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The Paradox of Productivity, Technology, and Innovation in Canadian Healthcare

International surveys reveal a troubling amount of inefficiency in terms of how well public funds are spent on Canadian healthcare relative to our peers. More effective healthcare delivery could be a major catalyst for nationwide growth and well-being.

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The Study In Brief

Measures to raise the rate of productivity growth in the Canadian economy have been a prominent element in our economic policy debate. With healthcare now accounting for well over a tenth of GDP, the efficiency with which healthcare resources are used has a significant impact on overall productivity, and issues relating to new technology and innovation in healthcare have been attracting increasing attention.

In this *Commentary*, we discuss how the problem of measuring the healthcare sector's contribution to GDP has given the misleading impression that healthcare productivity growth has been slow in the past. New medical technology has helped raise both life expectancy and the average quality of life; if we had had methods to properly value these improvements, healthcare's productivity growth would in all likelihood have looked quite impressive.

But healthcare has claimed a larger share of resources over time; with our aging population this trend is likely to continue. And while the productivity of healthcare resources is higher today than in the past, our healthcare system does not compare favourably with those in many other countries. There is evidence to suggest that a substantial share of our healthcare resources essentially are wasted, being used for tests and interventions of no or little value. If ways could be found to gradually reduce this waste, productivity growth in healthcare could be boosted substantially.

In looking for reasons why Canada has experienced slow aggregate productivity growth, observers have pointed to Canada's relatively low spending on R&D, and have advocated government policies to more actively support it. We think such policies can be justified in their own right: Canada has plenty of talented researchers whose innovations could be exploited throughout the world. But we don't think more Canadian R&D would necessarily be an effective way to increase productivity in our healthcare system. Canada is a small country, and most of the productivity-enhancing innovations and new technology that could be adopted here have been developed elsewhere. What is more important than increased R&D is that providers and managers in our system have strong incentives to adopt cost-efficient technology.

To encourage this, provincial governments, with support from Ottawa, should experiment with new models of provider payment that strengthen their incentive to adopt cost-effective drugs, treatment methods, and diagnostic tests. As well, governments should work on creating a system of Health Technology Assessment (HTA) that both discourages new technology that is too costly, and is nimble enough to not impede the adoption of efficient innovations.

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Canada's poor productivity performance is often flagged by leading policymakers as a drag on improvements to Canadians' quality of life.

On taking power in the fall of 2015, the Canadian Liberal government appointed a minister of innovation, science and economic development to work specifically on measures to boost productivity – putting the issue high on the federal government's agenda. Further, the finance minister's Advisory Council on Economic Growth recently highlighted the healthcare sector, particularly life sciences and medical devices, as a sector capable of contributing more broadly to economic growth (ACEG 2017). Jane Philpott, the federal minister of health, has stated that some of the ideas in the 2015 report of the Advisory Panel on Healthcare Innovation (commonly referred to as the Naylor Report, after its chair David Naylor) could become the basis for measures to improve the performance of the healthcare sector.

The performance of this sector is an important determinant of aggregate productivity: it uses over 10 percent of the economy's productive resources, and its share has, with some fits and starts, been rising over time. With an aging population slowing economic growth and increasing demand pressures, healthcare is likely to continue to rise as a share of the economy (Parliamentary Budget Office 2016). As Canada's broader economy seems mired in a lengthy period of slow growth, efforts to bolster productivity will remain high on the policy agenda, and measures to improve productivity in healthcare will attract increasing attention.

In this *Commentary*, we analyze the role of healthcare technology and innovation as drivers of the nation's productivity performance. A common view in the healthcare sector is that new technology has led to increased costs but has not increased productivity. We argue that this view is somewhat misleading because conventional national income accounting methods have not reflected the healthcare sector's true contribution to economy-wide productivity growth.

