THE USE OF HEALTH TECHNOLOGY ASSESSMENT TO INFORM THE VALUE OF PROVIDER FEES: CURRENT CHALLENGES AND FUTURE OPPORTUNITIES

CHSRF SERIES OF REPORTS ON COST DRIVERS AND HEALTH SYSTEM EFFICIENCY: PAPER 6

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KEY MESSAGES

▸ The rate of spending on health in Canada is rising faster than the rate of economic growth, creating concerns about the sustainability of Canada’s publicly funded healthcare systems. Costs for hospital and physician services continue to comprise the bulk of healthcare spending.

▸ Currently, provider fees are largely based on the costs to deliver the service, not the relative value-for-money of the new service. This approach means providers may have little to no incentive to perform high-value services compared to low-value services.

▸ Health technology assessment (HTA) examines the medical, economic, social and ethical implications of the use of medical technologies, services and procedures. Because it has the capacity to capture value, HTA is considered an effective tool in making policy decisions to develop professional fees in response to the availability of new health technologies.

▸ In theory, using HTA to inform the price of a provider fee can lead to reductions in net expenditures while increasing payments to providers.

▸ Given the successful Canadian capacity to conduct HTA, negotiating provider fees using HTA input is considered to be a feasible and desirable option, as it provides an opportunity to better align incentives for consumers, providers, producers and payers.

▸ Canada would benefit from a coordinated approach to price determination. This can be built on existing provincial processes, providing increased benefits for providers while potentially avoiding unnecessary costs by payers and reducing inequities across provinces.

▸ The use of value-based pricing of provider fees could be applied, in principle, to mixed models of provider financing and alternative arrangements in the future.
EXECUTIVE SUMMARY

The rate of spending on health in Canada is rising faster than the rate of economic growth, creating concerns about the sustainability of Canada’s publicly funded healthcare systems. Reimbursement for hospital and physician services continues to comprise the bulk of health sector spending; in 2010, for example, spending on physicians through salaries and provider fees reached $26.3 billion, representing 13.7% of total healthcare spending. This trend is expected to continue.

Physicians are most often paid through fee-for-service arrangements from publicly-funded insurers. The hospitals in which they work are in turn funded through global budgets that must pay for health technologies associated with the services delivered by physicians. Health technologies are believed to be a significant factor in rising healthcare expenditures. Choices made by providers (physicians and hospitals) regarding what mix of services to provide, therefore, can greatly influence both hospital and physician spending.

Health technology assessment (HTA) is becoming an increasingly prominent policy tool in response to concerns about rising healthcare costs driven by the use of technology. HTA is a multi-disciplinary process of policy analysis that aims to bridge the world of research with the world of decision-making by examining the medical, economic, social and ethical implications of the use of a health technology and their associated interventions. HTA seeks to define and measure (i.e., capture) the value of new products and services. It is currently being used in Canadian hospitals to decide what technologies to adopt and by some health jurisdictions to decide whether to create new provider fee codes. However, decisions to adopt a new technology are also driven by the need to provide consumer choice, provider autonomy, and patient access, underlying the principles of Canada’s Health Act. Additionally, not funding a new technology may provide disincentives to service providers to practice in health systems where services are not reimbursed, threatening the ability of the health system to reliably provide care and leading to additional costs if specialty services are not available. This, in turn, may harm the relationship between payers and providers.

In Canada, new codes for provider fees are developed in each jurisdiction using separate approaches and with very little coordination. This makes the Canadian health system susceptible to perceived inequities across jurisdictions and can lead to the phenomenon known as “whipsawing”—pressure to fund a service in other jurisdictions if only one province or territory is funding the service. There may also be pressure to pay the same amount of money for similar services without considering the social and economic context in which it will be delivered. This can result in unnecessary growth in health system costs.

The prices of new provider fees in Canada are largely based on costs to deliver the service and do not consider the relative value-for-money of the new service. This approach means providers have little incentive to perform high-value services compared to low-value services. HTA can play an important role in linking the price of a provider fee with a tangible value. This means that service prices can be modified upward for high-value services and downward for low-value services, averting unnecessary growth in health system costs.

There are several notable features for establishing Canada-wide price coordination. By minimizing ‘whipsawing’, jurisdictions will feel less pressure to adopt low-value services. Better price negotiation encourages explicit recognition of what amount of value society is willing to give up for the health service. Through Canada-wide coordination, opportunity costs are made explicit, leading to greater incentives for innovations because of better communication from policy-makers to providers and technology producers. Finally, Canada-wide coordination has the potential to strengthen the current research environment. If price negotiation is linked to the use of ex-post assessment, strengthening
the capacity to conduct discipline-specific research and the structures required to support it would be encouraged. Coordination should lead to improved methods for evaluating health system performance.

Although jurisdictions in Canada have mechanisms in place to determine the value of new fees, there is considerable variation in how this is done in terms of the information considered and the process and methods used. This means that a different price for a similar service could result due to many considerations including disease burden, need for the service, how the service fits in with other programs or human resource requirements or from methodological differences in approach to valuation. This also means making translation of the relative value of fees across provinces difficult and could lead to concerns about provider wage-loss and provider stability in some provinces. The implementation of a coordinated system would alleviate many of these issues.

Challenges of the formal use of HTA in provider fee assessment include being inefficient if it undertook detailed value-based pricing assessments of all provider services. It will make sense to prioritize value-based pricing assessments towards those services which are associated with significant budgetary impacts or representing opportunities for improving system efficiency. While the use of QALYs in resource allocation decisions does allow health system choices to be made explicit, it may come at the expense of equity, social justice, patient autonomy and fairness. If medical technologies have a significant impact on elements not captured in the QALY, these benefits may have to be incorporated into the price negotiation formally. Finally, the formal use of HTA in provider fee assessment will require provincial medical specialty associations to use new mechanisms to coordinate with a national fee schedule process. Currently, they may be unprepared to respond to ex-post assessments of service value.

A coordinated, pan-Canadian approach to determining prices for provider fees is considered both feasible and desirable. This study attempts to examine what is known about the successful use of value-based pricing of provider fees internationally and examines the potential impact—and the potential challenges—of incorporating HTA in the development of provider fees in Canada. It synthesizes information from two key sources: 1) a comprehensive literature search for national and international evidence on the effectiveness and cost-effectiveness of value-based pricing of provider fees; and 2) semi-structured interviews with key informants—medical directors, experts in health economic evaluation, and an expert in provider fee assessment. The findings of this study indicate there is some indirect evidence to suggest value-based modifications of provider fees could result in better use of scarce health resources, but there is little documented evidence of using HTA specifically as a basis for pricing provider fees.

