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Filling the Cavities: Improving the Efficiency and Equity of Canada's Dental Care System

Lack of access to even urgent dental care is a problem for the poor and other population groups in Canada. Their numbers are due to swell as babyboomers retire and lose employer insurance coverage, and more workers join the gig economy. Canadian governments should take inspiration from other countries and lay the foundation for universal access to dental care through an expanded mix of public and private insurance coverage.

Åke Blomqvist and Frances Woolley

About The Authors

Åke Blomqvist
is Health Policy Scholar at the C.D. Howe Institute and Adjunct Research Professor, Carleton University.

Frances Woolley
is a professor of economics at Carleton University. Her research focuses on Canadian public policy.

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Daniel Schwanen
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The Study In Brief

Ensuring that all members of the community, including the poor, have access to urgently needed healthcare is a central objective of Canadian social policy.

Yet, in the current system, there are many population groups in which individuals have difficulty accessing even urgently needed dental care. Moreover, the number of Canadians unable to access dental care is likely to grow rapidly in the next decade as the babyboom generation retires and loses insurance coverage, and the number of Canadians working in the gig economy, where benefits such as employer-sponsored health insurance are rare, rises.

Lack of access to dental care may lead to substantial reductions in quality of life due to both the discomfort of oral pain, and the embarrassment associated with having bad breath or bad teeth. Furthermore, there is research to suggest that poor oral health may be a disadvantage in the labour market and also that there may be a link between oral health on the one hand, and heart disease, strokes, and certain forms of cancer, on the other. Untreated oral health problems also are responsible for a not insignificant amount of visits to primary-care physicians and hospital emergency rooms.

We believe provincial governments should take inspiration from other countries and start moving toward some form of universal dental insurance coverage; in doing so they should also consider ways in which the dental services sector could become more competitive and efficient. Policy initiatives along those lines could yield major payoffs, in terms of both equity and efficiency.

A straightforward way of creating universality would be to gradually expand existing public plans until they covered everyone in the population. However, universality does not necessarily mean that everyone must be insured through the same plan. As an alternative, we explore a mixed model with competition between private and public insurance. In our proposals to improve public dental coverage in Canada, we further scope out possible stumbling blocks in developing a broader public insurance plan, for example, controversies over what should be covered, and how public payment models and regulation could encourage more efficient service delivery.

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A strong case can be made for an expanded government role in financing dental care in Canada.

The government programs that currently exist are limited in scope, and while many Canadians have private insurance that includes dental care, coverage is far from universal. Making a "public option" in dental care more widely available would serve not only to reduce the extent of the gaps in coverage, but could also enhance competition in the dental care sector and moderate the growth in dental care costs.

Ensuring that all members of the community, including the poor, have access to urgently needed healthcare is a central objective of Canadian social policy. Our provincial health insurance plans do so for physician and acute-care hospital services, but not for services such as dentistry or long-term care, or for prescription drugs. The coverage gaps that exist with respect to pharmaceuticals and long-term care have featured extensively in the social policy debate: Numerous proposals have been made to extend or strengthen coverage of pharmaceutical costs, and a lively debate about the future of elder care continues to simmer as Canada's boomers age (Blomqvist and Busby 2015a, 2016). Dental care, in contrast, has received much less attention in the political arena. In part, this may be because the public pressure to do something about it is less intense. While dental problems can be painful and debilitating, they are rarely life-threatening: The consequences that follow when some population groups have difficulty accessing dental care are not as dramatic as those when people don't receive urgently needed medical care or drugs, so there is less political pressure for action. Moreover, the majority of Canada's employed population has good oral health and private dental insurance that they are mainly satisfied with.

But even if problems of access to dental care have not received a great deal of attention in the health policy debate, there is no doubt that, in the current system, there are many population groups in which individuals have had difficulty accessing even urgently needed dental care (Ramraj et al. 2013). Moreover, the number of Canadians unable to access dental care is likely to grow rapidly in the next decade as the babyboom generation retires and loses insurance coverage, and the number of Canadians working in the gig economy, where benefits such as employer-sponsored health insurance are rare, rises. Lack of access to dental care may lead to substantial reductions in quality of life due to both the discomfort of oral pain, and the embarrassment associated with having bad breath or bad teeth. Furthermore, there is research to suggest that poor oral health may be a disadvantage in the labour market (Glied and Neidell 2010, Singhal, Correa and Quiñonez 2013, Singhal et al., 2016), and also that there may be a link between oral health on the one hand, and heart disease, strokes, and certain forms of cancer, on the other (Meurman, Sanz and Janket 2004, Fitzpatrick and Katz 2010). Untreated oral health problems also are responsible for a not insignificant amount of visits to primary-care physicians and hospital emergency rooms (LaPlante et al., 2015, Singhal, McLaren and Quiñonez 2017).

The gaps in dental insurance coverage in Canada stand in contrast to many European countries, such as the UK or France, where basic

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dental insurance is universal. Furthermore, a close look at dental care use in Canada suggests that, in addition to the under-use of dental services among many low-income Canadians, there is arguably plenty of dental service overuse by others, because of how dental care is financed and how providers are paid. We believe provincial governments should take inspiration from other countries and start moving toward some form of universal dental insurance coverage; in doing so they should also consider ways in which the dental services sector could become more competitive and efficient. Policy initiatives along those lines could yield major payoffs, in terms of both equity and efficiency.

A straightforward way of creating universality would be to gradually expand existing public plans until they covered everyone in the population. However, universality does not necessarily mean that everyone must be insured through the same plan. As an alternative, we explore a mixed model with competition between private and public insurance. In our proposals to improve public dental coverage in Canada, we further scope out possible stumbling blocks in developing a broader public insurance plan - for example, controversies over what should be covered, and how public payment models and regulation could encourage more efficient service delivery.

Dental Care: An International Perspective

In many other countries with publicly organized universal health insurance, dental care is covered at least to some extent; in Canada, only "medically necessary" dental surgery is part of the universal provincial health insurance plans. In addition, there are provincial and federal programs that pay for certain kinds of dental care for specific population groups, but their scope is limited and government's share of aggregate oral healthcare costs remains small. In this respect, the Canadian system is more like that in the US, where the public-sector share also is limited. Public coverage is much broader in countries like the UK and France, where the universal publicly organized health insurance plans include substantial dental-care coverage.

Private insurance nevertheless pays for a significant share of dental care costs even in France and the UK where it supplements the universal public-sector coverage for many people, and even more so in the US and Canada where it paid for roughly half of total oral health costs in 2010. [1] Out-of-pocket payments of patients accounted for about the same share (a little over 40 percent) in Canada, the UK, and the US, but were lower in France (Table 1).

In terms of per capita costs, dental care spending tends to be much higher in the US and Canada than elsewhere. As a share of aggregate healthcare costs, dental care is considerably higher in Canada than in the US because spending on physician and hospital services, and especially drugs, is so much higher in the US; in comparison with the UK and France, the share is higher in Canada because Canada spends so much more on dental care.[2]

1 In 2015, the figure was even higher, at 56 percent (Canadian Dental Association, 2017)

2 Recent data from CIHI's National Health Expenditure database suggest that spending on dental services as a percentage of total health expenditure in Canada currently is lower than the 7.4 percent shown in Table 1. The most recent data available to us refer to 2016 and show dental expenditure at 6.3 percent of the total. This is still considerably higher than the shares shown for the US, the UK, and France, however.

Table 1: Oral Health Costs and Financing in Four Countries, 2010

	Canada	France	UK	US
Oral Health, $ per capita	309	175	141	349
Percent of Total National Healthcare Costs	7.4	4.6	4.1	4.0
Public Sector Share of Oral Health Costs (percent)	5	36	46	9
Out-of-pocket Share of Oral Health Costs (percent)	42	25	41	42

Source: Based on Neumann and Quiñonez (2014), Table 4, p. 7.

Government Dental Plans: The Current Picture

While the overwhelming bulk of dental care in Canada is paid for privately, either through private insurance or out of patients' pockets, we examine government dental plans in some detail, for two reasons. First, doing so allows us to identify potential gaps in access to dental care. Second, existing government dental plans provide a range of possible models for an expanded public plan, as proposed later in this paper.