However, there are reasons to believe that healthcare R&D in the past – as a result of misaligned incentives in health systems – did not focus enough on cost-reducing innovations. While new technology has enabled us to treat more diseases, it has resulted in few labour savings because, within clinical practices, it has not led to widespread substitution of capital for labour (Baumol 2012; Skinner 2013; CBO 2008). In this essay, we argue that this tendency is due in part to the way in which most healthcare systems are financed and to counteract it, we call for, among other things, a more systematic application of health technology assessments to identify and promote those that are cost effective. Even if Canadians have underestimated the value of healthcare technology in the past, future productivity growth can be better measured and further accelerated if we make stronger efforts to encourage providers to adopt new cost-effective technologies and abandon outdated

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and inefficient ones.[1] International indicators still reveal a troubling amount of inefficiency in terms of how well public funds are spent on Canadian healthcare relative to our peers. More effective healthcare delivery could be a major catalyst for nationwide growth and well-being.

In public debates on innovation, most arguments focus on government measures to support firms that engage in R&D in order to develop new medical, device, and pharmaceutical technology and products for use in healthcare. However, to achieve lasting improvements to Canadian healthcare productivity, the focus should rather be on aligning incentives with efficiency goals by cutting wasteful spending and empowering patients to play a role in stimulating innovative activity. We argue, specifically, that provincial governments, perhaps with federal government support, should seek to better measure and inform patients on care quality so as to improve patient engagement and choice, where feasible, while also revising payment systems to encourage more value for money.

Technology, GDP, and Productivity in Healthcare

Historically, much of the innovation in healthcare has resulted from the invention of new medical technology. The underlying purpose in healthcare is to improve human health and well-being; over time, the development of new treatment methods, drugs, and diagnostic tools has enabled us to do so more effectively and to respond to a growing variety of illnesses. As a result, the average life expectancy and quality of life have improved for countless people with conditions that, in earlier eras, would have led to their premature death or forced them to endure disability and pain (Sorenson et al. 2008).

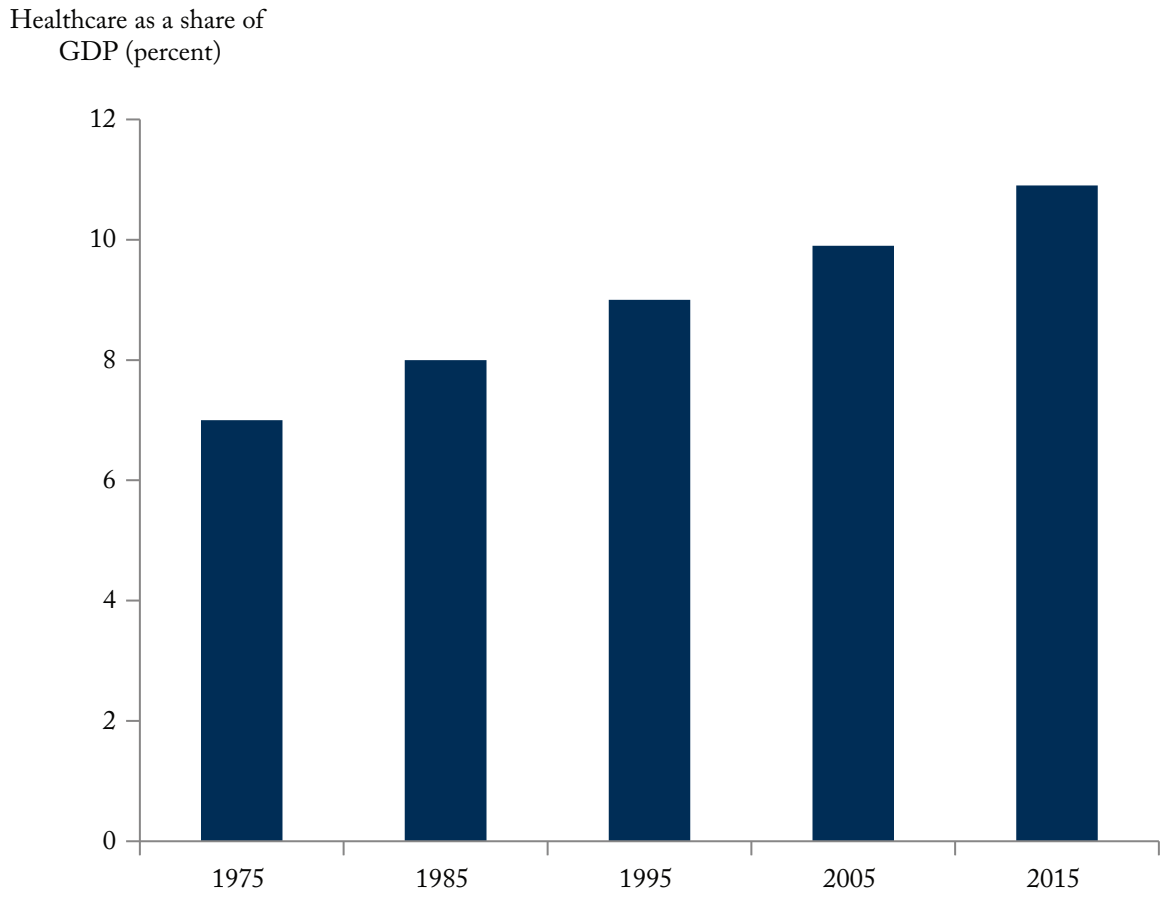
Even though new technology is typically developed to improve health, some commentators have regarded its effects in the healthcare sector as a problem because it tends to increase aggregate healthcare costs. Empirical work on the determinants of healthcare spending has identified other factors, such as rising incomes and aging populations, which also cause healthcare spending to grow over time (CIHI 2011). Many studies have concluded, however, that the introduction of new technology has been a major contributing factor (Dodge and Dion 2011; Di Matteo and Emery 2014).[2]