This report was originally written together with a second report, “Value-Based Pricing of Pharmaceuticals in Canada: Opportunities to Expand the Role of Health Technology Assessment?”
1 CONTEXT

1.1 Rising healthcare costs and key cost drivers in Canada

Canada’s rate of spending on healthcare is rising faster than the rate of economic growth. This raises concerns about the sustainability of Canada’s publicly funded healthcare systems.¹ Reimbursement for hospital and physician services continues to comprise the bulk of health sector spending, representing over 40% of total expenditure by use of healthcare funds.¹ Hospital expenditures are expected to grow faster than overall spending on healthcare. In 2010, spending on physicians, through salaries and provider fees, increased by 6.9% reaching $26.3 billion and representing 13.7% of total healthcare spending.² Alberta, Ontario, Manitoba, Nova Scotia and British Columbia currently allocate more than 40% of their provincial budgets to healthcare, a figure that is expected to increase in years to come.¹ Increased expenditure on healthcare with a constrained budget means reduced available resources for investments in other critical areas, such as justice and education. This, in turn, leads to questions about whether growth in healthcare expenditure is justified, and how it can best be managed.

Physician providers are most often paid through fee-for-service arrangements—reimbursed directly by publicly-funded insurers based on costs associated with the service. Hospitals are generally funded through global budgets, where a global budget is provided to each hospital to pay for all hospital-based services annually as per past performance.³ This includes purchasing health technologies associated with service delivery, which are believed to contribute significantly to rising healthcare expenditures.⁴ Choices made by providers (physicians and hospitals) regarding what mix of services to provide, therefore, can greatly influence both hospital and physician spending. Although there has been an increase in alternative strategies for payment, provider fees are a central component of monitoring the delivery of providers (e.g., through shadow billing) and are the basis of estimating payments using other approaches.

In Canada and worldwide, one response to concerns about rising healthcare costs driven by the use of technology has been to implement health technology assessment (HTA) processes, to help set priorities for funding health technology and ensure sustainability without sacrificing patient health.⁵, ⁶ Until now, the primary role of HTA has been to inform policy decisions regarding reimbursement of health technologies, including drugs, and to a much smaller extent to support implementation and programs focused on consumer demand for goods and services, such as academic detailing.¹ Because of the close link between health spending on new technology and provider fees, HTA is an available policy tool for examining the value of new provider services.

For payers and patients, not reimbursing a service and the technology associated with the service may have unintended consequences on the mix of services provided by physicians or provide disincentives to service providers to practice in regions where services are not reimbursed. This threatens the ability of the health system to reliably provide care and leads to additional costs if specialty services are not available⁷, ⁸ This, in turn, may harm the relationship between payers and providers.

More recently, HTA has been used to inform decisions on whether to adopt new provider fee codes in Ontario and Nova Scotia, often resulting from introduction of new health technologies and their associated procedures. If a lack of compelling clinical evidence exists, decisions to modify the price of an existing fee code or not to introduce a new fee code may result.⁹, ¹⁰ At least one other jurisdiction has

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¹ Academic detailing is one-on-one non-commercial based educational outreach to prescribers provided by trained healthcare professionals. In Canada, many of these groups belong to the Canadian Academic Detailing Collaboration (CADC) which provides evidence-based information or educational outreach to physicians and other healthcare providers in Canada.
piloted modifying fees based on perceived relative value informed by HTA. Although there is a large amount of HTA activity within the Canadian health system, it is not consistently used for the development of new provider fees or to inform the price of a new service. Along with the opportunities and barriers that exist within the Canadian health system, there is a need to examine the evidence of effectiveness and cost-effectiveness as well as the impact on quality and access to care of HTA-based approaches to provider fee development. This in turn will help Canadian policy-makers decide whether such systems should be adopted in Canada and how these might best operate.

1.2 Purpose of this study

This study began in February 2010 as part of a comprehensive program of work in the areas of healthcare financing, innovation and transformation sponsored by the Canadian Health Services Research Foundation. The intent of this report is to provide information to support dialogue among key stakeholders, with a goal of identifying, refining, and implementing feasible options that use health technology assessment to improve the sustainability of the health system.

The objectives of this paper are to:

(i) Synthesize relevant international and domestic evidence on the successes and challenges of incorporating HTA in the development of provider fees;

(ii) Understand the types of institutional structures needed to support this activity;

(iii) Explore the potential for implementation in Canada and make recommendations as to whether this approach should be adopted more widely in Canada, and if so, suggest possible ways forward.

The report is structured as follows. First, a conceptual overview of what health technology assessment is, how it is practiced in Canada, what it attempts to do, and evidence of its effectiveness and cost-effectiveness is presented. Then, a discussion of how HTA could be applied to the assessment of provider fees is presented. Finally, some of the challenge of this approach will be discussed, feasible policy options for Canada will be outlined and a recommendation is made.

1.3 Methods

The information presented in this study is a narrative synthesis based on two key sources of information: 1) a comprehensive literature search for national and international evidence on the application of HTA to inform the development and pricing of provider fees; and 2) semi-structured interviews with key informants: provincial medical directors, experts in health economic evaluation and an expert in costing of physician provider fees. The informants are listed in Appendix A and the questions asked are listed in Appendix B. This information was then used to create feasible options for Canada and final recommendations.

2 HEALTH TECHNOLOGY ASSESSMENT (HTA)

2.1 What is health technology assessment?

Health technology assessment (HTA) is a multi-disciplinary process of policy analysis that examines the medical, economic, social and ethical implications of the incremental value, diffusion and use of a medical
technology in healthcare. It is intended to bridge the world of research with the world of decision-making. It is a growing field internationally, fostered by the need to support management, clinical, and policy decisions, and fueled by advances in methods of evaluation in the applied and social sciences, including clinical epidemiology and health economics. HTA is becoming an increasingly important tool to help policy-makers define and measure (i.e., capture) value from the use of a health technology.

2.2 HTA processes in Canada

HTA is widely practiced in Canada and organizations can be found at hospital, regional, provincial, and national levels. The number of organizations conducting HTA in Canada has grown in recent years. Some of the organizations are academic coalitions, funded through health research bodies or with matched government funding, and with informal linkages to policy-makers. Others are funded entirely by health systems or ministries. There is currently no formal coordination of HTA organizations throughout Canada. All provinces have some capacity to conduct drug assessments through health ministry programs, such as in Ontario, Quebec, and British Columbia or through shared resources or through commissioned third-parties or academic groups.

Healthcare technology can enter Canadian health systems through a myriad of entry points. Diffusion of technology is a result of consumer (patient and physician) demand, regulatory and reimbursement constraints, and purchasing power. Experimental and established hospital- and regional-based HTA units (reflecting their provincial/territorial counterparts) have existed since as early as the 1990s, when the Greater Victoria Hospital Society developed capacity for HTA. In the last 10 years, technology assessment oriented to hospital purchasing decisions has been conducted in British Columbia (Vancouver Coastal Health Authority), Alberta (Capital Health Authority, Foothills Hospital and Alberta Health Services), Manitoba (Winnipeg Regional Health Authority), Ontario (London Health Sciences, The Hospital for Sick Children), and New Brunswick (Horizon Health Network). Appendix C provides a snapshot of organizations currently engaged in HTA.

HTA in hospitals has also been legislated in Quebec, with academic health centres required to have a HTA capacity. In some cases, hospital- or regional-based HTA is funded as an academic project and a hospital may only provide in-kind or infrastructure support. The use of HTA to inform provider and technical fees will ultimately affect hospitals, which may seek additional capital or operating funds as part of their global funding envelopes. The link between service fee provisions and technology purchasing decisions needs special attention and emphasis as models for the management of health technologies are further developed. It has been observed that a majority of small technologies may diffuse into a health system unaffected by fee schedules, because providers can use existing fee codes to bill for services associated with the new technologies.

