact of the Quality and Outcomes Framework—A Systematic Review." *Annals of Family Medicine* no. 10 (5):461-468.
- Giuffrida, A., T. Gosden, F. Forland, and et al. 1999. "Target payments in primary care: effects on professional practice and health care outcomes." *Cochrane Database of Systematic Reviews* no. 4.
- Goodson, J. D. 2001. "The Future of Capitation: The Physician Role in Managing Change in Practice." *Journal of General Internal Medicine* no. 16 (4):250-256.
- Gosden, T., F. Forland, I. S. Kristiansen, M. Sutton, B. Leese, A. Giuffrida, M. Sergison, and L. Pedersen. 2000. "Capitation, Salary, Fee-for-Service and Mixed Systems of Payment: Effects on the Behaviour of Primary Care Physicians." *The Cochrane Library* (4).
- Hellinger, F. J. 1996. "The Impact of Financial Incentives on Physician Behavior in Managed Care Plans: A Review of the Evidence." *Medical Care Research and Review* no. 53 (3):294-314.
- Henry, D., S. Schultz, R. Glazier, R. S. Bhatia, I. Dhalla, and A. Laupacis. 2012. *Payments to Ontario Physicians from Ministry of Health and Long-Term Care Sources 1992/93 to 2009/10*. Toronto: Institute for Clinical Evaluative Sciences.
- Hickson, G. B., W. A. Altemeier, and J. M. Perrin. 1987. "Physician Reimbursement by Salary or Fee-for-Service: Effect on Physician Practice Behaviour in a Randomized Prospective Study." *Pediatrics* no. 80 (3):344-350.
- Hurley, J. 2010. *Health Economics*. Toronto: McGraw-Hill Ryerson.
- Hurley, J., and E. Mentzakis. 2011. *Existence and Magnitude of Health-related Externalities: Evidence from a Choice Experiment*. Hamilton, ON: McMaster University Centre for Health Economics and Policy Analysis, Working Paper No. 11-1.
- Hussey, P. S., M. S. Ridgely, and M. Rosenthal. 2011. "Implementing New Payment Models The PROMETHEUS Bundled Payment Experiment: Slow Start Shows Problems In Implementing New Payment Models." *Health Affairs* no. 30 (11):2116-2124.
- Institute of Medicine. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, D.C.: National Academy Press.
- . 2012. *Best care at lower cost: The path to continuously learning health care in America*. Washington, D. C. : The National Academies Press.
- James, J. 2012. "Health Policy Brief: Pay-for-Performance." *Health Affairs* no. October 11.
- Jha, A. K., Orav E. J., and A. Epstein. 2011. "Low-Quality, High-Cost Hospitals, Mainly in South, Care for Sharply Higher Shares of Elderly Black, Hispanic, and Medicaid Patients." *Health Affairs* no. 30 (10):1904-1911.
- Kahneman, D. 2011. *Thinking, Fast and Slow*. New York: Farrar, Strauss and Giroux.
- Kantarevic, J., and B. Kralj. 2012. "Link Between Pay for Performance Incentives and Physician Payment Mechanisms: Evidence from the Diabetes Management Incentive in Ontario." *Health Economics* no. Forthcoming.
- Kiran, T., J. C. Victor, B. R. Shah, and R. H. Glazier. 2012. "The Relationship Between Financial Incentives and Quality of Diabetes Care in Ontario, Canada." *Diabetes Care* no. 35 (5):1046-1055.
- McClellan, M. 2011. "Reforming Payments to Health Care Providers: The Key to Slowing Health Care Cost Growth While Improving Quality?" *Journal of Economic Perspectives* no. 25 (2):69-92.
- McClellan, M., A. McKethan, J. Lewis, J. Roski, and E. Fisher. 2010. "A National Strategy to Put Accountable Care into Practice." *Health Affairs* no. 29 (5):982-990.

- McDonald, R., J. White, and T. Marmor. 2009. "Paying for Performance in Primary Medical Care Learning about and Learning from ``Success" and ``Failure" in England and California." *Journal of Health Politics, Policy and Law* no. 34 (5):747-776.
- McGlynn, E. A. 1998. *Assessing the Appropriateness of Care: How Much Is Too Much?* Santa Monica, CA: Rand Corporation.
- McGlynn, E., and et al. 2003. "The Quality of Health Care Delivered to Adults in the United States." *New England Journal of Medicine* no. 348 (26):2635-2645.
- McKethan, A., M. Shepard, S. L. Kocot, N. Brennan, M. Morrison, and N. Nguyen. 2009. *Improving Quality and Value in the U.S. Health Care System*. Washington, D. C.: Bipartisan Policy Center.