Secularly, spending on healthcare has been growing faster than total output and incomes in the economy, meaning that healthcare costs as a proportion of GDP have been increasing over time (Figure 1). In Canada and in other countries where government pays the major share of the total cost, healthcare has also risen as a proportion of total government spending. Clearly, these trends cannot continue indefinitely. If they did, healthcare would ultimately claim so much of the economy's total resources that production of other valuable goods and services would fall, and government would be unable to pay for urgently needed goods and services such as education and policing. Not surprisingly, a large part of the debate over health policy has therefore focused on methods to rein in spending growth and "bend the cost curve" (Di Matteo and Busby 2016; Marchildon and

1 In Canada's healthcare system, a variety of participants influence decisions about the adoption of different kinds of new technology: for example, drug plans and prescribing doctors for new pharmaceuticals and biologics; hospital-based doctors and managers for imaging and radiation machines and therapeutics; and doctors and laboratories for diagnostic equipment.

2 In comparisons across countries, an important determinant of spending differences is the price of inputs into healthcare production. For example, physician incomes in the United States and Canada tend to be higher than in other countries. However, unless healthcare input prices have been rising faster than in other sectors, this factor does not explain why, over time, healthcare spending has been growing more quickly than the overall economy.

Figure 1: Trending Up: Health Spending as a Share of the Economy, 1975-2015



Source: Canadian Institute for Health Information, National Health Expenditure Trends, 2016.

Di Matteo 2014). Because the introduction of new technology has been identified as a major contributor to rising costs, policies relating to the development and adoption of new technology have featured prominently in the debate.

GDP and the Value of Health

An emphasis on policies to reduce spending growth may seem natural, given that over the last 40 or more years, healthcare has been using up an increasing share of the economy's resources. But an increase in healthcare's share of total resource use is not necessarily a bad thing, nor does it mean that, as a result, the Canadian economy's true overall rate of productivity growth has slowed down.

Developments in healthcare technology (including pharmaceuticals, medical devices, and diagnostic tools) have helped to improve such population health indicators as life expectancy and life years lost to illness and disability (Sorenson et al. 2008). These improvements are valuable: many studies show that, when given the choice, people are willing to spend large amounts of money to reduce the risk of death and disability or to improve the quality of their lives when they suffer from painful or

debilitating disease (Nimdet et al. 2015). Increases in life expectancy or reductions in life years lost to illness and disability, then, have an economic value that in the past has more than justified the resources spent on the healthcare services that produce them (Murphy and Topel 2006).