2.3 How does HTA bridge science and policy?

HTA attempts to project and estimate relevant outcomes associated with policy choices surrounding health technology to inform healthcare decisions. Most HTA studies in Canada and internationally focus on clinical and economic outcomes.

To better illustrate the fundamental components of any HTA process, Schwarzer and Siebert have recently characterized the process of HTA as having three distinct components or phases (see Figure 1). The first component is a “science” phase, where research and analyses are carried out. Technologies are assessed using discipline-specific appropriate scientific methods and judgments. For example, an assessment of the
health consequences of using a technology would typically use current scientific methods and judgments from the fields of epidemiology and pharmacology.

In the “science” phase, economic evaluations typically use a utilitarian framework—i.e., estimating the time enjoyed in preferred states of health. This approach allows a decision-maker to understand which strategy leads to the highest payoff, or health gain achieved, and allows for a comparison of health with the associated cost of resources incurred by a health system or society. A popular unit of health gain, or effectiveness, is the quality-adjusted life-year, or QALY, that measures preferences for length and health-related quality of life. Cost-effectiveness studies—namely, studies that compare costs with effectiveness measures—that use utilitarian measures like QALYs are called cost-utility analyses. The advantage of using QALYs in cost-effectiveness analyses is that it allows decision-makers to compare resource use across competing health programs. For example, a health system administrator can compare health gains from technologies intended to treat cardiovascular conditions versus health gains from technologies intended to treat urological conditions. The QALY provides a common currency to assess the extent of the benefits gained from a variety of interventions. Despite these advantages, this single unit of benefit harbors some significant shortcomings as well: issues of equity, social justice, patient autonomy and fairness are not incorporated into QALYs. (This is discussed in more depth in section 4.)

A second distinct phase in HTA is a “policy” phase, where societal values and judgments are brought to bear on scientific evidence to arrive at a policy decision. Rather than rely on policy-makers to passively use the results of technology assessment to create policy changes, many organizations conducting HTA today use formal expert committees that include healthcare providers, researchers, and members of the public to examine and deliberate on the scientific evidence available from assessments, with the goal of creating recommendations for policy-makers. These “deliberative” approaches, particularly when they bring together decision-makers and researchers, are a much more effective approach to ensuring knowledge from HTA (evidence) is correctly interpreted and applied, compared to simply producing scientific reports in hopes this will be translated to policy by others.

A third phase in HTA has been labeled a “population” phase, where evidence-informed recommendations are implemented and an evaluation of decisions from these recommendations can occur. This phase might involve re-assessing the decision and the impact of the decision. It may also involve supporting policy-makers or providers in their attempt to use HTA recommendations, or promoting the use of HTA-driven policies through the use of tools or other interventions. Good evaluations in this phase can feed back to future assessments of technology, which in turn can feedback to policy changes.

The existing processes and institutions of health technology assessment seen in Table 1 can be fairly described using this framework.

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iii Utilitarianism is an ethical theory that suggests that the “good” from any individual action is determined by its consequences in terms of total good on society. The best actions result in the greatest overall “good”: Utility is a measure of the “good” to be maximized and generally relates to measures of satisfaction or happiness. This can be contrasted with other moral theories, such as egoism, where the consequences for the individual taking action are the only thing considered.

iv Deliberative approaches and processes within HTA organizations have evolved to become more transparent and have borrowed from political and ethical approaches to public policy development. In particular, it has been suggested that the use of evidence to inform deliberation and healthcare decisions should, in theory, facilitate deliberation and agreement by stakeholders and that any legitimate and fair assessment of healthcare resource allocation decisions should be transparent, rest on reasons that stakeholders agree are relevant, be revisable in light of new arguments, and provide assurances that these conditions can be met.
2.4 Can HTA lead to optimal use of healthcare resources?

HTA in Canada has been largely used to inform hospital-level purchasing decisions for new technologies. There is a growing evidence base suggesting that HTA can reduce expenditure growth rates without adversely affecting patient health when it is implemented at a hospital level. McGill University Health Centre (MUHC) technology assessment unit incorporated policy recommendations of 25 of 27 reports between 2002 and 2007, resulting in an estimated savings of C$11.8 million.26 This amounted to a net annually recurring budget saving of $3 million, with a range of $2.3 to $3.8 million. The technology assessment unit cost $1.2 million to operate over the same five-year period. At the Centre Hospitalier Universitaire de Québec (CHUQ), 69% of recommendations from two reports were accepted and resulted in $460,000 in annual cost savings. Beyond reductions in the expenditures, these hospital-based programs are widely perceived as timely, relevant to local decision-makers, reflecting community values, and met with high degrees of satisfaction and acceptance among professional staff.27, 28

HTA organizations operating at a provincial level have also reported reduced net expenditures from the use of HTA. An assessment of the Quebec provincial technology assessment organization concluded that 18 assessments conducted over a period of several years resulted in cost savings of between $16 and $27 million annually.29 More recently, an HTA program, the Medical Advisory Secretariat/Ontario Health Technology Advisory Committee, run by the Ontario Ministry of Health and Long-Term Care, has reported a net cost avoidance of approximately $200–500 million per year through assessment of requests for new technologies in Ontario.30

It is important to point out that the costs avoided in these examples were not a result of setting prices from HTA but rather from evidence-informed decisions facilitated by HTA to pay or not pay for a particular technology. Costs are either avoided through not reimbursing a technology, or reimbursing it for a sub-population for which there is convincing evidence of a benefit or of cost-effectiveness. Theoretically, further costs will be avoided as higher value technologies replace the use of lower-value technologies; however, this has not been empirically measured in any Canadian study to date.

There is also significant evidence that providers respond to financial incentives, and several studies have looked at responses to changes in provider fee prices. A large body of evidence shows that price reductions of provider fees can lead to slowing of health expenditure growth. However, reductions in expenditure are not directly proportional to price controls—typically the overall effect of price reductions are partially offset by increases in the quantity of services provided, a phenomenon known as supplier-induced
demand. This phenomenon is specific to the type of practice affected by the fee, as some physician specialties are more able to induce demand for services. Studies from Canada have shown a weak or negligible effect on induced demand from changes in provider fees.

There is no direct evidence that using HTA to inform provider fees leads to reduced healthcare expenditure. Taken together, documented experience of the acceptability and impact of HTA along with significant evidence of impact from changing provider fees both internationally and in Canada provide compelling indirect evidence that a system of HTA-informed pricing of provider fees would be relevant, acceptable, and would lead to reduced growth in overall expenditure.

