

ENCOURAGING EFFICIENCY:  
TOWARDS A CANADIAN MODEL OF SERVICE-BASED HOSPITAL FUNDING

by

Chelsea Elizabeth Mitchell

An essay submitted to the Department of Economics  
in partial fulfilment of the requirements for  
the degree of Master of Arts

Queen's University

Kingston, Ontario, Canada

September 2011-09-02

copyright © Chelsea Elizabeth Mitchell 2011

## Acknowledgements

First and foremost, I would like to thank my supervisor, Professor Charles Beach, for his generous guidance, constructive feedback and eye for detail over the past few months. Even though health economics is not one of his primary research areas, I am very grateful that he was willing to supervise my work on this essay.

While I have been following the issues surrounding Canada's health care system for some time, I became interesting in various methods of hospital funding after taking Economic Analysis of Contemporary Policy Issues, taught by Professor Thomas Courchene. I would like to thank Professor Courchene his assistance in narrowing down my topic.

I am most appreciative for the support of Professor Cherie Metcalf, Program Director for the combined MA(Econ)/JD program. I am especially thankful her suggestions during my search for a supervisor.

I am fortunate to have found such good friends in Ingrid DeFreitas and Gillian Schafer. Over the past year it has meant so much to me to have the encouragement of friends who know exactly what I am going through.

Finally, I would like to thank my parents, Mary Louise and Michael Mitchell, for all the love and support they have given me over the years. I know it wasn't easy for them when I left for school on the other side of the country five years ago, and I am so grateful that they gave me the confidence to pursue the path I have chosen.

# Table of Contents

Acknowledgements.....	i
Section	
1. Introduction.....	1
2. Overview of the Canadian Health Care System.....	3
2.1 Current Methods Used to Fund Canadian Hospitals.....	5
3. System is Unsustainable in its Current Form.....	9
3.1 Options for Reform.....	11
4. Evidence from Other Countries .....	16
4.1 Norway .....	16
4.2 United States.....	17
4.3 Australia.....	19
4.4 United Kingdom .....	20
5. Issues to be Addressed.....	23
5.1 Appropriateness of Service Mix .....	23
5.2 Up-coding.....	24
5.3 Physician Payment.....	26
5.4 Information and Data.....	27
5.5 Innovation.....	28
5.6 Integrated Health Care.....	28
6. Towards a Canadian Model of Hospital Funding .....	29
7. Conclusion.....	34
References.....	36

## 1. Introduction

Amid stories of escalating costs and patients having to seek treatment elsewhere due to long wait times, Canada's health care system is no longer the same source of pride for Canadians that it once was. In 2008, the total amount of health care spending in Canada was \$171.9 billion, or \$5170 per person. This spending accounts for approximately 10.7 percent of Canada's 2008 GDP. An international study, using 2005 data, found that Canada spent the seventh-highest amount on health care among OECD countries with universal health care (Esmail and Walker, 2008). Health care spending in Canada has increased by an average of 10 percent per year since 1996. These rising costs are due to a number of factors such as an increase in the proportion of the population over age 65, higher labour costs, new technologies and drugs, and increased incidence of chronic and new diseases (Premier's Advisory Committee on Health, 2001).

Many options for reform have been suggested, but so far no major changes have occurred in recent years. One such option is service-based funding, a method that gives hospitals the incentive to provide services in the most efficient way possible. This paper will focus on the use of service-based funding for Canadian hospitals and will provide a framework for implementing such a system in Canada. This framework consists of the strongest elements of similar systems from other countries in order to develop a funding method that maximizes potential cost savings while minimizing administrative cost increases.

The next section of this essay provides a brief history of the Canadian health care system and enumerates the methods currently used by the provinces to fund hospitals. The third section explains why the health care system is unsustainable and gives possible

options for reform, including service-based funding. The fourth section examines evidence from other countries that have service-based funding in place. The fifth section explains the issues associated with this type of funding and gives suggestions for how to overcome any obstacles presented. The sixth section suggests a framework for implementing a service-based funding system in Canada and is followed by some concluding remarks.