In terms of total costs, the largest government program that covers dental care costs in Canada is a federal one: The Non-Insured Health Benefits program, which pays for the dental care received by people in First Nations and Inuit communities (Health Canada 2014). The federal government also funds smaller programs covering those in the military, veterans, members of the RCMP, refugees, prison inmates, and so on. [3] The range of services covered under these programs varies. The Non-Insured Health Benefits (NIHB) program for Aboriginal Canadians, for example, is more like a private dental plan, covering a broad range of both preventative and restorative procedures. The Interim Federal Health Program that covers refugees (IFHP), on the other hand, is designed to meet urgent dental needs, and does not cover either preventative care such as scaling, or more advanced procedures such as root canals. One commonality of these federal programs, however, is that they both reimburse dentists at rates close to or at those recommended by the provincial/territorial dental fee guides.[4]

With regard to provincially funded programs, there is striking divergence in the extent and type of public dental coverage (Shaw and Farmer 2015). In-hospital dental procedures are generally fully covered across the provinces, in the same way that other hospital care is, if they meet the test of being "medically necessary." However, these procedures

3 The federal government also offers the medical expense tax credit (a non-refundable credit), which allows individuals to claim dental services received in the last 12 months. Only expenses in excess of the lesser of $2,237 for 2016 ($2,268 for 2017) or 3% of net income can be claimed when calculating the federal tax credit.

4 For information on the NIHB program, see https://www.canada.ca/en/health-canada/services/first-nations-inuit-health/reports-publications/non-insured-health-benefits/dental-benefits-guide-non-insured-health-benefits-program.html; for IFHP see https://docs.medaviebc.ca/providers/benefit_grids/Dental-Benefit-Grid.pdf. Both accessed 11/1/2018.

account for a small fraction of dental care. Public coverage for other oral health procedures, when it is available, is typically limited in scope, income tested or restricted to those receiving social assistance, or targeted towards particular demographic groups, most often children. While generalizations are difficult, a few observations may be offered.

All provinces fund some level of dental services for adults in receipt of income support through "social assistance" or "welfare" programs. The amount of coverage varies widely across the country, but some common patterns can be discerned. First, long-term income support recipients are eligible for more dental benefits than short-term recipients. For example, in Quebec, adults can only access emergency dental services for the first 12 months of receiving last-resort financial assistance, but after a year they become eligible for a wide variety of services, including root canals. Second, every province restricts income-support recipients' access to dental care in some way. British Columbia, for example, caps income-support recipients' dental care benefits at $1,000 every two calendar years.[5]

Most other provinces restrict spending through fee schedules that specify which dental procedures are covered, and at what rate. The lists can be quite restrictive. Newfoundland, for example, does not cover any preventative services, such as cleanings or fluorides.[6] The reimbursement rates are typically below, sometimes significantly below, dental associations' recommended fees. Third, in most provinces, but not all, adults lose their dental benefits when they are no longer on income support. An exception is Alberta, where the Alberta Adult Health Benefit lets low-income, former social assistance recipients keep their health coverage.[7] Finally, most of these income-support related programs are effectively restricted to adults under 65. Low-income seniors receive federal support through the Guaranteed Income Supplement, Old Age Security, and sometimes the Canada Pension Plan, so typically do not qualify for provincial welfare-type dental programs.

The dental care landscape for children is radically different from that for adults. The majority of Canadian children are covered by some form of dental insurance. The first, go-to, insurance coverage comes from parents' private insurance plans. For children with uninsured parents, most provinces provide some kind of secondary insurance coverage. Typically access to these provincial programs is income tested. BC's Healthy Kids Program, for example, is currently available to families with an adjusted net income of $42,000 or less.[8] One exception is Quebec, which provides universal coverage of dental services to children under the age of 10 – as long as the services are provided in a public dental clinic or hospital.[9]

Provincial programs for children typically take strong cost control measures. The Ontario Healthy Smiles program, for example, reimburses dentists at a rate significantly below the rates recommended by the province's dental association[10] (see also Shaw and Farmer, 2015: 11). Yet not all dentists are

5 https://www2.gov.bc.ca/gov/content/governments/policies-for-government/bcea-policy-and-procedure-manual/health-supplements-and-programs/dental-and-orthodontic-services accessed 10/1/2018

6 http://www.health.gov.nl.ca/health/dentalservices/general_info.html#4.

7 https://www.alberta.ca/alberta-adult-health-benefit.aspx#toc-1, accessed 12 April 2018

8 https://www2.gov.bc.ca/gov/content/health/health-drug-coverage/msp/bc-residents/premiums accessed 11/1/2018

9 http://www.ramq.gouv.qc.ca/SiteCollectionDocuments/citoyens/en/depliants/depl-services-dentaires-en.pdf. Accessed 11/10/2018.

10 The Ontario Health Smiles fee schedule can be found here: http://www.health.gov.on.ca/en/pro/programs/dental/docs/hso_services_fees_dentist.pdf. Accessed 11/1/2018.

willing to treat patients at cut-rate prices (Ito 2011). To ensure access to treatment, therefore, a number of provinces have established or funded dental clinics to treat eligible patients. Prince Edward Island, for example, offers preventative dental services to children through public health clinics that visit local schools and, as noted above, Quebec's universal program for children under 10 operates through public dental clinics.

While children are the Canadians most likely to have access to dental insurance, seniors are the least likely. Income support programs targeted at seniors, such as the Guaranteed Income Supplement, do not come with dental care benefits, unlike those for younger adults. Shaw and Farmer (2015) identified only one province, Alberta, with a dental public health program for seniors. Although a number of provinces provide some oral healthcare to seniors in long-term care facilities (Shaw and Farmer 2015), only one province, Prince Edward Island, mandates annual oral examinations for long-term care residents (Ontario Dental Association 2010). There appears to be a strong consensus among dentists that seniors need better access to dental care (Sutherland, 2008). The BC Dental Association, for example, recommends that dentists lobby their province to fund dental coverage for low-income seniors (BC Dental Association, 2008).

In addition to these three big demographics – adults, children and seniors - there are some smaller groups that receive provincially funded dental benefits. Almost all provinces provide some funding for dental care for children born with cleft lip or/and palate, but it falls short of the 100 percent coverage that is available for other birth defects necessitating surgical intervention. Children and adults with severe developmental disabilities such as autism may require dental treatment under general anesthesia. Although such services may be covered through provincial health insurance plans as "medically necessary" hospital services, access can be problematic (Rush 2013). The spotty dental coverage for people with special needs is another cavity in Canada's healthcare funding system, and is part of the reason why a better system is needed.

This section has described the government programs that act as a backstop to Canada's predominantly private dental insurance system. But how effective is that backstop? How many people fall through the cracks, and are not able to access dental care?

Dental Services in Canada: Patterns of Use

Canada's reliance on private, usually employer-based, dental insurance, in combination with the limited scope of public programs, could be expected to generate unequal access to dental care. In this section, we demonstrate how strong the connection is between age, income, employment and use of dental services. In doing so, we rely on the information on patterns of insurance coverage and utilization of dental care in Canada available from the Canadian Community Health Survey. As the CCHS only collected information on dental service usage for a very small number of provinces, we focus here on Ontario. As it makes up nearly 40 percent of Canada's population, Ontario is important in its own right, and the results shown here should generalize to other provinces with similar markets for dental services.

Insurance Coverage, Age and Household Income

There is a clear positive correlation between dental insurance coverage and household income, for all three of the age categories that are shown in Figure 1: Youth, 20 to 64 year olds, and those over 65. Insurance coverage is negatively correlated with age, in all income brackets, but especially among those with low income. Seniors in the top two income deciles are more than three times as likely to have dental insurance as seniors in the bottom decile. Note also that, because the income deciles shown

Figure 1: Percent of Ontarians with Dental Insurance, 2013/14

Source: Calculated by the authors from the Canadian Community Health Survey PUMF. Denture wearers excluded.