3 HOW CAN HTA BE USED FOR PRICE NEGOTIATION?

3.1 Professional provider fees

Reimbursement of medical services through fee-for-service (FFS) arrangements occurs across all Canadian provinces and in federal programs responsible for the delivery for healthcare. Alternative strategies for payment, including salary, sessional, block-funding, on-call and population-based funding agreements, also exist in increasing numbers, and these systems are implemented to varying degrees across Canada. According to the Canadian Institute for Health Information (CIHI), in 2005–2006 the proportion of physicians funded solely by alternative payment schemes ranged from 12% in Alberta to 96% in the Northwest Territories. Even in health jurisdictions where provider fees are not directly used for billing, provider fees are a central component of monitoring the delivery of providers (e.g., through shadow billing) and are the basis of estimating sessional or salaried payments to providers.

The price of a service fee is typically set when a provincial government, medical association or physician requests a new fee code. Details of the new procedure or service, where it will be performed, the time required by the physician, associated fees, technician and capital costs, frequency and other relevant information are submitted and ultimately considered for reimbursement by a provincial ministry of health. As such, professional provider fees are essentially based on the costs of resources needed to provide the service, but do not take into account the value of the service itself. Once provider fees are established, they are seldom revisited.

3.2 HTA and fee price negotiation: national and international experience

The use of HTA to provide information about the comparative health and resource impact versus existing services is commonplace, especially when a health ministry must contemplate the price of a new provider service, and particularly if this has not been thoroughly assessed in another jurisdiction. The source of this HTA information might be from in-house research, from an existing Canadian or international HTA organization, or a combination of both.

HTA can play an important role in linking the price of a provider fee with value. Cost-effectiveness analysis (CEA), a key component of health technology assessment, compares the incremental costs of a health technology or service with its incremental health benefits (i.e., effectiveness, often in terms of preferences for length and quality of life), yielding a measure of value. The use of value-based modifiers (see Box 1) to incentivize provider demand is part of a larger theoretical framework termed “value-based

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v Sessional funding can be defined as payments on an hourly or daily basis. Block funding arrangements are annual budgets negotiated for a group of physicians, often associated with an academic medical centre. Population-based arrangements involve payments for a population of clients assigned to a physician group.
insurance design, where cost-sharing between insurers and consumers depends on the value that the service provides the patient in terms of health gained per dollar spent. In a U.S. setting, incentives in the form of lower co-payments and higher fees can be passed on to both patients and providers. Under value-based insurance design, consumers are given low (or no) co-payments for high-value goods and services and high co-payments for low-value goods and services. Similarly, physicians can be given more payment for high-value service and lower payment for low-value service, assuming the change in payment does not significantly affect the value of the service.

In Canada, co-payments for insured provider services are not allowed under the Canada Health Act. However, using HTA assessments to modify provider fees is still a feasible option. If an HTA demonstrates that a service is of “high-value,” this could result in the establishment of a provider fee modifier to incentivize increased use by providers. For example, a service with a high relative value could be assigned a value-based modifier that increases the price of (and therefore, the incentive to deliver) a service after other factors (such as knowledge, judgment, technical skills, direct costs, overhead and others) are taken into account. Another approach is to invent a unique service code that can be billed in addition to other standard fee-for-service codes when a service is provided. The fee is not intended to cover the costs of the service, but create an incentive to physicians to provide the service, replacing lower-cost alternatives. Although this increases the cost to provide the service, it has the potential to reduce healthcare costs overall by reducing the use of low-value services, which inflate health system costs.

In contrast, HTA that demonstrates that a service is of low value may lead to the development of a value-based modifier that decreases the price of (and therefore the incentive to deliver) a service once other factors are taken into account. HTA can also be used to restrict the delivery of a service to a sub-population for which a service is most effective and cost-effective. HTA may also be used to support decisions not to reimburse a service (i.e., no provider fee code, which is the same as modifying the value of the service to zero). In theory, these approaches should improve efficiency by controlling the quantity of use of specific health technologies or services, providing incentives to increase the use of high-value services, and providing disincentives for more costly low-value services. There is currently some evidence that target payments will lead to increased utilization (i.e., quantity) of services in primary care, although there is insufficient evidence that quality of care is improved. Box 1 presents a theoretical and empirical example of value-based provider fee modifiers. A framework for aligning HTA and provider fees can be seen in Figure 2.

**BOX 1: USE OF HTA TO ESTABLISH PROVIDER FEES**

**THEORETICAL EXAMPLE USING VALUE-BASED PROVIDER FEE MODIFIERS**

Consider two technologies that can be used by a provider for a particular service. Previously, a provider fee of $30 was reimbursed for this service irrespective of which technology was used. Providers were also equivocal regarding the choice of intervention, and generally chose depending on their setting and training. However, a comprehensive health technology assessment report suggested that providing the service with one technology is much more cost-effective than the other. The HTA clearly showed that the higher costs of one technology ($1,900) were not offset by the benefits conferred (0.015 QALYs), resulting in an incremental cost of $127,000 per QALY gained. This prompted the health ministry to re-evaluate the provider fee for that service.
After a review of the evidence (and taking into consideration other factors such as knowledge, judgment, technical skills, direct costs, overhead and others) the health ministry developed two distinct fee codes for the service, where each fee code was based on application of provider fee modifiers derived using information from the HTA. A modifier of 0.50 was applied to the high-cost, low-value technology to create disincentives for its use, while a modifier of 1.50 was applied to incentivize use of the low-cost, higher-value technology.

After implementing these changes, the health ministry evaluated the impact on healthcare expenditure after one year (see table below). Based on the findings, it appeared that provider behavior was influenced by the provider fee incentives that were implemented. There was increased use (+400 units) of the lower-cost, high-value technology (i.e., Technology A) and decreased use (-400 units) of the high cost, low-value technology, resulting in reduced expenditure ($748,000) on this service when compared with the previous year. This net expenditure reduction occurred despite a net increase of $12,000 for provider fees.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TECHNOLOGY A (COST = $200 PER YEAR)</th>
<th>TECHNOLOGY B (COST = $2,100 PER YEAR)</th>
<th>TOTAL HEALTHCARE COST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UNITS</td>
<td>FEE COST</td>
<td>TECH A COST</td>
</tr>
<tr>
<td>Pre-($30 fee for both)</td>
<td>1,000</td>
<td>$30,000</td>
<td>$230,000</td>
</tr>
<tr>
<td>Post-modifiers ($45 for A; $15 for B)</td>
<td>1,400</td>
<td>$63,000</td>
<td>$280,000</td>
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<tr>
<td>Difference</td>
<td>400</td>
<td>$33,000</td>
<td>$80,000</td>
</tr>
</tbody>
</table>

REAL-WORLD EXAMPLE WHERE NEW FEE CODES WERE DEVELOPED TO INCENTIVIZE PROVIDERS

In Ontario, fee codes have been developed that incentivize physicians to use Fecal Occult Blood Testing (FOBT) for colorectal cancer screening. Physicians are eligible to charge a $7 FOBT distribution and counseling fee (Q150A) for one patient every two years. A $5 FOBT completion fee code (Q152A) is also available. These fee codes are based in part on a health technology assessment that demonstrated that FOBT is a low-cost, high-value service. In contrast, special fee codes for primary care practitioners are not available for other more costly colorectal screening modalities including colonoscopy and flexible sigmoidoscopy (although incentives are available through pay-for-performance schemes).