## 2. Overview of the Canadian Health Care System

Canada's publicly funded health care system, also referred to as "Medicare", is based upon the principles of public administration, comprehensiveness, universality, portability and accessibility (*Canada Health Act*, 1984). The trend towards universal health care began in 1947 with Saskatchewan's introduction of a public and universal insurance plan for hospital services. Prior to this, health care in Canada was primarily financed privately, and only those who could afford to pay were given access to services. A decade after Saskatchewan established public funding for hospital services, the federal government passed the *Hospital Insurance and Diagnostic Services Act*. The federal government encouraged the provinces to establish hospital insurance plans by offering to pay for 50 percent of the costs of eligible hospital and diagnostic services. In order to receive the funding, the provinces had to adhere to certain conditions relating to public administration, portability, universality and comprehensiveness. By 1961, all of the provinces had established public insurance plans to provide universal coverage for hospital care (Senate Committee, 2001a).

In 1962, Saskatchewan broadened the scope of public health care insurance by extending coverage to physician services provided outside of the hospital setting. In 1966, the federal government followed suit with the introduction of the *Medical Care Act*, under which it covered approximately half of the costs of eligible physician services. Again, in order to receive funding, the provinces had to meet certain criteria. By 1972, physician services were covered under all provincial health care insurance plans (Senate Committee, 2001a).

The Established Programs Financing (EPF) mechanism replaced the 50-50 federal provincial cost-sharing arrangements in 1977. The EPF was a block funding transfer that combined federal transfers for both hospital services and post-secondary education (Senate Committee, 2001a). This funding shift “largely eliminated day-to-day federal scrutiny of specific provincial decisions” (Banting and Corbett, 2002) since the provinces could now decide how much of the transfer to apply to hospital services and how much to apply to post-secondary education. This means that the value of the transfer was no longer linked to expenditures and that the transfer would grow with the rate of growth of the economy, not the rate of growth of expenditures (Senate Committee, 2001a).

In 1996, the federal government once again altered the transfer scheme with the creation of the Canada Health and Social Transfer (CHST), which provided for transfers for health care, post-secondary education and social assistance. Each province’s CHST includes both cash and tax point transfers, with the goal of providing equal per capita entitlements for all provinces. This is achieved by giving equalization-receiving provinces a higher cash transfer than non-equalization-receiving provinces. The federal government gives equalization payments to the poorer provinces as a way to redistribute income to ensure that all Canadians have access to comparable services, no matter where they live. The wealthier provinces receive a greater amount of their transfers from tax points than cash contributions (Senate Committee, 2001a).

As part of the comprehensiveness tenet of the *Canada Health Act*, the provinces must provide coverage for all “medically necessary” services. The public administration tenet dictates that the provincial/territorial health care plans must be administered by a public agency, on a not-for-profit basis. This essentially prevents the emergence of a

parallel private health care sector, which would compete with public insurance for the funding of services covered under the *Canada Health Act* (Kirby and Keon, 2004).

This prohibition of private funding for medically necessary services sets Canada apart from most countries. In fact, it is the only OECD country to outlaw private parallel health care (Esmail and Walker, 2005). However, it is important to make the distinction between public funding of health care services and public provision, or delivery, of these services. The *Canada Health Act* does not require that services be delivered by public agencies (Senate Committee, 2002). Currently, most publicly funded health care services in Canada are provided by the private sector. The majority of doctors are in private practice and almost all hospitals are owned by private, non-profit organizations (Kirby and Keon, 2004). Generally, the only hospitals owned by the provincial/territorial governments are psychiatric facilities (Senate Committee, 2002).

## 2.1 Current Methods Used to Fund Canadian Hospitals

Before introducing the possibilities for reform in the health care system, I will provide a brief overview of the methods that are currently being used by the provinces to fund hospitals. Most provinces do not distribute funding to their hospitals using a single method. Often, a primary method is used to disperse the majority of funding and one or more secondary methods are used to allocate smaller amounts (Senate Committee, 2002).

Line-by-line budgeting involves allocating amounts for specific activities, with the total allocation to each hospital simply being the sum of all activities. This method allows the provincial ministries of health to link funding to policy objectives by giving more money to activities the province wishes to promote than other activities. Since the



funding is broken down into fairly specific categories, hospitals are able to plan their activities with greater precision. However, this also means that hospitals have less flexibility to reallocate funds to different activities. In the early years of Medicare, most provinces funded hospitals using the line-by-line approach, but by the mid-1990s, the majority of provinces were using other methods (U.S. Congress Office of Technology Assessment, 1995). Currently, line-by-line budgeting is only used by British Columbia and New Brunswick, with both provinces using it in conjunction with the population-based method (Senate Committee, 2002).