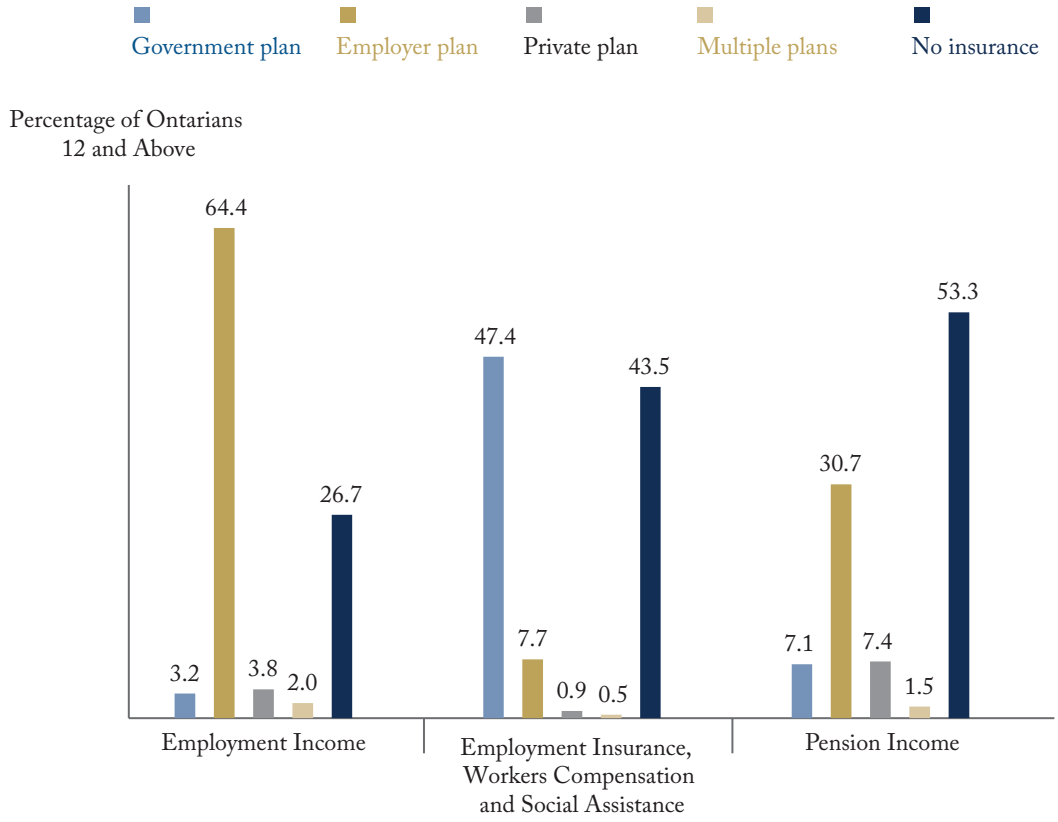
are for all Ontario households, there are more seniors in the bottom deciles than the top ones, because seniors tend to have lower-than-average incomes. At all income levels, young Ontarians are more likely to have insurance than older ones, but the differences are particularly pronounced at lower income levels.

Another critical feature of the way dental insurance is distributed across Canada's population is that by far the largest share comes in the form of either employment-based group insurance, or government plans (Figure 2). The provincial government plans mostly cover individuals in households whose main source of income are payments from government income support programs, such as Employment Insurance, Social Assistance, or Workers Compensation. This is to be expected given the structure of provincial dental programs described in the previous section. In households that rely principally on income from employment, employment-related plans cover the majority: almost 65 percent. While some of the employment-related plans continue to cover workers after retirement, this is becoming less common. At retirement, therefore, many workers face a choice between either being uninsured or buying an individual plan. Most choose the former, especially if they live in low-income households.

Insurance Coverage and Employment

Employment-related insurance is more common among individuals who work in steady and well-paid jobs. Among those of working age, individuals in the lower income deciles are more likely to derive income from casual or low-wage jobs that do not offer benefits. These individuals – who include the group often referred to as the "working poor" – account for the fact that as many as 30 percent of those in households that rely principally

Figure 2: Type of Dental Insurance Plan by Main Source of Household Income, Ontario, 2013/14



Source: Calculated from Canadian Community Health Survey PUMF.

on employment income still do not have dental insurance.

Employment-related plans are group plans that private insurance companies have negotiated with employers to cover all employees in a given workplace. Insurance companies also offer individual plans (plans that are not supplied collectively, through employment, but for which enrollees sign up individually), but enrolment in those plans comprises only a small proportion of the population, principally older individuals (see Figure 2).

There are two main reasons why employment-related group insurance is so much more common than individual plans. First, the premiums on individual plans with a given range of benefits tend to be much higher than the premium for a comparable group plan, because of an effect that is referred to in the insurance literature as "adverse selection" – those in higher need of dental services are more likely to purchase insurance. Second, under Canadian tax law, employer contributions to workers' private health insurance are treated as a non-taxable benefit, which implicitly gives group plans an advantage over individual plans. The way adverse selection and the tax laws combine to favour group plans is discussed in Box 1.

Insurance Coverage and Service Use

Dental insurance coverage affects individuals' use of dental services: Among Ontarians in the 20-64 age bracket, those with insurance are much more likely to regularly visit dentists than the uninsured (Figure 3). Among both the insured and the uninsured, those with low income generally have fewer visits

Box 1: How Tax Law and Adverse Selection Handicap Individual Dental Plans

Why do premium costs for individual insurance plans tend to be so much more expensive than the premium costs of group plans with similar coverage? The main reason is that in markets for individual plans, there is much more scope for what is known in the insurance literature as adverse selection, a problem that tends to cause premiums to be very high, or lead insurers to only offer plans with very limited coverage.

Adverse selection arises in insurance markets when there are differences among individuals in the probability that they will need expensive insured services, or suffer the kinds of losses that insurance is supposed to cover. When this is so, people who know that they are at a high risk for a loss, or know that they probably will need expensive services, are more likely to sign up for insurance, or choose more generous coverage, than those who believe they are "good risks" – that is, have a low probability of a loss or of needing a lot of health services.

Dental care certainly is subject to adverse selection because different people have different probabilities of needing expensive dental procedures. In a population where everyone is insured by the same plan, premium costs will be based on an average of the high-risk expensive people, and those with good teeth who don't need much care. But if people who have low expected use of services begin to drop out of the plan, the premium will have to rise since the average cost of services for those who remain is higher than before. In group plans, this doesn't happen because those with low expected costs are not allowed to drop out. In markets for individual plans, on the other hand, they will drop out, with the result that individual plans will either be very costly, or offer only limited benefits.

The fact that employer contributions to workers' health insurance is treated as a non-taxable benefit under Canadian tax law constitutes an additional advantage for group plans relative to individual plans. Suppose an individual plan with given benefits has a premium cost of $50 a month for covering a worker and her family. If the worker is in the 25% income tax bracket, she has to earn a monthly amount of $66.67 from her employer to pay for it. If the employer pays for the plan instead, it is treated as a non-taxable fringe benefit, and will only cost her $50 in reduced salary.