The value of these treatment modalities when compared with FOBT is uncertain; however, colonoscopy and flexible sigmoidoscopy are more costly modalities and there are human and operational resource impacts if increased colonoscopy and flexible sigmoidoscopy screening examinations take place within the Ontario health system. In light of the uncertainty and potential economic and resource implications, the Ontario health system may want to incentivize the use of FOBT. FOBT fee codes, based on information from an HTA, can be used to establish provider fee codes to potentially influence physician behavior. This represents an alternative approach to the value-based modifiers presented in the previous example.

There is currently no direct evidence of the impact on quality, access or other health system metrics of using HTA to inform provider fees either in Canada or internationally. In 2010, the Centers for Medicare & Medicaid Services (CMS), the largest public health insurance body in the U.S., announced its intent to implement provisions in the 2010 Patient Protection and Affordable Care Act (Section 3007). The Act
requires CMS to develop a value-based payment modifier to the Medicare Physician Fee Schedule that will differentially pay individual medical professionals based on the quality of care furnished to Medicare beneficiaries compared to the cost of that care. The value-based payment modifier will be phased in from January 1, 2015 through January 1, 2017. Australia has similarly announced its intentions to incorporate HTA into the review of new and pricing of existing services.42

**FIGURE 2: GENERAL FRAMEWORK FOR ALIGNING HEALTH TECHNOLOGY ASSESSMENT, VALUE, AND PROVIDER FEES (ADAPTED FROM BRAITHWAITE38 ET AL)**

4 CHALLENGES WITH USING HTA IN PRICE NEGOTIATION OF PROVIDER FEES

4.1 Whose value?

Health systems that function within a liberal democracy have goals that will sometimes appear conflicting. As suggested by Hausman, the key responsibility of government is to “create an environment that secures fundamental interests, including the fundamental interest in being able to pursue one’s personal interests.”43 This means government has an important responsibility to ensure people have the ability to achieve their health goals. An examination of similarities in health policy objectives in OECD countries reveals a similar pattern of common objectives that reflect concerns about justice: adequacy and equity in access; income protection; freedom of choice for consumers; and appropriate autonomy for providers.44

Despite the need for providing opportunities and choice, public providers of healthcare must additionally concern themselves with ensuring value for healthcare money spent. Health technology assessment has supported value-for-money assessment by examining how technology can affect health outcomes and consumer satisfaction given budgetary constraints. Governments must equally consider questions of how money spent on health may affect opportunities for societal benefit from other government programs, like justice and education.44, 45 Importantly, these tradeoffs are not as simple as fewer resources for increased provider autonomy. Increasing choice in the healthcare sector may reduce choices in other sectors.

It has been suggested that HTA as currently performed may not reflect or measure other important sources of societal value. Some have suggested economic evaluations in HTA do not incorporate relevant societal or other impacts from health decisions—for example, the potential impact on private sector investment...
in research and development from decisions to fund.\textsuperscript{46, 47} The price of fees provided to physicians also carries additional implications beyond simple short-run efficiency. Provider fees also have implications for workforce composition, healthcare quality and clinical effectiveness. Fees must also consider geographic differences in the cost of labor. Fees that are perceived as too low could jeopardize future career choice of medical graduates and retention of the current workforce, and be detrimental to future access to health services.\textsuperscript{48} On the other hand, fees that are too high may lead to less-than-optimal utilization of low-value services, and suboptimal use of scarce healthcare resources.

Others have suggested issues of equity, social justice, patient autonomy and fairness are not incorporated into conventional HTA-based economic evaluations.\textsuperscript{49} For example, economic evaluations do not typically distinguish between additional health gained by the very old (for which there is precious little health remaining) or for the very sick (who may value small health gains to a greater extent). Other criticisms of HTA relate to the lack of consideration of the quality of life of caregivers and benefits achieved through enhancing patient compliance. While debate on the merits and failings of HTA centre around methods employed in the economic evaluation of new technologies (mostly drugs), many HTA organizations have adopted approaches that attempt to mitigate these criticisms. The use of patient input or citizen’s councils to capture value beyond clinical and cost-effectiveness has become widespread practice in the evaluation of pharmaceuticals in Canada. Several recommendatory committees also feature “public” members, so that public policy recommendations consider other social values.\textsuperscript{50, 51}

The formal use of HTA in provider fee assessment is attractive in principle; however, it may be costly and difficult to implement. The resources may not be available in Canada to undertake detailed value-based pricing assessments of all provider services. Moreover, there may be difficulties in conducting assessments of similar and sufficient quality. Therefore, it may make sense to prioritize value-based pricing assessments towards services associated with significant budgetary impact and for which there is a large price differential over other existing services. For example, an assessment of the value-based price of a robotic surgery procedure may be reasonable. In contrast, it probably does not make sense to undertake a thorough assessment of health technologies that have a small budget impact and where the price is similar to other services offered currently.

\begin{quote}
HTA as currently performed may not reflect or measure other important sources of societal value. A formal use of HTA in provider fee assessment may be costly and difficult to implement. It makes sense to create a standard approach to evaluation and prioritize value-based pricing assessments towards services associated with significant budgetary impact.
\end{quote}

\subsection{4.2 Coordination of provider fees}

While the U.S. is moving toward value-based modifiers for CMS provider fees, this is based on a long-standing national standard fee schedule of service fees that are valued relative to each other and with agreed-upon modifiers to value services according to geographic location.\textsuperscript{52} Attempts to make the value of insured medical service fees relative to each other have been made in Alberta, British Columbia and Ontario, but have not enjoyed uptake, largely due to the nature of re-evaluation; while the price of some services may increase, the price of others decreases, and this leads to concerns about provider wage-loss and provider stability.\textsuperscript{53}

Although all jurisdictions have mechanisms in place to determine the value of new fees, there is considerable variation in how this is done in terms of the information considered and the process and
methods at arriving at a fee. This means that a different price for a similar service could result from either contextual considerations such as disease burden, need for the service, how the service fits in with other programs or human resource requirements, or from methodological differences in approach to valuation. This also means different provinces could use different codes to describe similar services, making translation of the relative value of fees across provinces difficult.

There is also variability across provinces in ability or remit to actively or systematically revisit the prices of previous fees. The result is that the fee-for-service price may vary for historical, methodological and contextual reasons, and constant comparisons across provinces are required to validate fee prices. The Interprovincial Territorial Medical Directors Forum for Insured Medical Service, a network of medical directors from across provincial health insurers, are closely linked to each other and communicate frequently through the establishment of a provincial and territorial medical directors’ group. They represent a current mechanism to keep provider fees in check across provinces, but lack formal mechanisms to standardize fee codes or price evaluation. In order to develop HTA-based prices for provider fees, there is a need for standardization of fee codes and approaches to evaluating the price in order to determine a value-based modifier.

Value-based provider fee modifiers require systematic price re-evaluation of services. There is a need for a pan-Canadian standardization of fee codes and approaches to evaluating the price in order to determine a value-based modifier.

4.3 Do all provider fees require evaluation?

There may be very good reasons not to modify a price of a service, even if it is not cost-effective. There may be situations where encouraging a service is part of a larger scheme to train or retain providers, or as a strategy to facilitate existing or future provincial health programs and initiatives. By encouraging services of possible lower value, it may have spillover effects by retaining specialists who can provide higher-value services in the future. Providing services may also facilitate regional or cross-provincial coordination.