But conventional GDP accounting does not reflect this source of rising welfare. Measures of economic productivity growth are based on comparing output measures and the quantities of inputs, such as capital and labour. Reliable estimates of productivity growth, however, can only be made in sectors where there are natural ways of measuring the quantities of output they produce. In healthcare, there is no such natural measure: Even though health is valuable, and existing indexes of population health show big improvements over time, there is no obvious way in which these improvements can be directly translated into a dollar measure of the healthcare sector's contribution to the GDP and the population's standard of living. The output of the healthcare sector – improvements in population health – is not sold and paid for in the marketplace, so there are no data that can be directly used to measure its quantities and values.[3]

Although conventional GDP statistics do not reflect the value of improved population health, they do account for the resources that are used in the production of health services. In other words, GDP as conventionally measured includes the wages and salaries paid to doctors, nurses, and other health professionals as well as spending on new hospital capacity and payments for health technologies such as pharmaceuticals, medical devices, and digital health tools. Implicitly, therefore, the GDP statistics reflect only the cost of the resources that go as *inputs* into the healthcare sector, not the value of the health improvements these resources produce. While the true value of what the healthcare sector is producing might be rising as technology improves, the national income accounts don't recognize this increase, even though they recognize the costs of the healthcare system. To an unwary reader, the accounts may give the misleading impression that there has been no change in productivity in the healthcare sector. It is partly for this reason that so much of the discussion about health policy has focused on cost containment rather than the value of better population health.

The impression that there has been little or no productivity growth in healthcare persists even in studies that try to go beyond the basic aggregated data. Using the Canada Revenue Agency's Administrative T-1, T-2, and T-4 files as well as health sector labour statistics to create appropriate estimates of GDP per worker, Sharpe and Bradley (2008) find that, from 1987 to 2006, productivity in the healthcare sector fell, on average, by 0.7 percent annually, compared to average increases of around 1.1 percent in all industries over the same period. However, even though the use of these additional data sources makes it possible to compile more accurate measures of input quantities in healthcare, they cannot overcome the problem that national accounting incorporates no meaningful measures of the sector's main output: improved population health.

On balance, therefore, the perception that the growing healthcare sector has acted as a drag on productivity growth in the economy as a whole may be largely a statistical illusion. Indeed, studies from the United States and elsewhere have suggested that, if we try to use some existing simple estimates of the economic value of better health – in particular, the value of longer life expectancy as a result of reduced mortality from serious health

3 In the absence of good direct measures of technology's contributions to health, the most common measure of improvements to health internationally is the quality-adjusted life year (QALY), a concept we discuss later in this essay.

problems – then the adjusted estimates of GDP show a growth rate that is almost twice as high as that estimated from conventional GDP statistics (Murphy and Topel 2006). If we were better able to measure the value of the healthcare sector's output, long-term productivity growth in healthcare may actually turn out to have been comparable with that in the rest of the economy.[4]

But even though the lack of good output measures has led to an underestimate of true productivity growth in healthcare over time, in Canada and elsewhere, it doesn't follow that all the resources we are spending on healthcare today are used productively. In particular, data on resource use and health system performance in Canada and other high-income countries show that we are not doing well. The most compelling narratives of lagging productivity in Canadian healthcare are the results of international surveys as well as comparable international data on care quality and safety.

International Indicators on Lagging Healthcare Productivity in Canada

The most widely cited international survey is the Commonwealth Fund Survey that asks patients, the general public, and primary-care providers in 11 developed countries about access to healthcare and the quality, efficiency, and equity of care. On nearly all metrics, Canada has consistently ranked well below average despite spending more than the average country on healthcare (Davis et al. 2014).

OECD indicators of care quality, patient safety, and access tell a similar story: among OECD countries, Canada ranks as one of the top spenders on healthcare but achieves poor to middling results (CIHI 2015). Even more worrisome in international comparisons are the geographic variations in healthcare services. For example, Canada sees tremendous dispersion around the average hospital admissions and knee-replacement rates – nearly double the average variation in other countries – and much higher average variation for hysterectomy rates (OECD 2014).

Moreover, there are tremendous variations not only within Canada but also between Canada and other countries (CIHI 2014). Cost-effective patterns of care are likely to be similar from one jurisdiction to another both within and across countries, so this large degree of variation suggests that there are inefficiencies in the system. That means either waste in places where too many resources are spent on certain kinds of care or healthcare of insufficient quality where too few resources lead to specific kinds of health problems going untreated. When these patterns occur, the overall productivity of healthcare resources could be raised by reallocating resources from places where there is overuse to those where there are shortages.