Under the ministerial discretion method, the office of the provincial minister of health responds to requests for funding from individual hospitals. From a transparency standpoint, this method is controversial since there is no established formula for determining funding for each hospital. In 2000, Manitoba, Nova Scotia, Prince Edward Island and Newfoundland were using this method as their primary funding approach (Senate Committee, 2002).

The population-based method forecasts demand for hospital services for an individual hospital or regional health authority using factors such as age, gender, socioeconomic status and mortality rates. This predicted demand is then used to develop a projection for the estimated cost of providing health care services for the hospital or health authority. Since this method uses a formula to determine funding, it is more transparent than many other methods. One drawback to this method is that it requires complex information, which can be costly to obtain in terms of both technology and human resources. In addition to British Columbia and New Brunswick, Alberta and

Saskatchewan also use the population-based method as a primary funding approach (Senate Committee, 2002).

Unlike the line-by-line and population-based methods, global budgeting focuses on the total budget for the hospital instead of breaking it down into individual activities. Each year's budget is simply the previous year's allocation with an adjustment for inflation or population growth. Hospitals are given the ability to decide how much funding to allocate to each activity. This method is fairly cost effective for the provincial governments since individual activities do not need to be scrutinized, and complex information-gathering systems are not required. Global budgeting is the primary funding method for both Ontario and Quebec (Senate Committee, 2002).

The policy-based funding method allocates funds according to the policy goals of the provincial government. Once the ministry of health decides to implement a policy, funding is applied equally to all facilities providing the service encouraged by that policy. While policy-based funding is not suited to being a primary method of funding, it is a good way for the province to ensure that policies are being put into action. While policy-based funding is not used as a primary funding approach for any of the provinces, it is used as a secondary approach in British Columbia, Alberta, Ontario and Quebec (Senate Committee, 2002).

Project-based funding is another secondary funding method. It is generally used as a means of one-time capital expenditures, such as a new hospital wing. Unlike policy-based funding, this method is directed at one hospital at a time for a specific purpose and not applied to all hospitals. All provinces use this method to disburse funds for capital expenditures (Senate Committee, 2002).

Service-based funding allocates funds to individual hospitals based on the volume and type of cases each hospital treats. This method requires patients to be classified into groups that use similar levels of resources (often called Diagnostic Resource Groups, or DRGs), with each group being weighted according to the costs associated with treating patients in that group. A benchmark (provincial or national) cost is established for each procedure, and hospitals are funded by this amount for each specific procedure performed on a patient, regardless of the actual cost to the hospital. This method encourages efficiency to a greater degree than other methods since hospitals that provide services for less than the benchmark cost are able to retain their cost savings, and the more costly hospitals have an incentive to become more efficient. Currently, Ontario is the only province using a service-based approach to secondary funding (Senate Committee, 2002).

### 3. System is Unsustainable in its Current Form

While Canada is recognized, and even lauded for its universal health care system, the system is not sustainable in its current form. It is estimated that between 2000 and 2026, Canadian health expenditures will grow by 247 percent while the population will increase by only 19 percent (Crowley, Ferguson, Zitner, and Skinner, 2002). If the average annual growth in government health care spending continues on its current trajectory, six of the ten provinces will be spending more than 50 percent of total revenues on health care by 2036 (Skinner, 2009). This will obviously lead to a crowding out of other areas, such as education and social assistance.

Even if governments were able to come up with the additional funding required to keep pace with the growth in health care expenditures, the system as a whole is unsustainable in the long run. Continuing to inject money into the system does not address the root of the problem – the lack of incentive to increase productivity (Kirby and Keon, 2004).

The health care market differs from the markets for most other goods and services in several respects. First, there is a lack of consumer sovereignty since it is the health care providers who are principally determining demand, not the consumers. It is the patient who makes the first contact with his or her physician, but after that it is the physician who determines the services the patient requires. The patient relies on the physician for access to prescription drugs, diagnostic tests and referrals to specialists. Second, there is the issue of asymmetrical information between consumers and providers. This is related to the lack of consumer sovereignty in that patients are not able to access care directly, and often do not know what type of care they require. This asymmetry of

information can lead providers to “manufacture” demand for their services. The potential for conflict of interest arises here since providers are recommending certain courses of treatment, and they are paid for providing whatever treatment they recommend. In the worst-case scenario, a patient might be subjected to tests or a treatment that is not entirely necessary given the condition he or she has. However, given that most patients do not have extensive knowledge of the practice of medicine, they will not be aware of what exact treatment is required. The final difference between the health care market and markets for other goods and services is the presence of uncertainty in the health care market. Illness is almost always an unexpected occurrence, so it is difficult to properly budget and plan for it. This means that demand for health care will also be uncertain. As the economy grows, an increase in the demand for consumer goods can be expected. But the demand for health care is not so easily predictable. These complications are part of the reason for the high degree of government involvement in health care insurance. Even countries that allow parallel private health care insurance highly regulate those markets (Phelps, 2010; Senate Committee, 2001b).