Some provider fees may not be amenable to price modifiers even if they represent services that are not cost-effective.

4.4 Cost-effectiveness threshold

The cost-effectiveness threshold represents the maximum price that a decision-maker would be willing to pay for an additional unit of health (e.g. QALY). The cost-effectiveness threshold plays a critical role in value-based pricing since funding services above the threshold will lead to net health losses. In Canada, there is no formal cost effectiveness threshold, although a cost-effectiveness threshold of $20,000 to $100,000 per QALY has been suggested. There is indirect evidence of a cost-effectiveness threshold from public drug plan decisions, where it has been shown that between the years of 2003 to 2008, no drug believed to exceed $125,000 per QALY was given a positive recommendation. Although similar analyses have not been done for non-drug technologies in Canada, an analysis of CMS decisions revealed no implicit threshold for decisions. Services that were associated with poor cost-effectiveness were as likely to be funded as cost-effective services. It is potentially controversial to use cost-effectiveness thresholds in healthcare resource allocation decisions when the threshold has not been empirically defined. It has also
been shown that relying on thresholds may not lead to optimal resource allocation decisions.\textsuperscript{58} However, empirical evidence on cost-effectiveness thresholds is emerging from other countries; for example, studies have been undertaken to reveal decision-maker thresholds for cost-effectiveness in the U.K.\textsuperscript{59, 60} These have led to suggestions that previously stated thresholds of £30 000 per QALY may be too high.\textsuperscript{59, 60} Similar empirical research is needed in Canada for value-based pricing to emerge as a viable policy option.

**A cost-effectiveness threshold is essential to determine what services are low value from those that are high value. More empirical research is needed in Canada to understand the current cost-effectiveness threshold.**

### 4.5 QALYs

While the use of QALYs in resource allocation decisions does allow health system choices to be made explicit, it is a far-from-perfect outcome measure.\textsuperscript{61} There are several limitations to the QALY that will have to be considered when using HTA to establish prices of healthcare interventions. Issues of equity, social justice, patient autonomy and fairness are not incorporated into QALYs. For example, each QALY gets equal weight and there is no distinction between QALY gains by age or disease severity. Issues related to unmet need are also not incorporated in QALYs—i.e., placing greater value on health technologies that treat diseases for which no therapy is previously available. Furthermore, the effects of a patient’s health on the quality of life of others (e.g. caregivers or family) do not figure into the calculation of QALYs.

If medical technologies have a significant impact on elements not captured in the QALY, these benefits may have to be incorporated into the price negotiation either formally (e.g., alternative QALY weighting) or by other methods. In 2010, CADTH developed a patient input process into its Common Drug (CDR) program. Similar mechanisms were introduced in Ontario and B.C., and are under development in the new pan-Canadian Oncology Drug Review (pCOR) process. The Ontario government has also developed a citizens’ council, where Ontarians discuss and provide their opinions on the values that reflect the needs, culture and attitudes of Ontario citizens about government health policy decisions. Information from these processes could help inform price negotiations of provider fees.

**Benefits (direct and indirect) of a healthcare intervention that are considered important and not captured in the QALY should be incorporated into the price negotiation.**

### 4.6 Ex-ante and ex-post assessment

Although consistent attempts are made to predict the value of a new good or service prior to its launch (i.e., \textit{ex ante}), many jurisdictions internationally have developed methods to re-assess the value post-launch (i.e., \textit{ex post}). This is because predicting the value of a good or service in the real world is difficult: the evidence-base may be lacking or difficult to generalize to a Canadian population or unpredictable effects of technology adoption may occur. With provider services, the effectiveness and marginal cost of production can change dramatically over time, because of individual and institutional learning curves, improvements in technology or its application, and changes in the organization of care associated with the service. As well, the evidence base for technologies, driven by regulatory processes, does not typically allow for strong inferences about effectiveness, leading to even further uncertainty about appropriate decisions.
The uncertainty about the value of a service or its budgetary impact and diffusion can be factored into price negotiation by allowing for conditional re-assessment. Prices can be linked to future outcomes, future volumes, or both, to give payers and producers some assurance of future economic value. Ex-post assessment provides opportunities for decision-makers to evaluate previous decisions, particularly when there is considerable decision uncertainty. Canada has shown leadership internationally by providing access to health technologies as real-world evidence is still being captured (also known as coverage with evidence development (CED) agreement). This is notable in Ontario, through the Medical Advisory Secretariat Field Evaluation Program, where the value of reducing uncertainty through ex post assessment not only provides additional information for future re-assessment, but enjoys widespread policy uptake when providers are intimately involved with the design and implementation of research.

Additionally, ex-post assessment allows services that were never previously evaluated to be assessed (when comparing new service A to existing services B and C), as they may be of particularly low value and lead to health system inefficiency.

Uncertainties around the value of a new healthcare intervention can be factored into the price of adoption combined with ex-post assessment. The value of additional evidence (post-launch) may reduce uncertainties around treatment decisions and improve society net health benefits.

4.7 Health research environment and infrastructure

HTA in price negotiation requires an environment that marries applied health research with policy-making. HTA-based price negotiation will require significant intellectual capital in the form of highly trained and experienced policy scientists with discipline-specific training in clinical epidemiology, health services research, information science, health informatics, political science, ethics and health economics, as well as the structures required to support them. There are currently very few opportunities in Canada for HTA-specific learning. Few universities currently have graduate programs with HTA specialties. Additionally, if assessment of provider services occurs ex post (i.e., after the decision to fund a service), the use of real-world information to measure and evaluate services will be required. Although Canada has an “information-rich” environment—with registries, discharge abstracts, and administrative physician and drug utilization databases—coordination of these environments for the purpose of assessing value of fees and services will be required.

Efforts are underway to strengthen this research infrastructure in ways that would improve the information available for tracking value delivered. The Canadian Institutes of Health Research recently announced its Strategy for Patient-Oriented Research, which is intended to: improve the research environment and infrastructure; set up mechanisms to better train and mentor health professionals and non-clinicians; strengthen organizational, regulatory and financial support for multi-site studies; and support best practices in healthcare.

Value-based provider fees using HTA and in some cases ex-post assessment would require investment to strengthen the research infrastructure in ways that would improve the information available for tracking value delivered.
5 POLICY OPTIONS

5.1 Main Concern

Physician providers are most often paid through fee-for-service arrangements—reimbursed directly by publicly funded insurers based on costs associated with the service. Choices made by providers regarding what mix of services to provide can greatly influence spending on both physician services and the associated hospital and technology expenditures needed to support service delivery. Currently, new provider fees are largely based on the cost of delivering the service, and do not usually consider the cost-effectiveness and other aspects of service value. This means providers have no signal to perform high-value services compared to low-value services. Some provinces have turned to using HTA to inform fee-code development. However, new fee codes are developed in each health jurisdiction according to separate approaches with very little coordination (Figure 3). The lack of standardization creates inequities across providers and pressure on provincial health jurisdictions to pay for services without considering local health-system requirements or systematically considering value.