A recent report has underscored this point by noting that up to 30 percent of the tests, treatments, and procedures for eight common interventions were potentially unnecessary (CIHI 2017). This level of unnecessary care is comparable to that in the United States, the only country whose healthcare system is ranked lower than Canada's by the Commonwealth Fund, where a 2009 estimate suggests that almost one-third of total healthcare spending resulted from waste (Institute of Medicine 2013).

Policies to catch up with other countries in the efficiency with which we use our healthcare resources will not necessarily put us on a new path where productivity continues to increase every year. If these policies are successful, however, productivity in Canadian healthcare will be growing faster than elsewhere while we are

4 Although comparable estimates for Canada are not available, they would most likely yields similar results. In the United States, average life expectancy increased from 69.8 years in 1960 to 78.7 years in 2012; in Canada, it rose from 71.1 to 81.2 years.

catching up, and, even on its own, more efficient resource use is a worthwhile objective.

Sustainable Productivity Growth in Canadian Healthcare

Is More R&D the Answer?

The debate about how to make better use of the resources we spend on healthcare in Canada is part of a more general discussion of what to do to improve productivity in the economy as a whole. In comparison with other countries at a similar level of development, it is often suggested that Canada's relatively low devotion of resources to R&D is one reason for our poor aggregate productivity growth (Parsons 2011).

We welcome the fact that upstream R&D, in healthcare and in other sectors, is garnering a great deal of policy attention, but we think that policymakers should be cautious when predicting the impact of increased domestic R&D on the rate of Canadian productivity growth. While new technology is critical, productivity growth can be based on technology developed anywhere in the world. Logically, there is no reason to expect a close relationship between an individual country's productivity performance and the resources it devotes to R&D (see Box 1).

Payers, Providers, and Patients: What Kinds of Innovation?

Even though valuable improvements in population health have occurred over time in response to new medical technology, society may have wasted resources in the sense that we could have produced these improvements at a lower cost – for example, by making better decisions with respect to what technologies should be adopted and how they should be used within healthcare systems. Decisions with respect to the kinds of new technology to develop and use are particularly important in healthcare: certain characteristics in healthcare markets increase the risk that technologies will remain in use even when they are inefficient.

In the classical literature on the effects of technological change, a sharp distinction is made between two types of innovations (Rosenberg 1976). One type refers to innovations that raise productivity by allowing us to produce existing goods and services at lower cost (with smaller amounts of inputs such as labour and capital per unit of output). The effects of those kinds of innovations on productivity are relatively easy to quantify. The other type consists of innovations that result in new goods and services that did not previously exist but are valued by consumers. Just how the beneficial impact of these kinds of innovations should be quantified is less straightforward than for the cost-reducing ones, but it is clear, conceptually, that new products can also raise productivity in the sense of increasing the value of the outputs society can get from its productive resources. For instance, new treatments may allow family members to return to work, engage in social activities, and participate in education programs that would otherwise not be possible.

An important insight in the literature on technological change in healthcare is that, for firms working on developing innovations in that sector, the incentives to develop new cost-saving innovations are relatively weak. They have a much stronger incentive to focus on innovations that make it possible to diagnose or treat new illnesses or that produce better expected health outcomes than existing methods or health technologies. In terms of the two categories of innovation introduced above, their incentive to concentrate on creating "new products" is stronger than the incentive to come up with new methods to reduce per-unit costs of existing methods (CBO 2008).

This bias is the indirect result of misaligned incentives in the system: The vast majority of decisions about which technologies to adopt in healthcare are made by providers who derive their income from services they supply to patients

Box 1: Healthcare Productivity Growth and Canadian Industrial Policy – Issues with Using the R&D Benchmark

Although it is true that the new technologies that result in higher productivity typically are the result of R&D, technology can be transferred across national boundaries. There is no reason to expect a close correlation between the growth rates of countries' aggregate productivity and the resources they devote to R&D. For most countries, especially if they are relatively small like Canada, the new technology that is applied in various sectors of the economy has generally been developed elsewhere. It is unlikely, then, that industrial policies to encourage increased R&D spending by Canadian firms will have much of an incremental impact on our economy's overall productivity. This reasoning applies to healthcare as much as to other sectors. The main determinant of healthcare productivity growth is how effectively we apply cost-efficient new technologies wherever they have been developed, and how we reject those that are too expensive, given their expected benefits.