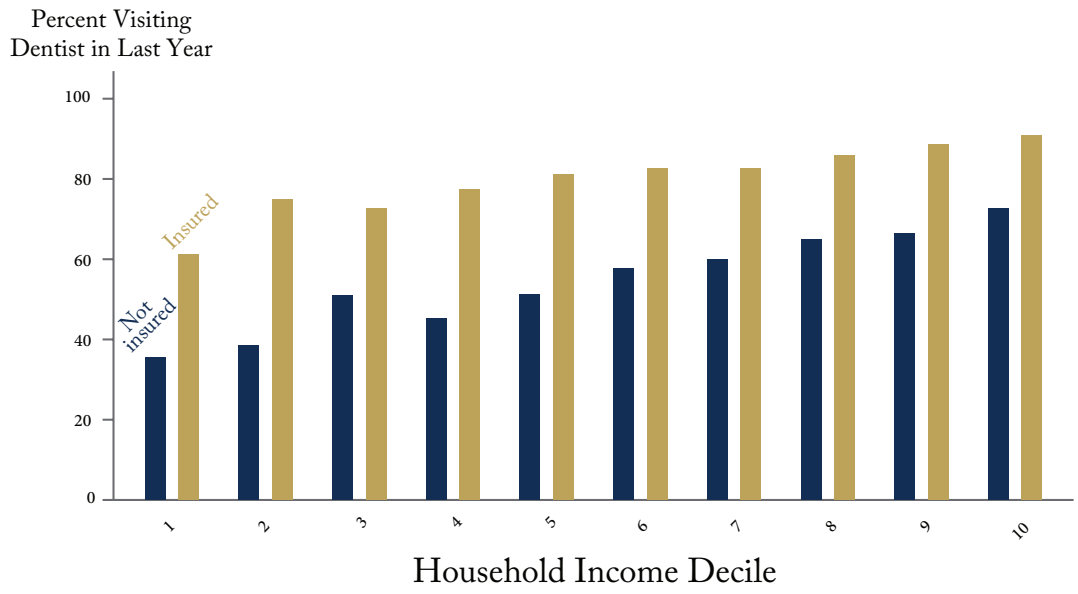
The advantage of group coverage through this effect is higher for people with high income, since they typically are in a higher tax bracket. This in turn is part of the reason why group insurance is more common for those in well-paid steady jobs, but less common in, for example, part-time jobs or jobs with low pay.

than those in higher income brackets. For those with insurance, this may partly reflect the fact that even the insured typically have to pay part of the cost as a patient co-payment, a tendency for those with high income to have plans with more generous benefits (fewer limits on coverage, lower co-payments rates …), and other barriers low-income Ontarians may face accessing dental care, for example, transportation costs or language barriers.

Dental Problems and Income

Finally, dental problems are strongly correlated with income. Those at the lower end of the income scale have a higher proportion reporting dental pain during the previous month (Figure 4). Somewhat surprisingly, there does not appear to be a strong relationship between the prevalence of dental pain and insurance status. Although the proportion who said they had pain during the past month is somewhat lower for those with insurance in most income brackets, these differences are dominated by the effect of income. For example, even those with insurance in the four lowest deciles of the income distribution are more likely to have had pain than people in any of the higher deciles, even in comparison with those in the higher income brackets who don't have insurance. This pattern suggests that the greater prevalence of dental problems among those with low income is due not

Figure 3: Percent Visiting Dentist in Previous Year, Ontario, Adults 20-64, 2013/14, by Insurance Status and Household Income Decile



Source: Calculated by F. Woolley from the CCHS PUMF.

just to the lack of access to dentistry services, but to other factors as well.[11]

Nevertheless, dental care can help both to reduce the prevalence of oral health problems in the population, and also to alleviate the pain and loss of life quality they cause when they occur. The lower rates of utilization of dental services by those with low income, coupled with the greater prevalence of oral health problems among them, suggests that supplying more of these services to low-income groups could yield high benefits in the form of less pain and better quality of life through both prevention and cure.[12]

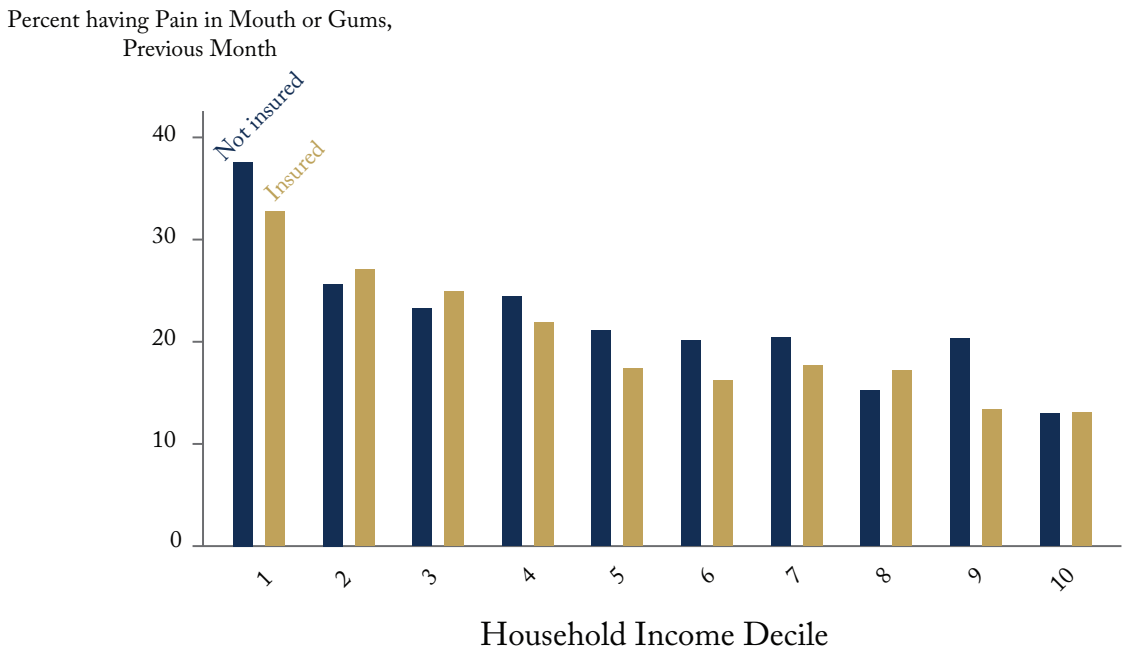
Expanded Government Dental Plans: The Effect on Those Who Currently Are Uninsured

The patterns of dental insurance and dental services utilization in the above Figures show that there are large differences in the utilization of dental care across population groups. Moreover, the differences in utilization seem to be due mostly to differences in income and insurance status, rather than to differences in the need for care. In the following, we argue that government measures to reduce the differences in care utilization would be efficient

11 The apparent lack of correlation between insurance status and reported pain is surprising not just because dental care reduces pain once a person has a problem, but also because one would expect insured people to receive more preventive care and hence have fewer episodes of pain.

12 The fact that people who suffer the most oral pain and discomfort are the least likely to visit the dentist is sometimes described as the "inverse care law" (Quiñonez and Grootendorst, 2011).

Figure 4: Percent Experiencing Pain or Discomfort in the Mouth or Gums Sometimes or Often in the Previous Month, Ontario, 20-64 Year Olds, 2013/14



Source: Calculated by F. Woolley from the CCHS public use microfile.

and could yield substantial benefits. In particular, we argue that an expansion of existing government dental plans to cover more of those who currently are uninsured could increase the utilization of dental services among the low-income groups who today are likely to use relatively small amount of these services, and whose oral health could improve substantially, at relatively low cost.

Increased Insurance Coverage and Acute-care Service Utilization Among Low Users

In comparison with the present situation, the main beneficiaries of expanded program of affordable dental insurance would be individuals who have relatively low income, but who are not covered by existing public programs and do not have private insurance. Most people in this category are unlikely to have significant amounts of liquid assets to deal with an emergency such as unexpected dental problems, and many would also find it difficult to borrow money on reasonable terms. Without insurance, the result may well be untreated dental problems, sometimes resulting not only in a long-term loss of life quality, but also to lower employment income and wasteful use of other healthcare service, as noted earlier.

Generally speaking, a *tax-financed* public insurance plan, as Canada has for physician and hospital services at present, tends to be of most benefit to those with low incomes, since they pay a relatively low share of total taxes. Moreover, economic analysis suggests that insurance against the cost of dental care could have a substantial benefit even if the total cost were born by the low-income individuals who currently have no insurance. With insurance, the burden of paying for dental care in a population is shifted from

those who are unlucky enough to experience major oral health problems and spread across all those who are insured, reducing the risk of a financially devastating dental episode. These gains from risk pooling explain why insurance coverage is efficient, with net benefits for the group as a whole.

The gains from risk pooling with respect to dental care will not be as large as those from general health insurance, since the amount of financial risk is smaller. The costs of dealing with even major dental problems are likely to be small relative to the potential costs associated with serious health problems such as strokes, heart attacks, cancer, or dementia. But even so, they can be considerable – perhaps even catastrophic - for people on low income who might have trouble raising enough money on short notice to pay for even urgently needed care.

The benefits from enhanced risk pooling among those who currently are uninsured imply that a tax-financed program of dental insurance could promote economic efficiency in a strict sense: It would do so by increasing the use of dental care among those who currently are uninsured and therefore tend to have inefficiently low rates of utilization when they have oral health problems.