- Mechanic, R., and S. Altman. 2009. "Payment Reform Options: Episode Payment Is A Good Place To Start." *Health Affairs* no. 28 (2):w262-w271.
- Miller, H. 2009. "From Volume To Value: Better Ways To Pay For Health Care." *Health Affairs* no. 28 (5):1418-1428.
- Millett, C., J. Gray, S. Saxena, G. Netuveli, and A. Majeed. 2007. "Impact of a pay-for-performance incentive on support for smoking cessation and on smoking prevalence among people with diabetes." *CMAJ* no. 176 (12):1705-1710.
- Mosca, I. 2012. Personal Communication, November 14.
- Mullen, K. J., R. G. Frank, and M. B. Rosenthal. 2010. "Can you get what you pay for? Pay-for-performance and the quality of healthcare providers." *Rand Journal of Economics* no. 41 (1):64-91.
- Nelson, L. 2012. *Lessons from Medicare's Demonstration Projects on Value-Based Payment*. Washington, D. C. : Congressional Budget Office, Working Paper 2012-02.
- Newhouse, J. and the Health Insurance Experiment Group. 1993. *Free for All? Lessons from the RAND Health Insurance Experiment*. Cambridge, MA: Harvard University Press.
- Newhouse, J. P. 1996. "Reimbursing Health Plans and Health Providers: Efficiency in Production Versus Selection." *Journal of Economic Literature* no. 34 (3):1236-1263.
- Øvretveit, J. 2009. *Does improving quality save money? A review of evidence of which improvements to quality reduce costs to health service providers*. London: Health Foundation.
- Rosen, B. 1989. "Professional Reimbursement and Professional Behavior: Emerging Issues and Research Challenges." *Social Science and Medicine* no. 29 (3).
- Rosenthal, M., R. Frank, Z. Li, and A. Epstein. 2005. "Early Experience with Pay for Performance: From Concept to Practice." *JAMA* no. 294 (14):1788-1793.
- Rosenthal, Meredith B., Bruce E. Landon, Sharon-Lise T. Normand, Richard G. Frank, and Arnold M. Epstein. 2006. "Pay for Performance in Commercial HMOs." *New England Journal of Medicine* no. 355 (18):1895-1902. doi: doi:10.1056/NEJMsa063682.
- Ryan, A., and J. Blustein. 2011. "The Effect of the MassHealth Hospital Pay-for-Performance Program on Quality." *Health Services Research* no. 46 (3):712-728.
- Ryan, A., J. Blustein, and L. Casalino. 2012. "Medicare's Flagship Test of Pay-for- Performance Did Not Spur More Rapid Quality Improvement among Low-Performing Hospitals." *Health Affairs* no. 31 (4):797-805.
- Scott, A., P. Sivey, D. Ait-Ouakrim, L. Willenberg, L. Naccarella, J. Furler, and D. Young. 2011. "The Effect of Financial Incentives on the Quality of Health Care Provided by Primary Care Physicians." *Cochrane Database of Systematic Reviews* no. 9 (CD008451).
- Serumaga, B., D. Ross-Degnan, A. Avery, R. Elliot, S. R. Majumdar, and S. Soumerai. 2011. "Effect of pay for performance on the management and outcomes of hypertension in the United Kingdom: interrupted time series study." *BMJ* no. 342 (7792):doi:10.1136/bmj.d108.
- Steel, N., S. Maisey, A. Clark, R. Fleetcroft, and A. Howe. 2007. "Quality of clinical primary care and targeted incentive payments: an observational study." *British Journal of General Practice* no. 57 (359):449-454.

- Struijs, J. N., and C. A. Baan. 2011. "Intergrating Care through Bundled Payment - Lessons from the Netherlands." *New England Journal of Medicine* no. 364 (11):990-991.
- Sutherland, J. 2011. *Hospital Payment Policy in Canada: Options for the Future*. Ottawa: Canadian Health Services Research Foundation.
- Sutherland, J., M. Barer, R. Evans, and R. T. Crump. 2011. "Will Paying the Piper Change the Tune?" *HealthCare Policy* no. 6 (4):14-21.
- Town, R., R. Kane, P. Johnson, and M. Butler. 2005. "Economic Incentives and Physicians' Delivery of Preventive Care." *American Journal of Preventive Medicine* no. 28 (2):234-240.
- Vaghela, P., and J. Thornhill. 2009. "Population Intermediate Outcomes of Diabetes Under Pay-for-Performance Incentives in England From 2004 to 2008." *Diabetes Care* no. 32 (3):427-429.
- Werner, R., J. Kolstad, E. Stuart, and D. Polsky. 2011. "The Effect of Pay-for-Performance in Hospitals: Lessons for Quality Improvement." *Health Affairs* no. 30 (4):690-698.