That said, there is no reason why healthcare R&D, be it in pharmaceuticals, medical devices, diagnostic technology, or new treatment methods, cannot be profitable activities in Canada in their own right. We have an educated population and many universities whose basic research can be used to feed into applied research to develop technology for use in healthcare and other industries. We also have good access to markets in other countries where new technology can be sold. Policies that enable these industries to flourish may have a significant payoff, in the form of higher Canadian incomes, even if they don't have a major impact on our own economy's productivity performance.

The issue for policymakers on this score is whether we need to be actively supporting more such activities in healthcare or whether other solutions exist beyond improved supports for upstream R&D. Although the mandate of the Naylor Panel concerned innovation in the healthcare system, its final report devotes only one chapter to measures to support firms engaged in R&D to create innovations for use in healthcare. In the panel members' view, Canada is a country where this industry could flourish, but interviews with people from the industry identified a number of barriers that have hampered its development. As a result, multinational enterprises have come to see Canada as "an unfavourable place for investment or for field-testing promising innovations" (APHI 2015, 103). These barriers were created partly through a fragmented and inconsistent system of regulation and technology evaluation, and partly through the structure of financing and managing Canada's healthcare system – a system that tends to protect the status quo rather than reward successful innovation.

whose costs are mostly paid for by third-party insurance plans (private or public), not directly by the patients themselves. In the markets where providers supply their services in competition with others, insured patients – and primary care doctors who make referrals – choose among providers largely on the basis of the health benefits they expect to get, regardless of cost, because the cost is basically paid by someone else. Thus, offering the treatment method that offers the best possible outcome gives a provider a competitive advantage, even if it is based on a technology that is very expensive compared with others that are almost, but not quite, as effective.

As long as the patients' insurers will pay for whichever treatment method or drug is chosen, the provider always has the incentive to offer the one that yields the highest expected health benefits, regardless of its cost. It is this effect that, indirectly, gives a strong incentive for firms that are developing new technology to focus on prospective innovations that yield at least some incremental health benefits, rather than on others that could potentially reduce

the per-unit cost of producing services that already are available. As a result, resources are wasted to some extent, not only because providers and patients have little incentive to pay attention to relative costs when they make choices about treatment methods, drugs, and health technologies among existing alternatives, but also because of the inefficient bias in the way resources are used by firms engaged in developing new technology. It is important, therefore, for healthcare insurers – both government and private – to make appropriate coverage decisions and revise payment policies to realign the incentives for providers and patients.

In part, the tendency for technological advances to raise healthcare costs in a system with insured consumers is due to our inability to accurately identify the contribution of health services to an individual's health. If we could measure this contribution, insurance contracts could, in theory, specify that providers would be paid on the basis of improvements in the insured person's health rather than on the basis of the services they had used. The implementation challenges of this theory are large, but elements of this idea, such as better measurement of outcomes, new payment models, and informed patient choice, should complement efforts to create a system more conducive to innovation than it is today. We will now explore some of these elements in greater detail.

Economic Evaluation of Health Technologies

By helping insurers make the right coverage decisions, economic evaluation of health technologies can be a useful tool for raising resource productivity in healthcare. Health technology assessment (HTA) frameworks are based on methods that aim to quantify the extent to which different technologies improve health, often by using quality-adjusted life years (QALYs) as a measurement tool to support decision-making and trade-offs within limited public budgets. As such, this form of evaluation process will remain a necessary part of technology review processes in the near- to mid-term future.

But while HTA can improve productivity by leading to rejection of inefficient technologies, it can also be wasteful if it delays the development and adoption of efficient technologies and the removal of outdated technologies.[5] The pace at which new technologies are introduced into the healthcare marketplace will likely accelerate, especially with the spread of digital technology, and HTA bodies must become increasingly adaptable to this fast-moving environment.