Increased Utilization of Preventive Care

The wider use of preventive dental care could also contribute to the greater economic efficiency resulting from insurance coverage. Dental insurance plans do not just cover the cost of treating those who already have developed oral health problems, but typically also subsidize, and hence encourage the use of, various types of preventive care. The effectiveness of prevention of dental problems through fluoridation is well established (e.g., Murray 1993), but there is still controversy regarding the effectiveness of prevention through regular checkups, and how often they should be done (Patel, Bay and Glick, 2010). If preventive care is sufficiently effective in reducing future problems, however, it is in fact possible that the long-run effect of insurance coverage is to reduce, rather than increase, the total cost of the dental care that is supplied to given populations.

An Expanded Government Role: The Effect on Competition and Efficiency in Dental Services Markets

Although the principal benefit of expanding public dental insurance would be the improved access to dental care of the previously uninsured, expanded public insurance might also, indirectly, benefit those who currently are insured in private plans.

A well-managed government plan might be able to offer good dental care to population groups that currently are covered by private plans, at a cost that is lower than what they pay today. If it were offered as an alternative to private insurance, it could make the dental sector more competitive. There are several reasons why fees for dental services in Canada today are higher than they would be in more competitive markets and with better-informed consumers. Those who are insured may often be treated in ways that end up costing them more than they would be willing to pay if, first, they knew more about the nature of their dental problems and the effectiveness of the services they are receiving, and, second, were more aware of the true cost of their dental care in terms of foregone salary increases.

Price Competition and Efficiency in Canada's Dental Services Markets

Economic theory suggests that the price of a good or service that is privately produced depends on the technology that is available to produce it, and on the extent of competition in the market where it is bought and sold. In markets that are highly competitive, goods and services tend to be efficiently produced and supplied at prices that

approximate the cost of producing them; in markets where competition is less intense, prices are higher and production less efficient. Most dental services are privately produced; and these same principles apply in the market where dental services are bought and sold.

How competitive are the markets for dental services in Canada today? The answer depends in part on how one defines "competition." In economic analysis, a critical distinction is that between *price* competition in which the main method that producers use to attract buyers is by offering a competitive price, and *non-price* competition in which they focus instead on advertising and real or perceived quality differences in the products that they offer when doing so.

In any market, competition requires consumers to have the ability to choose: many suppliers to choose from, good information on the price and quality of products on offer, and the ability to switch from an existing supplier if a new one offers a better product or a better price. With respect to the market for dental services, comparing the cost of treatment of competing providers is difficult since patients with dental problems typically don't know what services they need before the dentist has examined them, and dentists usually don't post their fees. Moreover, while the cost of treatment obviously matters, patients' choices are heavily influenced by other factors as well (the dentist's reputation, the practice's location and staff, etc.). In economic theory terms, dental services are a clear example of what is called a "differentiated product" where buyers choose among sellers not just on the basis of price, but also based on other characteristics that they think will influence the quality of the good or service they will get. In economic analysis, it is a standard conclusion that product differentiation gives producers a certain amount of market power, which they can use to charge higher prices.

The intensity of price competition in Canada's dental services markets is also likely to be diminished by another factor: That a large share of the services that are produced in the markets is supplied to insured patients. In a market for differentiated products, buyers choose among competing sellers based on both price and non-price factors. Other things equal, the expected price in dental services markets matters less to insured patients since they only pay part of it out of pocket. Insured patients, therefore, put relatively less attention to the fees that they expect the dentist to charge when they decide which one to go to, so economic theory would predict that dental practices who treat mostly insured patients would tend to charge higher fees, and compete more by means of non-price factors.[13]

Finally, the intensity of price competition in Canadian dentistry is probably also diminished, at least to some extent, by the schedules of fees that most provincial dental associations recommend for different procedures and that likely serve as a guide both for what individual dentists charge and what

13 For patients whose expected treatment costs exceed any upper limit that their plan covers, price will of course be very important. Only relatively few patients are likely to be in this position in any given year, however. Price of course is also a more important consideration for uninsured patients, which raises the question to what extent dentists are willing to treat them for lower fees than they charge insured patients. Doing so, however, would constitute price discrimination, and the Ontario Dental Association website includes a statement to the effect that dentists generally are expected to charge the same fee to all patients, regardless of their insurance status (https://www.oda.on.ca/you-your-dentist/dental-benefits-explained91, accessed October 15, 2017).

benefits insurance plans will pay when their patients have received services. Because dentistry is classified as a regulated profession, the dental associations are allowed to establish such guides, even though agreed-on lists of recommended prices would be considered illegal in other sectors under Canadian competition law.

Information Asymmetry and Supplier-Induced Demand in Dental Care

In the literature on the market for medical services, a great deal of attention has been paid to the fact that there is no practical way for patients to get the information that is necessary to make good choices with respect to what treatment they should opt for, except by relying on the advice of the doctors who also are the sellers. That quandary raises the question whether health professionals may take advantage of this "information asymmetry" when it is in their financial interest to do so.

Clearly, there is information asymmetry of this kind in the market for dental care as well. Buyers of dental services are disadvantaged by their lack of professional expertise not only when it comes to deciding which provider to choose, but also with respect to what treatment approaches they should opt for when they have oral health problems. To a substantial extent, their choices will be based on the advice of the dentists who supply the services. In some circumstances, it may be in the providers' interest to bias their advice toward recommending treatment approaches that are more costly than those a better-informed patient would have chosen. In the market for physician services, the practice of biasing the advice that patients receive in order to generate more provider income is known as creation of "Supplier-Induced Demand" (SID), a problem that may be relevant to dental services as well.[14]

Attempts at empirically estimating whether SID exists to a significant extent in physician services markets have had mixed success. Although there is no direct evidence on the scale to which it exists in Canadian markets for dental services, empirical studies in other countries have supported the suggestion that it exists in their dental care sectors (Listl and Chalkley 2014; Grytten 2017). For Canada, there is some anecdotal evidence that suggests it may be present here as well: A CBC Marketplace investigation uncovered a number of instances in which unnecessary dental treatments were recommended.[15] SID is more likely to be an issue in places where there are large numbers of dentists in relation to the patient population,[16] or when factors such as reduced incidence of tooth decay diminishes the demand for their services.

The likelihood that SID exists also depends to a large extent on how providers are paid: It

14 Where little evidence on the comparative effectiveness of different approaches is available, as often seems to be the case in dental care, the information asymmetry that makes SID possible may simply consist in patients' not realizing this when they consider their dentists' treatment recommendations.

15 In CBC's Marketplace experiment (CBC Marketplace 2012) the program presented the same journalist-patient and same x-rays to 20 different dental practitioners, and received treatment-cost estimates ranging from $144 to $11,931. About two-fifths of the dentists offered dental treatment options that did not align with the recommendations of two disinterested experts. http://www.cbc.ca/news/canada/dentists-vary-widely-on-diagnosis-and-cost-cbc-marketplace-finds-1.1279371

16 Yuen and Quiñonez (2015) note that, between 2008 and 2012, the number of dental practitioners in Ontario grew at three times the population growth rate, with increases being concentrated in the urban centres. Data on the Canadian Dental Association website also show the large variations that exist in the density of dentists across provinces, and between major urban areas and rural areas. For example, in 2013 there was an average of 1512 people per dentist across Ontario, but only 1053 in Toronto (CDA 2017).

is a problem principally when payment is via fee for service, as it typically is in dental care. In the physician services market in the U.S. and elsewhere, the incentive for doctors to create SID has been counteracted to some extent by paying them in other ways (for example, through salary or capitation); as we discuss below, there may be some scope for using this approach to improve efficiency in the Canadian dental sector as well.[17]

What the Data Say

Given the reasons why price competition in dental care is unlikely to be very intense, it is perhaps not surprising that, even though the supply of dental care in Canada has expanded substantially over time, there has been no tendency toward lower fees.