The use of HTA to establish the provider fee or a modifier is an opportunity to align incentives for consumers, providers, producers and payers. HTA appears to be the most appropriate and available policy tool for measuring and rewarding value and informing policy decision-making, although there is considerable room for improvement in the scientific judgments currently used in HTA to measure value. There are currently national standards available for the conduct of economic evaluation in assessing healthcare intervention. However, methods for measuring value, beyond preferences for health, may need to be explored.

Canada has considerable capability in health technology assessment and applied health research, including the evaluation of technologies in a real-world setting, and this is likely to improve with the current and future direction of the Canadian Institutes for Health Research. Canada has already developed transparent, accountable and evidence-based HTA processes for the appraisal of the health benefits offered by health technology. There is already considerable and compelling evidence that HTA, both for its use in listing decisions and in price negotiation, has had a significant financial impact on the health system in Canada without adversely affecting health outcomes.

However, there are several notable features for widespread negotiation of price that are lacking in the current health system environment:

✈ Coordination of price negotiation: Canada’s decentralized health system provides opportunities for “whipsawing.” That is, lack of substantial coordination of price negotiation means jurisdictions may be pressured to introduce provider fees or raise the price of services. The process is not symmetrical, in that jurisdictions will never be challenged to discontinue a service or lower the price of a service when a comparison reveals they have overvalued the price of a good or service. Lack of coordination can therefore lead to overpricing.

✈ Social value: Price negotiation requires an explicit recognition of what amount of value society is willing to give up, as additional resources that could be used for other government programs including healthcare (and even, investments in business development) must be used to accommodate costs of health purchasing decisions. Price is also linked to other considerations, like reliability of service and ability to implement programs of care. Without an explicit recognition of opportunity cost through clear communication from policy-makers as to what factors constitute good value, providers lack cost-effectiveness signals for chosen appropriate use of health technologies and interventions. The downside of declaring social value is that it is imperfect, may not adequately reflect important population heterogeneity, and may need frequent updating with shifting politics or demographics.
Coordination of research environment: A significant amount of health information is collected and analyzed across Canada, but this requires fit-for-purpose coordination in order to quickly and thoroughly re-assesses outcomes associated with the value of technologies and services in healthcare. This will be particularly salient in an environment where price negotiation is linked to the use of ex-post assessment. This means strengthening capacity to conduct discipline-specific research and the structures required to support it. Coordination should lead to improved methods for evaluating health system performance.

5.2 HTA-based price negotiation of provider fees

The current scheme of creating prices for provider fees is highly uncoordinated, with provinces individually creating their own fee codes with unique prices according to their own methods. New provider fees are largely based on the cost of delivering the service, and do not usually consider the cost-effectiveness and other aspects of service value. The lack of standardization creates inequities across providers and pressure on provincial health jurisdictions to pay for services without considering local health system requirements or systematically considering value. Some provinces have turned to using HTA to inform fee-code adoption. There is some informal coordination through information-sharing via the Interprovincial Territorial Medical Directors Forum for Insured Medical Service, and some use of HTA information from the Canadian Agency for Drugs and Technologies in Health, as well as other in-house resources depending on the province.

**FIGURE 3: CURRENT USE OF HTA IN ADOPTING NEW PROVIDER FEES**

![Diagram showing current use of HTA in adopting new provider fees]

**Option 1: Create a coordinated approach to evaluating provider fees**

The first option would be to create a coordinated approach that would create a standard and contribute to the negotiation of the price of provider fees. The approach would have the following mandatory and optional functions:

- **Mandatory**—The national coordinated process would develop a method for translating HTA information into value-based fee price modifiers, and create value-based modifiers for future provider services.
- **Optional**—The national coordinated process could develop a standard approach to assessing the value of new fees, which could be adopted by individual provinces.
[Optional]—The national coordinated process could develop a resource-based relative-value schedule of all or some (those most often used) fee codes across provinces.

[Optional]—The national coordinated process could review new fee codes and create suggested provider fees for adoption across jurisdictions.

In this approach, a network of medical directors and other key stakeholders would refer requests for new fees to a national review process. The review process would conduct HTA or use HTA from existing bodies (like CADTH) and create recommendations for a relative value modifier for the new service and existing similar services. The process would involve appropriate consultation with provider associations. (See Figure 4)

**FIGURE 4: OPTION 1: DEVELOPMENT OF A COORDINATED APPROACH TO FEE PRICE DETERMINATION**

The development of pan-Canadian entity to coordinate pricing strategies for new provider services would help reduce inequity across jurisdictions. It could standardize methods for costing new services using HTA and other measures of relative value, including where a service is being provided. This coordinated approach could build on existing models for informing provider fee prices and on the existing information-sharing network of medical directors who are highly receptive to HTA information. This approach would also provide an avenue for coordinated health technology management in Canada and incentivize best practices in use of health technologies, which could result in avoiding unnecessary health expenditures. The use of value-based pricing of provider fees could be applied to mixed models of provider financing and alternative arrangements in the future. Table 2 resumes the key strengths and weaknesses of proposed option 1.
**Table 2: Strengths and Weaknesses of Creating a Coordinated Approach to Evaluating Provider Fees (Option 1)**

<table>
<thead>
<tr>
<th>Strengths of Approach</th>
<th>Weaknesses of Approach</th>
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<tbody>
<tr>
<td>As with the pricing of pharmaceuticals, there is currently inequity in the price that can be charged by providers across the country. This leads to unnecessary tension and whipsawing. Common approaches to valuating existing services and common approaches to adjusting them based on resources or value are helpful in standardization and explaining differences.</td>
<td>Coordination of medical associations: Provincial medical specialty associations may require new mechanisms to prepare to coordinate with a national fee schedule process.</td>
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<tr>
<td>The current process would be an extension of information sharing that already exists across provinces and a common need expressed by medical directors in each province. Even developing a coordinated approach could lead to further coordination.</td>
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<tr>
<td>Technology management: Establishing a pan-Canadian approach to pricing of provider services (a majority of which involve new technology) is a feasible, first step to managing health technology in Canada, since reimbursement of non-drug health technology is not managed provincially, as with drugs. This approach will also influence providers’ behavior toward best practices in use of health technologies and unnecessary health expenditures can be avoided,</td>
<td></td>
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<tr>
<td>Built on existing models—CMS in the U.S. currently has an existing coordinated approach for assessing the value of provider fees across an even more diverse demographic. Although there are some differences between this model and the needs in Canada, many of the experiences and principles of that approach can be brought into Canada.</td>
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**Option 2: Create a coordinated process for fee schedule review with ex-post monitoring**

This system would harbour the same features as those in Proposed Option 1, but would additionally liaise with a separate research entity that provides information on real-world performance of medical services across provinces. This national research entity would be equivalent to province-based research groups and linked to existing institutions that focus on collecting and analyzing this type of information, such as the Institute for Clinical and Evaluative Sciences (ICES). This coordinated approach will build on current activities, including the Canadian Institutes for Health Research (CIHR) initiatives, to promote applied health research capacity and environments. It can also build on and provide direction to the collection and analysis of health information at the Canadian Institute for Health Information (CIHI). (See Figure 5)

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vi The Institute for Clinical Evaluative Sciences (ICES) is an independent, non-profit organization, whose core business is to conduct research that contributes to the effectiveness, quality, equity and efficiency of health care and health services in Ontario.
This approach would harbour all of the benefits outlined in the previous option, but would allow for more flexibility in creating price modifiers, which would stimulate more medical practice innovation and opportunities to enhance research practice. It would also provide Canada with opportunities to accurately measure the relative value of medical service in the real-world. Table 3 presents strengths and weaknesses of creating a coordinated process for provider fee schedule review with ex-post monitoring (option 2) as supplement to those provided in Table 2.