In this context, greater cooperation between international and domestic HTA bodies will be essential. Canadian HTA agencies – federal and provincial – will need to draw on existing international evidence, from randomized clinical trials, post-market assessments, clinical guidelines, and other sources, and maintain close relationships with their international and domestic counterparts (Blomqvist, Busby, and Husereau 2013). Further, greater use of novel financing tools in funding arrangements with provincial insurers and providers could include more risk sharing between technology purchasers and developers. For example, there could be a closer relationship between the real-world outcomes that arise from the use of technology and the total reimbursement to developers.

Measurement, Payment Models, and Value-Based Healthcare

5 One of our reviewers has also suggested that a promising way to accelerate productivity growth in healthcare is through measures to encourage more rapid abandonment of older technologies that have been shown to be more costly and less effective than new ones. In principle, HTA agencies could play a greater proactive role in this process by presenting and publicizing their findings.

Recent international discussions have focused on the notion of "value-based healthcare" – loosely defined as improving patient outcomes per dollar spent – which attempts to measure and associate payments more closely with the incremental improvements to patient outcomes resulting from value-added activities in health service delivery (Porter and Lee 2013; Lee and Kaiser 2016). This discourse, led in part by the contributions of Michael Porter and Dr. Thomas Lee at the Harvard Business School, has brought attention to the need for better performance measurement to guide policy efforts and revised payment models.

On the issue of performance measurement, Veillard et al. (2015) provide a comprehensive overview of health outcomes measurement and data collection for healthcare in the Canadian context. Among other recommendations, the authors flag a pressing need to improve the collection and publication of patient-reported outcome measures, which they argue should help build a foundation for better value in healthcare. The provinces and Ottawa should collaborate to bring these improvements about.

The second major part of discussions around value-based healthcare is the alignment of incentives in the healthcare system to better match outcomes. In theory, if providers' revenue was based on the actual improvements in patients' health, they would be much less likely to use expensive technologies with limited incremental health benefits, and the bias against cost-reducing technologies would be lessened. However, because there is so much uncertainty in the link between the choices of services and drugs that patients receive and the ultimate outcome, paying providers based on actual outcomes may prove difficult because it would expose them to a high level of financial risk. Further, it may also give them an incentive not to accept patients with severe forms of various health problems.[6]

Much international experimentation is underway on how policymakers should revise payment systems to include outcomes, but it is still in the early stages of development. However, there are some promising and tested examples to improve value for money in the immediate future, including bundled payments in the United States, population-based integrated payment models such as the US Accountable Care Organizations and, in Southern Germany, the Gesundes Kinzigtal pilots, and the OrthoChoice bundled-payment initiative in Stockholm, Sweden (Sutherland and Hellsten 2017).

Breaking down the third-party insurance relationship, in part, means finding ways to give those responsible for care paths the ability to provide high quality while also being mindful of how their decisions relate to the appropriate stewardship of public funds. For example, the fees paid to a doctor, groups of providers, or hospital managers for treating a patient with a specific kind of health problem can be made independent of the treatment method used, limiting the incentives to acquire the most expensive equipment regardless of the potential future care costs of patients. Use of advanced and costly diagnostic procedures can be discouraged in routine cases where simpler, less-expensive methods are available. Furthermore, making groups of providers responsible for services across silos – those in the community in addition to those in a hospital, for example – can improve the integration of care and technology-adoption decisions for specific types of care episodes or for individuals with chronic conditions. Canadian provinces should look to successful international experiments in these areas

6 See Nashef (2015) for an account of these issues in the U. K. National Health Service. In the Canadian setting, the issue of incentives is also complicated by the many different actors who are involved in decisions about the adoption of new technology (drugs, biologics, imaging and radiation machines, diagnostic equipment, and the like), as mentioned in note 1.

and emulate them in a manner most appropriate to the local context (Sutherland and Hellsten 2017; Blomqvist and Busby 2012).

The Naylor Report gives extensive attention to many examples of successful innovations in Canadian healthcare that have not been "scaled up" (emulated throughout the system). In our opinion, financial incentives may not always be the reason why interested practitioners try out innovative methods, but lack of incentives to adopt them throughout the system may well be an important part of the explanation why they do not get accepted, especially when they run against entrenched interests. Promising ideas are frequently developed by the most engaged groups of caregivers, but broader adoption often means learning new ways of doing things – and that introduces uncertainty to provider incomes, thereby stalling efforts.