Supply has increased both in the sense that the number of dentists practicing in Canada has grown somewhat faster than the population, and also because the number of dental hygienists has increased substantially. Data from CIHI show that between 1999 and 2013 (the latest year shown in the data), the number of dentists per 100,000 people in Canada grew from 56 to 62, or by more than 10 percent. The number of practicing hygienists rose even faster, from 48 to 81 per 100,000, or by close to 70 percent, over the same period.

Under competitive conditions, these increases in supply should have had a dampening effect on the growth of dental care costs. However, Statistics Canada data on the cost of dental care services show that dental prices rose considerably faster than the prices of other goods and services. From January 2000 to December 2013, the dental care services price index increased by 55 percent, while the overall consumer price index rose by a little over 30 percent, meaning that dental care costs rose at a rate of more than one percentage point faster than the general rate of inflation. This trend has continued: By September 2017, the dental care index had risen by 11.1 percent since the end of 2013, while consumer prices in general have only gone up by 6.6 percent.[18]

While the increase in supply has not resulted in falling fees, what has been observed instead is an intensification of non-price competition, with a great deal of advertising of dental services and use of techniques such as offers of "free teeth whitening" in attempts to attract new patients. Although many patients, especially insured ones, may have appreciated the advanced technology and pleasant amenities in successful dental practices, others, especially those without insurance, might have preferred a pattern in which the increased supply of services had translated into lower fees.

Filling the Cavities: The Case for Universal Public Dental Insurance

There is considerable room for reforms that would improve the equity of Canadian dental care, and the efficiency with which resources are used. The first priority should be expanded public dental insurance.

17 One reason why capitation, for example, may lead to more cost-effective patterns of care in the physician services market is that it gives practices more of an incentive to make use of less expensive personnel (such as nurses, or nurse practitioners) who can perform many of the functions doctors currently perform, for example, in primary care. In dentistry, there would be a corresponding incentive on dental practices to substitute the services of dental hygienists, or dental therapists, who could perform many of the services that today are supplied by dentists.

18 The data underlying the calculations come from Statistics Canada cansim-3260020-eng-646754569958. The series of monthly data follows a regular pattern of little change throughout most of each year except between March and April, most likely reflecting the influence of the publication of new provincial dental association fee guides around that time.

Several large population groups, including many elderly and low-income Canadians, are not adequately covered by public dental programs, nor by private dental insurance. Their lack of coverage, and the high cost of care, causes them to use only limited amounts of dental services, including preventive care such as scaling. This, in turn, contributes to a high prevalence of oral health problems and reduced quality of life in these population groups, as discussed above. Canada's retired population will increase rapidly as the baby-boomer generations reach their sixties and seventies, and with fewer plans providing for coverage beyond the employee's retirement, this issue will only get larger. Public dental insurance would help create a more equitable Canada, by improving many vulnerable people's access to oral healthcare.

Public dental insurance would have efficiency benefits as well. As we argued above, the cost of Canadian dental care is higher than it could be in a more efficient and competitive environment. The factors that contribute to high fees and costly patterns of dental care – be it low intensity of price competition when buyers are insured, the existence of fee guides, information asymmetry and supplier-induced demand – are similar to the ones that were once observed in markets for physician services. Yet regulation and/or more active measures by insurers have diminished the influence of these factors in the physician services market.[19] An expanded public role in dental insurance, by introducing competition for private insurers who may then push to limit the cost of dental services, or by allowing the public insurer to take a stand against costly practices, could likewise check fee growth and lead to better patterns of dental care.[20]

The ultimate goal, we argue, should be universal dental insurance. However, universal insurance can take different forms, and the process of reaching that goal could begin with more limited initiatives such as expansion of existing public programs.

Option #1: Building a Universal, Single-Payer Plan

As we have shown, there are major disparities in access to dental care in Canada: some population groups receive much more care than others. One conceptually straightforward way of eliminating these disparities would be to just introduce universal government-funded dental care, along the same lines as what we already have for physician and hospital services under Medicare – call it "Denticare." Indeed, the 1961-64 Royal Commission on Health Services, which led to the creation of Medicare, originally envisioned extending universal coverage to dental care (Marchildon 2011).

Option #2: Consolidating, expanding and Rationalizing Existing Public Dental insurance Plans

Universal dental coverage through a single tax-financed public plan, as for provincial health insurance, is, at best, a long-term aspirational goal. Realistically, reform will be gradual and piecemeal. A natural first step toward universality would be expansion of existing public plans – creating

19 In Canada, the response has largely been in the form of regulation: Physician fees are fixed through negotiations between provincial governments and provincial medical associations. In the U.S., it has to a large extent taken the form of "selective contracting" in which insurers restrict their clients to seeking care from "preferred providers" with whom the insurers have negotiated about fees (Baker 2011).

20 The government programs that currently cover specific population groups already have taken some steps in this direction. For example, the federal Non-Insured Health Benefits program that covers dental care for First Nations and Inuit citizens publishes a schedule of the fees they pay providers who treat patients under that program; providers who do so are not allowed to charge patients anything above these fees, which are set after consultations with provider groups.

something more like "Denticaid" than "Denticare." For example, the dental benefits available to adults receiving income support or welfare could be offered to select other low-income adults, as Alberta does right now through the Alberta Adult Health Benefit. The income cut-offs for eligibility for programs such as Ontario's Healthy Smiles program could be raised, so that more people were covered by the program. A high priority in any expansion of existing public programs must be better coverage for seniors, given their low level of access to dental care.

To achieve the equity and efficiency gains we envision for public dental insurance, rationalization of existing public insurance plans is also needed. To ensure that people covered by public plans actually had ready access to dental care, governments could introduce new forms of tendering for the provision of publicly-funded dental services. In addition, best practices and evidence on preventative dental care services could be established to help form the basic component of a broad public dental insurance plan.

Continuing to evaluate the effectiveness of the tax subsidy to employment-related group insurance

Many supporters of expanded public insurance[21] would also argue that a natural complementary reform would be to eliminate the tax-subsidy to employment-related group insurance. Observers have suggested that the implicit subsidy which results from the non-taxation of fringe benefits has led to inefficient forms of health insurance and hence has contributed to inefficiently high levels of healthcare spending (Stabile 2001). Moreover, the "tax expenditures" that this lost revenue implies are regressive, with most of the benefits accruing to individuals with above average income.

The employment-related group insurance plans that the current tax rules have favoured has often taken somewhat inefficient form. The Conference Board of Canada's survey of medium and large Canadian employers found that the typical employer-sponsored dental plan reimbursed 100 percent of basic dental services, such as check-ups and routine x-rays, but only 50 percent of major restorative services, such as crowns, caps and bridges (Stewart 2015). Most plans also impose an annual limit on the amount that can be claimed under the plan, with the typical limit being $2,000 per insured adults for basic and major restorative services combined. Conventional economic analysis suggests that this pattern is inefficient. Low deductibles tend to encourage higher spending on routine dental care, while coverage limits reduce the protection against financial hardship for those who are unlucky enough to experience major dental problems and high-cost procedures. Yet the main purpose of insurance is to cover major expenditures.