**TABLE 3: STRENGTHS AND WEAKNESSES OF CREATING A COORDINATED PROCESS FOR PROVIDER FEE SCHEDULE REVIEW WITH EX-POST MONITORING (OPTION 2)**

<table>
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<tr>
<th>STRENGTHS OF APPROACH</th>
<th>WEAKNESSES OF APPROACH</th>
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<tr>
<td>More flexibility: Similar to pharmaceutical pricing, price negotiation mechanism tied to prospective valuation allows for greater flexibility in pricing.</td>
<td>Coordination of medical associations: Provincial medical specialty associations may require new mechanisms to prepare to coordinate with a national fee schedule process. They may be unprepared to respond to ex post assessments of service value.</td>
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<td>Opportunities to improve research environment: This system will build on current initiatives to improve applied health research in Canada. It will provide opportunities for the improved standardization of health and health outcomes information. An improved research environment will provide incentives for private sector innovators to invest in Canada and economic incentives for Canada’s “knowledge economy.”</td>
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<tr>
<td>Real value: Ex-post assessment reduces speculation regarding the value of provider services. It sends strong signals to providers about which services work and which are required in the health system. This will also lead to additional questions regarding the value of existing services compared to new ones.</td>
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6 CONCLUSIONS AND RECOMMENDATIONS

Price negotiation with HTA as an input is an opportunity to better align incentives and manage the entry of new technologies in the Canadian health system. Some jurisdictions in Canada already use HTA to inform provider fees including modifying fee code status or price based on perceived value. Given this preliminary experience, the capacity to conduct HTA in Canada, and providers response to financial incentives, establishing a pan-Canadian approach to pricing provider services based on the use of health technology assessment appears desirable and feasible. Although a coordinated system of provider fee determination would be more advantageous if linked to real-world assessment, it is likely too ambitious given the highly uncoordinated state of fee determination currently.

The coordinated system approach would require a new pan-Canadian body governed by provincial public health insurers to conduct provider fee reviews on behalf of the provinces. Coordination would reduce the likelihood of political pressure from across jurisdictions due to perceptions of inequity. Ideally, the body would suggest appropriate modifications to service fees based on evidence of cost-effectiveness and other metrics of value. The intent of these recommendations would be to promote the utilization of high-value services and reduce the utilization of low-value services. The value based fee modifier would influence providers’ behavior toward best practices and uses of health technologies. In turn, unnecessary health expenditure can be avoided. Such a pan-Canadian approach would build on existing information-sharing networks across provinces for new fee determinations.

Based on theoretical and practical evidence, we believe this system would be relevant and acceptable and could have a significant impact on the growth of healthcare expenditure, without having a negative impact on provider income or the health of Canadians.
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APPENDIX A: LIST OF PARTICIPANTS IN SEMI-STRUCTURED INTERVIEWS

<table>
<thead>
<tr>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>AFFILIATION</th>
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</thead>
<tbody>
<tr>
<td>Bryan</td>
<td>Stirling</td>
<td>Director Centre for Clinical Epidemiology &amp; Evaluation, Vancouver Coastal</td>
</tr>
<tr>
<td>Fleming</td>
<td>Blair</td>
<td>Medical Director Newfoundland</td>
</tr>
<tr>
<td>Hoch</td>
<td>Jeffrey</td>
<td>Health Economist Ontario/CCO</td>
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<tr>
<td>Karrell</td>
<td>Abe</td>
<td>Medical Director British Columbia</td>
</tr>
<tr>
<td>King</td>
<td>David</td>
<td>Medical Director GNWT</td>
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<tr>
<td>Peachy</td>
<td>David</td>
<td>Principal Health Intelligence Inc.</td>
</tr>
<tr>
<td>Tweed</td>
<td>Anne</td>
<td>Medical Director Nova Scotia</td>
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</tbody>
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APPENDIX B: SEMI-STRUCTURED INTERVIEW GUIDE

The interview begins with the interviewer stating the purpose of the interview, the topics that he wants to explore and the depth of response expected. Interviews were conducted by a single individual (DH).

PURPOSE:

*Interviewer:* The purpose of today’s interview is twofold:

1. It will help to create an understanding of current and past activities undertaken in your jurisdiction in regards to the use of HTA in price decisions including the successes and challenges of these activities that you are aware of
2. To explore future needs of the use of HTA in pricing decisions

As you might already know, CHSRF is an independent, not-for-profit organization with a mandate to promote the use of evidence to strengthen the delivery of health services in Canada.

The current initiative has been undertaken as HTA was identified as a potential solution to curb healthcare expenditure and value-based pricing is a way in which HTA has been used successfully. The discussion paper will be used as the basis of future discussion among key stakeholders with the view of using evidence to create change in the health system.

*Interviewer:* I would like to cover a few topics today that will help answer the question concerning how HTA is currently used to inform pricing decisions and how it could be better used in the future.

In each case, I will try to describe how much feedback is needed. However, I want to encourage you to speak freely in response to each question, even if you feel it doesn’t directly address the question. We will have 30 minutes for discussion.

QUESTIONS

Value-based pricing has several definitions but for the purposes of our discussion it is an attempt to have the price of a good or services reflect the value of the good or service.

1. Do you personally think the use of HTA to inform price is important? (Touring question)
2. Can you tell me what is currently happening in your jurisdiction in regards to Value-Based Pricing? (Touring Question)
3. In an ideal world what kinds of things could be in place in the future to facilitate the use of HTA in setting prices?
4. Permission to Use Name, Interviewee demographics
## APPENDIX C: HEALTH TECHNOLOGY ASSESSMENT ORGANIZATIONS IN CANADA

<table>
<thead>
<tr>
<th>Province/HTA Producer</th>
<th>Year</th>
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<th>Decision Maker</th>
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<tr>
<td>Institute of Health Economics Health Technology Assessment program</td>
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<td>PPP</td>
<td>Province</td>
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<tr>
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<td>University of Alberta/Capital Health Evidence-Based Practice Center</td>
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</table>

Adapted from Battista, 2009.(5) RHA=regional health authority; PPP=private-public sector-partnership; QG=quasi-governmental funding is matched academic and government funding or matched funding from different governments; US=United States; *through the National Advisory Committee on Immunization, Canadian Task Force for Preventive Healthcare and similar programs.; ** through Knowledge Translation Strategy grants designed to link policymakers and researchers, and special programs including the Institute for Health Services and Policy Research “Knowledge On Tap” and “Partnerships for Health System Improvement”