In addition to the inefficiencies resulting from the health care market itself, such as unnecessary treatment as a result of “manufactured” demand, the funding methods that the provincial governments apply to hospitals tend to promote inefficiency (Kirby and Keon, 2004). Almost none of the individual funding methods, which were discussed in the previous section, directly link funding with expenditures. This disconnect means that hospitals have little incentive to become more efficient. In fact, since several of the funding methods as based on the previous year’s expenditures, an inefficient hospital could receive greater funding than a relatively more efficient hospital (Senate Committee,

2002). Global budgets tend to perpetuate inefficiencies since hospital budgets are based on the previous year's expenditure and do not take the cost-per-procedure into account. A hospital that is able to provide the same services for a lower cost is effectively penalized because its budget will be based on lower total expenditures than a hospital providing the services at a higher cost.

Unless changes are made to the Canadian health care system, it will continue to be inefficient and unsustainable. Increasing funding without addressing the underlying problems is not working – changes must be made to the system itself.

### 3.1 Options for Reform

Given the current state of Canada's health care system, it is evident that changes need to be made. Various options for reform have been proposed, including health care premiums, a special health care tax, user fees, medical savings accounts and the creation of a parallel private health care system.

At the present time, Ontario and British Columbia are the only provinces charging health care premiums to their residents (Hurley, 2004). Albertans were also required to pay health care premiums until the province eliminated them on January 1, 2009 (Alberta Health and Wellness, 2011). Premiums in Ontario contribute approximately \$2.4 billion in revenue to the health care system annually, which amounts to 8 percent of annual public health care spending (Hurley, 2004). Before premiums were abolished in Alberta, they covered around 11 percent of health care costs (Premier's Advisory Council on Health, 2001). One positive aspect of health care premiums is that they remind users of the system that access to health care is not actually free. However, since premiums are

quite modest and are not tied to the amount of services provided to an individual, an increase in premiums is not likely to lead to a significant decrease in demand for medical services.

A special health care tax could be implemented in several ways, including as an addition to the income tax system or as a consumption tax. In either form, the tax would raise additional revenues for the provincial health care systems. Similar to the premiums discussed above, the tax would also create greater awareness of the costs associated with providing health care services to the entire population. Most Canadians would be opposed to any increase in taxes, even if it were to increase health care funding, so this option would likely not be a popular one. To date, no provinces have implemented a dedicated health care tax (Premier's Advisory Council on Health, 2001).

Currently, Canada is one of only six OECD countries not applying user fees (Esmail and Walker, 2005). Australia, Germany, the Netherlands, Sweden and the United Kingdom all charge user fees as a means of keeping demand for health services in check (Premier's Advisory Council on Health, 2001). In the United States, the RAND Health Insurance Experiment found that people in health insurance plans with user fees used fewer services than those in insurance plans without user fees (Lohr et al., 1986). If an individual has to pay a certain portion of each service provided, there will be stronger incentive against overuse of the system than there would be with a health care premium or tax, which is not directly tied to an individual's use of the system. Implementing user fees in Canada would require an amendment to the *Canada Health Act*, since user fees at the point of service are prohibited. In addition to this, there is evidence that, while user

fees successfully reduce demand, they place a greater burden on those with lower incomes (Premier's Advisory Council on Health, 2001).

The introduction of medical savings accounts is another possibility for reform. The accounts could take many forms, but a basic account would give each individual a certain amount of money, which could be adjusted for factors such as age and sex. The account envisaged by the Premier's Advisory Council on Health Report (also referred to as the Mazankowski Report) would be used in the following manner:

Individuals could use their medical savings accounts to pay for insured health care services used during the year. On an initial basis, hospital costs would not be included but all other services would. Individuals would have the ability to choose which health services they used during the year, choose who they "purchase" those services from, and where possible and appropriate, shop around to see where they can get the best price.