Even though the benefits of the implicit subsidy to private health insurance are larger for people in high-income groups, many Canadians support it because indirectly, it helps to pay for what they consider non-discretionary healthcare costs. There is also evidence to suggest that if this implicit subsidy were abolished, the result would be a large decrease in the use of group health insurance (Finkelstein 2002).[22] If non-taxation of employer contributions to employees' health insurance is going to remain part of Canadian tax law, however, competition in insurance markets – an essential element of what we will outline in option #3 below – will be more effective if the advantage that this rule confers on employment-based group insurance is at least

21 Including the authors of this *Commentary*.

22 In a memo, the C. D. Howe Institute's CEO Bill Robson has proposed that any such reform should take place only as part of an overall review of the taxation of non-discretionary health expenditures incurred by Canadians: "The problem isn't that we tax health-related expenses too little, it's that we tax them too much" (Robson 2017).

partially reduced through offsetting subsidies to individual plans, public or private.[23]

Option #3: Universal Dental Insurance with Public-private Competition

Under this model, universality of dental insurance coverage would be attained by creation of provincial plans that would constitute the "default option." Every resident would be automatically enrolled in the government plan unless they had opted out and enrolled in a private plan that the government had approved. A system of universal coverage but with a choice for citizens of being insured either through a government or a private plan would be similar to the compulsory-insurance approach that underpins the systems of universal health insurance in Switzerland and the Netherlands, among others; it is also similar to the approach that is used to create a version of universal pharmacare in the province of Quebec.[24]

A model of universal coverage with choice would have two major advantages over a Denticare-type government plan. First, and most importantly, it would not disrupt the present system to the same extent. The large number of Canadians who currently are covered by private plans that they are satisfied with could continue as they are. Second, the continued existence of private options would mean that, in contrast to our current system for providing medical services, the public-sector plans would not be the only option available to consumers. Competition with private plans would give the public insurer an incentive to operate efficiently and innovate, and to contain the influence of the provider groups that would supply its services.[25]

The cost to the provincial governments of a mixed system of this kind would depend on how it was financed. In order for private plans to be able to compete, the cost of being enrolled in the public plan must be comparable to the premium cost of opting for a private plan with a similar degree of coverage. Unsubsidized private plans can only compete effectively if coverage through public plans also is largely unsubsidized.[26]

If the public plans were to be largely premium-financed, they could be introduced without a major net effect on the public finances. If they were to be financed out of general government revenue, on the other hand, taxes would have to be higher. Moreover, private plans would only be able to compete effectively if they, too, were subsidized to the same extent. This, in essence, is the model that has been used for health insurance in Australia, where everyone has coverage either under the tax-financed public plan, or through a private plan whose premium cost is partially subsidized by the government.

Even if a universal system of dental insurance along these lines would imply less disruption of the current system, creating it would still be an

23 The exemption of employer contributions to fringe benefits from taxable income reduces revenue for both the federal and provincial governments, so the revenue that the federal government forgoes as a result can be considered part of its support of healthcare financing. If the exemption were to be abolished, this implicit federal contribution would disappear, leaving the provinces with a larger share of the financing burden.

24 The Quebec pharmacare model is based on a combination of regulations that require most employers to offer insurance that covers drugs as a fringe benefit, and a provincial plan in which anyone who doesn't have employment-related insurance must enroll; those enrolled in this plan must pay a premium as part of their provincial income tax. For a brief description of the model, see Morgan, Daw, and Law (2013).

25 Blomqvist and Busby (2015b) discuss these issues with reference to the provincial health insurance plans.

26 This essentially is the model that is used in Holland's health insurance system, and partly in Quebec's version of universal pharmacare. In both cases, however, individuals with low income pay subsidized premiums.

Box 2: First Steps Toward a Mixed Universal Model

In preparation for later reforms to create a system of compulsory universal dental insurance, provincial governments could offer voluntary insurance plans that would be open to anyone willing to pay its quoted premium. Premiums would be set at the actuarially fair levels for people in different age groups – at levels high enough for the plans to cover their total costs. While the plans themselves would be designed to be self-financing, the premium payments by individuals with low income, such as those on social assistance, could still be subsidized under separate programs, along lines similar to those in a system of tax-based premiums of the kind that were discussed in the text. Some provinces already follow this model for other kinds of insurance (for example, the government of Alberta sponsors non-group insurance covering drugs and extended health benefits to those who don't have coverage through employment.[1])

Voluntary provincial plans of this kind would be in direct competition with individual dental insurance plans that private insurers already offer. However, a government plan might be more successful in attracting individual subscribers than private insurers have been. In particular, they might be able to provide insured services at lower cost than private plans, by requiring their clients to get their treatment either in clinics operated by the plan, or from private providers with whom they had contracts. We discuss various methods they could use in order to lower costs in the text.

Premium levels for individual private plans (as opposed to group plans) tend to be high in part because of the adverse selection problem that is discussed in Box 1. A voluntary government plan would also be subject to this problem, but it can be counteracted at least to some extent, for example, by limiting benefits payable during an initial period after enrollment, specifying a minimum insurance contract length, and so on.

A well-run government plan with individual enrollment could be successful in competing with similar individual private plans, and attract substantial enrollment from population groups that currently are uninsured, including the elderly, or people in low-paying jobs without benefits. However, it would only be able to compete effectively with private group insurance if it, too, could enroll employees collectively, and if employer contributions toward premiums were treated as a non-taxable benefit, the same way that premiums for private group plans are under current Canadian tax law. From the government's point of view, the effect of this rule is to reduce its revenue, and it has been criticized on the grounds that it constitutes a tax expenditure that confers an unwarranted advantage on group insurance vs individual plans.

1 In Alberta, these plans are administered by Blue Cross: see http://www.health.alberta.ca/services/benefits-supplementary.html.

expensive and controversial undertaking and could only happen after a long period of debate and deliberation. As we see it, serious debate about reform in this area is only just beginning. But even if universality is a long way off, there are ways in which some of the principles underlying such a model could be partially incorporated and tested within the current system (Box 2).

Filling the Cavities: Promoting More Cost-Effective Dental Care

Canada devotes more of its overall healthcare budget to dental care than most developed nations, yet it is far from obvious that we are using the money well. A set of provincial dental insurance

plans, if they are properly designed, could offer more cost-effective patterns of care than the privately insured receive in the current system. Several measures could accomplish this.

Developing Insurance Coverage for the Right Bundle of Services

Public dental programs could make more systematic use of existing evidence on the cost-effectiveness of different treatment approaches than private plans currently do. This might well entail more conservative treatment approaches than under current practice which, according to the literature, includes many services of doubtful value: "Millions of dental procedures, prevention programmes, and treatments are being performed, even though the clinical evidence is often weak and information about their cost-effectiveness is rarely available" (Davidson and Tranaeus 2016, 1).

While good evidence on their effectiveness appears to be lacking for many procedures, when it is available, it could be used to guide coverage restrictions, to set rules about how often patients should receive scaling and hygienist care, how often routine preventive visits should include a detailed examination by a dentist, and so on. Or, it could be used to influence decisions such as under what circumstances – using criteria such as, say, the patient's age – the plan would pay for a dental implant, rather than a less expensive alternative.[27] It could also be used as a factor when setting rules for the extent and rates of patient co-payments. Thus, co-payments for preventive services may be set at zero; in cases where several treatment options are possible (partial dentures, bridges, extractions …), higher co-payments could be required for the more costly options.[28]

The foundation of our general Medicare plan is providing the services that are "medically necessary." In dental care, there is often no consensus on what level of care is clinically warranted. Take, for example, the routine dental check-up. A 2010 review of the literature called the standard 6-month or 8-month recall examination into question, concluding that the"evidence was not strong enough to support using any specific one-recall-interval-fits-all protocol for all patients." (Patel, Bay and Glick 2010). In general, more research on the true effectiveness of different kinds of oral care should be an important element in a strategy to ultimately create a system of universal insurance. Indeed, without better information, it is impossible to know to what extent the disparity in access to dental care today reflects opportunistic over-treatment of insured affluent Canadians, under-treatment of uninsured, middle- and lower-income Canadians, or both.

The direct cost of dental care amounts to well over 6 percent of the national health expenditure budget in Canada, yet oral health research receives relatively little funding from, for example, the Canadian Institutes for Health Research. CIHR has funded $13.7 billion in research up to and including 2017/18. Of this, just $15 million – about one tenth of one percent – has gone to

27 While many plans currently do not pay for them, there is now evidence that dental implants are actually cost effective (Vogel et al, 2013; Jensen et al, 2017).

28 As noted in the text, many existing dental plans have upper limits, sometimes relatively low ones, on the total benefits they will pay per year. While these limits may serve as a crude device to prevent providers from recommending very costly procedures, they also reduce the degree of financial protection of patients who are unlucky enough to have dental problems that are expensive to treat, and we don't think they should be a feature of the public plans.

projects that specifically mention "oral health".[29] Furthermore, many of these projects only consider oral health incidentally, in the context of, say, early identification of rheumatoid arthritis. In order for Canadians to have a better informed conversation about dental care, this needs to change.