Empowering Patients with Information and Enhancing Patient Choice

Patients and consumers of health services also have an important role in encouraging better performance in the health system. One of the Naylor Report's overarching recommendations is to bolster "patient engagement and empowerment," which the panel suggests would be accomplished by giving patients co-ownership and access to their health records, among other things. Putting personal health information in patients' hands, they say, would empower them to manage their own care and engage in informed conversations with providers.[7] It is incumbent on the provinces to lead the way in this initiative.

To date, few efforts have been made, either nationally or provincially, to boost patient information and choice in the Canadian healthcare system. Yet the places where better access to information and patient choice should be applied are reasonably clear. In many urban centres, policies that encouraged patients to look at outcome-based evaluations when choosing their family practice, hospital, and secondary or tertiary service provider may hold promise as an incentive for innovation. This would, of course, need to be supported by improvements in the collection of data on healthcare performance and in the institutions that provide it.

Furthermore, as many new digital technologies cater to increasingly diverse patient needs, private options will likely serve as additional sources of innovation pressure: providers offering private services are more free to adopt new and different technologies, methods, or scopes of practice to improve service quality than those who are working in the public system. That difference can lead to important insights on how care might be organized more effectively. Although there has been tremendous resistance to allowing private care options in Canada, in our view some of these pressures are inevitable, given the budget constraints in public systems and potential lags in funding new technologies. Provinces with a properly designed private option would harness patient choice to heighten pressure on the public system to be more responsive to shifting patient preferences.

Conclusion

Most peer countries have equal or better results for healthcare outcomes than Canada – meaning that it ought to be possible for Canada to deliver better health outcomes for the money it spends on healthcare. If that goal could be accomplished, it would reduce what is effectively a competitive disadvantage for Canada, and, while we were

7 The Advisory Panel also believed that greater attempts to inform patients should be accompanied by reforms in the payment system which would better encourage providers to respond to patient choices in ways that would not lead to increased healthcare costs.

catching up, productivity in Canadian healthcare would grow faster than in other countries.

The difficulty of properly measuring the value of better health prevents policymakers from gauging the contribution of healthcare innovations and technologies to overall well-being. That has led to the creation of alternative measures, such as Quality-Adjusted Life Years, to aid in policy-making. Still, the standard methods of data collection in Canada and abroad do not identify the total productivity contributions from the health sector to domestic economies, and that may have led to an underestimation of the sector's contributions to the broader economic environment.

However, the results of international surveys and indicators point to sizeable inefficiencies in Canadian healthcare. Even without a close link between productivity in the Canadian healthcare system and R&D spending in Canada, policymakers looking to increase innovation in the sector may favour increasing support for upstream R&D. Although such support can be justified for technology with the potential to be marketed internationally, we think more effective methods to bolster productivity in Canada's provincial healthcare systems are more likely to be found elsewhere.

The way healthcare is financed in most countries may bias the nature of the new technologies that are developed and adopted. Historically, the incentives on providers within the system have tended to favour innovations that are quality improving, regardless of costs, because the costs were always billed to third-party insurers. As such, incentives within the system tend to work against achieving the most value for each dollar spent.

In a publicly managed insurance plan, the incentives to focus on improvements to patient care, regardless of costs to society at large, can be counteracted to some extent. The pressure to develop new and more expensive technologies means that there will be an ongoing need for systematic evaluation of the possible contributions of new technology to productivity and living standards. It will be incumbent on national and provincial health technology assessment bodies, in the context of a more rapid pace of technological growth, to find ways to become more nimble. Their objective should be not just to prevent the introduction of ineffective and overly costly technologies but also to avoid delays in introducing effective ones, and even to promote their use when they are more efficient than existing practices. To the extent that the process of evaluation in a public system moves too slowly, private options will likely develop as a consequence.

Reforming the payment system – in particular, introducing more bundled payments to providers of episodic and chronic care – is a necessary part in any serious attempt to improve productivity in healthcare. The provinces should pursue payment system reforms alongside better measurement of patient outcomes. Finally, the disclosure of this information could empower patients and allow their choices to spark more innovation in Canadian healthcare.

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