If all the money in an account is used before the year is finished, the individual could be required to pay for additional services up to a certain amount, or the government could simply pay for it. If the government pays, there is no penalty for using all of the funds in the account. In that case, the government would have to choose the level of funding to apply to the accounts in such a way that individuals are able to access necessary health services without overusing the system.

Currently, Canada is the only OECD country to prohibit a parallel private health sector (Esmail and Walker, 2005). Like user fees, the adoption of a parallel private sector would require the *Canada Health Act* to be repealed or amended, since it is technically prohibited under the Act (Premier's Advisory Council on Health, 2001). However, in the 2005 case of *Chaoulli v. Quebec (Attorney General)*, the Supreme Court of Canada ruled that the prohibition on private insurance for services covered under Quebec's public health care plan was not valid. While this decision is specific to the province of Quebec,



“it implies that provincial governments cannot ban private care unless they guarantee that the public system will meet patients’ needs without excessive waits” (Steinbrook, 2006). Under this type of system, individuals would have the option to seek insured and non-insured services in a private facility. These services would be funded either out-of-pocket or through a form of private insurance. Of all the options outlined, this is the most contentious. Some Canadians feel that allowing individuals to seek treatment in the private sector will alleviate the pressure on the public system. However, there are concerns that such a system will attract the best doctors, and consequently those who are able to pay will have access to better quality health care than those who cannot.

Another possibility for reform is the introduction of service-based funding into the health care system. As mentioned in the Current Methods Used to Fund Canadian Hospitals section above, service-based funding is a method that allocates funds to individual hospitals based on the volume and type of cases each hospital treats. Service-based funding (also referred to as case-mix-based funding, activity-based funding, purchase of services, payment-by-results and payment-for-performance) is utilized as a funding method in several countries, including Norway, the United States, the United Kingdom and Australia. Unlike the options mentioned above, the introduction of service-based funding will have little impact on the consumers of Canadian health care as it merely changes the way in which hospitals are funded; it does not make any changes to the structure of the system itself. Canadians are more likely to accept changes that leave the single-payer aspect of the system intact.

Canada’s single-payer system is more efficient than multiple-payer systems like the United States (Kirby and Keon, 2004). With a single-payer system, risks are pooled

across the entire population of the country instead of the number of people covered by each insurer. In a system with private insurance, there are issues of moral hazard and adverse selection to contend with. If health insurance is not mandatory, intuitively it seems that people with a higher risk of illness will purchase more insurance than those with a low risk (Kirby and Keon, 2004). If this is the case, then risk will be pooled across a greater proportion of unhealthy individuals than if the risk was pooled across the entire population, which would result in higher premiums.

A single-payer system also has lower administrative costs than a multiple-payer system since hospitals do not need to process and administer health insurance claims for a multitude of insurers (Kirby and Keon, 2004). In 2004, it was found that administrative costs accounted for 31 percent of total health care expenditures in the US and only 16.7 percent in Canada (Woolhandler, Campbell, and Himmelstein, 2003).

## 4. Evidence from Other Countries

While service-based funding has been used in Canada only for pilot projects, other countries have implemented it with varying degrees of success. This section will examine service-based funding in Norway, the United States, Australia and the United Kingdom.

### 4.1 Norway

Hospitals in Norway are almost entirely publicly funded with less than 1 percent of all hospital beds being private. Prior to 1997, Norwegian counties funded hospitals using a global budgeting method; however, it was suggested by a Royal Commission that some hospitals restricted services under this method in order to stay within their budgets. Service-based funding was gradually implemented in an effort to raise hospital productivity and shorten waiting lists. In 1997, hospitals still received 70 percent of funding from global budgets, while the remaining amount was based on the previous year's activity. National Diagnostic Resource Group, or DRG, rates were established to determine the amount paid for each activity. In 1998, the service-based component was increased to 45 percent of total funding, and there was an even split between the two methods by 1999 (Senate Committee, 2002). Although the service-based funding comprised 60 percent of total funding in 2003, it was decreased to 40 percent in 2004, partly due to negative effects, such as "creative" coding to increase funding, arising from the service-based system (Christensen, Laegreid, and Stigen, 2006).

Service-based funding resulted in a decrease in waiting times, and an increase in both productivity and expenditures, which increased budget deficits instead of decreasing

them, as the new funding method was supposed to do. It was also found that “activities that [did] not yield a net income” were given a lower priority than those services which could be provided at a profit (Christensen et al., 2006).