Ideally, the evidence base for choosing the appropriate and cost-effective services to put into a public insurance bundle should be created prior to a dramatic expansion of public insurance. Expensive discretionary procedures, such as getting a crown when a filling would suffice, would not be covered in the public plan. However private complementary insurance could be allowed to exist for people who wanted to utilize it. A less careful approach – a radical expansion of public insurance to cover all dental services currently in use -- could lead to increased use of expensive services with little value-added that would be hard to remove from public insurance coverage once the plan was in place.

Scope of Practice

One way of filling the cavities in Canada's dental care system would be to make the dental care market operate more efficiently. As argued earlier, competition is one of the most powerful drivers of efficiency. A way of increasing the extent of competition in dentistry would be to remove the barriers to competing suppliers entering the market.

At present, entry into the Canadian dental market is strictly limited. Many procedures, such as routine inspections for dental caries, can only be performed by dentists. In some provinces, for example British Columbia, a dental hygienist is not even allowed to perform standard dental hygiene procedures unless the client has been examined by a dentist (College of Dental Hygienists of British Columbia 2013). Yet the evidence currently available, such as it is, suggests that much work routinely performed by dentists could be carried out by other professionals such as hygienists and the more extensively trained dental therapists.[30]

Dental hygienists are predominantly employees in dental offices and therefore do not charge patients directly for their services – the rates for their services are set by the dentist who then pays the hygienist independently. Further, in some provinces where dental hygienists have greater scope of practice and the ability to set up their own independent practices, not many do so. A referee has suggested that there could be many reasons for this, perhaps difficulty in access to startup capital and the challenges in finding dentists to whom they could refer patients in need of greater care, or along similar lines, the unattractiveness to patients

29 Obtained by searching the Canadian Research Information System at http://webapps.cihr-irsc.gc.ca/funding/Search?p_language=E&p_version=CIHR. One of our referees has noted, however, that adding the words "dental, dentists" as well, he obtained a substantially higher figure ($126 million). But this, too, is less than 1% of the total, much less than the share of dental care in total healthcare costs.

30 While regulation may reduce the rate at which hygienists are allowed to produce services that substitute for those of dentists in Canada, the rules in Canada still are much less restrictive than those in the US (Woolley 2011). We are grateful to the referee who drew our attention to the potential importance of the other professional category, that of dental therapists, who have been extensively used in providing services to school children and other population groups in a number of countries. Dental therapists undergo more extensive training than dental hygienists, and are therefore allowed to supply a broader range of services. In Canada, dental therapists played a more prominent role some years ago than they currently do, especially in providing dental care in Inuit and First Nations communities (Leck and Randall 2017). Expanded use of dental therapists to supply care to underserved population groups is currently being discussed is the US and elsewhere, often amid controversy (Nash et al. 2014).

Box 3: Alternative Methods of Paying Doctors and Dentists

Fee for service is what is known as a "retrospective" method of payment: For a given schedule of fees, the total cost of treating a given patient population depends on the number of units of each service that actually was provided; hence the total revenue of the provider is higher the larger the number of units of services that have been utilized. Retrospective payment methods contrast with those that are "prospective": Where the providers' revenue is determined ahead of the decision how to deal with their patients' health problems.

Examples of prospective methods of paying providers that have been used in healthcare include salary and capitation. Both are possible methods of paying for dental services. When providers are paid by salary, their monthly income a fixed amount which does not depend on either the number of patients they are responsible for, nor on the amount of services they have provided. Capitation contracts, in contrast, typically contain a list of specific services, with providers agreeing to supply whatever services their patients may need from this a list, in return for a fixed payment per person who is registered with the practice.

Under a pure capitation contract, the monthly revenue that a practice earns from a given patient does not depend on what services the patient has received during the month; instead, the revenue per patient is fixed in advance, so the practice's total revenue just depends on how many patients are registered with the practice during the month. Clearly, payment by capitation implies an incentive for practices to minimize the amount of services received by each patient, so that it can earn a large amount of revenue by enrolling a large number of them, and to make effective use of less expensive professionals such as hygienists to provide the services.

Patients may not like being treated by providers who have a strong financial incentive to minimize costs; they may fear that as a result, they may not receive proper treatment, or hurried care of low quality. This concern may be alleviated to some extent by setting an upper limit on the number of patients that a dentist may take responsibility for; alternatively the strength of the incentive to "undertreat" given problems can be reduced through a mixed model of "blended payment", under which a practice's revenue consists partly of capitation payments, partly of fee for services at a reduced rate. Moreover, dentists, like doctors, consider themselves as health professionals who have a responsibility to treat their patients properly, even when they do not have a strong financial incentive to do so.

of dental hygienist operations that don't also offer services that must be performed by a dentist. Alternative payment models for dental services could aim to encourage a greater use of hygienist and technician services, however.

Alternative Payment Models

Public insurance plans could also draw on the experience from other parts of the healthcare system to modify the financial incentives on the providers of the services they cover. As noted earlier, patients who receive dental care are in a situation similar to those who seek help for other types of health problems: They often need care urgently, and they have to largely rely on the professionals who treat them for the expertise that is needed to make decisions among alternative treatment approaches. One of the more robust findings in the literature on health economics is that in these circumstances, payment of providers entirely through the method of fee for service, does not work well (McGuire 2011). In particular, when it is combined with unrestricted third-party payment for services, it leads to very costly patterns of care. On balance, we believe there is a strong case for paying providers in a public dental plan at least in part in alternative ways, through salary or capitation, so as to reduce the incentive to overtreat patients (Box 3).

When providers of services to those insured under a given plan are paid by capitation, each insured individual must choose a specific provider

with whom to register, and get any treatment they need from that provider. Moreover, the provider must be chosen from among those who have agreed to provide services on the terms stipulated by the plan. In order to provide universal dental coverage, a public plan must be able to offer at least one provider that is reasonably accessible to every provincial resident.

To do so, provinces may want to have a network of dental clinics that are publicly owned and operated, but it may also contract with private practitioners who are willing to treat public plan clients on the terms specified under the plan. Not all of them would have to be dentists: By analogy with the model of nurse-practitioner led clinics in primary healthcare (DiCenso et al. 2010), the public plan could either operate, or contract with, clinics staffed and managed by dental hygienists (or dental therapists; see note 30 above) working in collaboration with licensed dentists.

Conclusion

In contrast to countries like the U.K. or France, government programs in Canada only pay for a small share of the cost of dental care. In surveys, many Canadians state that they have refrained from seeking dental care for financial reasons in the past year. Private dental insurance pays for a large share of dental care costs of most people of working age, and there are government programs that subsidize preventive and acute dental care for children and specific population groups such as those in First Nations and Inuit communities. But many Canadians, including most of the working poor and the retired, are covered neither by government programs nor by private insurance. While there are few systematic studies of the extent to which untreated oral health problems have caused avoidable pain and suffering and reduced people's quality of life, there is plenty of anecdotal evidence that it often does.

In the past, less attention has been paid to dental care than to other gaps in the Canadian system of universal health insurance, but this may be changing (see Shihipar 2017). Part of the reason the dental care issue will become more prominent is the large number of retiring babyboomers who will discover the consequences of not being covered by insurance when they experience major dental problems and find out how costly it is to get treatment.

For uninsured Canadians, the issue of financial barriers against access to urgently needed dental care obviously is the most pressing one. For those covered by employment-related group insurance, on the other hand, the main problems are high treatment costs and inefficient patterns of care. Dental care in Canada today is subject to many of the problems that existed many years ago in the markets for medical services, both in Canada and even more so in the US: High fees because price competition tends to be very weak in markets for differentiated products where most of the cost is paid by third-party insurers, information asymmetry that creates opportunities for providers to influence patients' choices of treatment options in ways that are in the providers' financial interest.

The policy approaches that we advocate in this Commentary are intended to address both sets of problems. A universal single-payer dental insurance plan, or a public default plan that would cover everyone who doesn't have an approved private plan, would ensure that no one would have to forgo urgently needed dental care for financial reasons. If properly managed, a public plan that anyone could use as an option would also put competitive pressure on private insurance, and indirectly on the dentists and allied professionals who supply the services.

Provincial governments should give serious consideration to strengthening their role in dental care financing along these lines, and to introducing new regulatory approaches to make the dentistry sector more efficient.

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