In order to adjust for the additional costs they face, teaching hospitals receive additional grants to finance teaching and research, as well as the more complex cases that are usually treated only at teaching hospitals.

## 4.2 United States

The American health care system differs greatly from the Canadian system in its complexity. While almost all Canadian hospitals are owned by private, non-profit organizations, 28 percent of American hospitals are publicly (government) owned, 58 percent are owned by private, non-profit corporations, and private for-profit corporations own the remaining 14 percent. The system is financed by a combination of private insurance, public insurance (Medicare and Medicaid) and out-of-pocket patient payments. Until recently, approximately 30 percent of Americans were covered by some form of public insurance, with the rest being covered by private insurance or were uninsured. On March 23, 2010, President Obama signed the *Affordable Care Act* into law, which, among other things, is supposed provide health insurance coverage to Americans who previously had no coverage (US Department of Health and Human Services, 2011). At the present time, there are no statistics available showing the increase in the number of Americans with health insurance as a result of the *Affordable Care Act*.

In 1983, the Health Care Financing Administration, a federal agency within the United States Department of Health and Human Services, introduced the Prospective Payment System (PPS), a type of service-based funding. Hospitals funded according to this method were paid according to DRG rates based on the average costs of each specific treatment (Senate Committee, 2002). These rates are not adjusted for the length of each patient's actual hospital stay, so there is an incentive for hospitals to treat patients as quickly as possible. As of 2001, 81 percent of all US hospitals were funded using the DRG system (Ministère de la Santé et des Services Sociaux, 2001). DRG rates in the US are set by each individual state, so the rates are not homogenous across the country. However, Congress does conduct annual reviews of all rates.

The literature has suggested a number of benefits associated with the PPS. First, since the DRG system adjusts for patient risk by setting a higher rate for more complex cases, hospitals have less incentive to choose only the less risky cases. Second, the method is far more objective than most other methods since all hospitals in a region or state receive the same amount of funding for the same procedure. Third, resources are allocated equitably since inefficient hospitals are no longer receiving greater funding for performing the same procedure, which was effectively the case under global budgeting.

One major drawback to the PPS is "DRG creep" or "up-coding". DRG creep occurs when physicians or hospital administration choose a higher diagnostic code than medically necessary in order to maximize reimbursement (Carter, Newhouse, and Relles, 1990). Considering that the PPS is supposed to result in greater efficiency, and therefore lower costs, DRG creep is a very serious issue. Close auditing of the codes applied to patients and penalties for misconduct has been found to keep DRG creep in check. There

have been a few cases where health care firm executives were convicted of fraud for engaging in such practices (Senate Committee, 2002).

### 4.3 Australia

Service-based funding was introduced in the Australian state of Victoria in July 1993 (Duckett, 1995). Since the 1980s, Victorian hospitals had been funded on a global budget basis. In 1985, the Victorian Health Department began publishing reports that described hospital activity in DRG terms. The department also published reports comparing hospital efficiencies using US Medicare weights. With the election of the Liberal state government in 1992, there was a push to use DRGs to fund hospitals, rather than just describe hospital activity and performance.

Unlike the United States, the DRG rates are not calculated as the average cost of providing the service, but rather were based on a “benchmark efficiency level” (Duckett, 1995; 2008). Given that the new payment system was implemented as a means of reducing hospital expenditures, as long as the benchmark level is below the average cost of service provision, service-based funding will result in cost savings. However, the promotion of cost savings should not be at odds with the goal of reducing wait times by discouraging hospitals from treating additional patients. The state of Victoria created an “additional throughput pool” which provided extra funding to cover the treatment of added patients. The size of this pool is determined by the state government as a matter of policy; there is no set formula. In the first year of service-based funding, the additional throughput pool was large enough to fund a 7 percent increase in patients.

Similar to Norway, teaching hospitals in Victoria receive additional funding in the form of a “Training and Development Grant” to adjust for the added costs associated with providing services in such an environment. Rural and isolated hospitals also receive supplementary funding to account for the cost differential between these and urban hospitals, including ambulance transfers from the rural hospitals to hospitals better equipped to handle complex cases (Duckett, 1995).

Only a year after the change to service-based funding, there was already evidence of greater efficiency in the system. Total hospital expenditures had decreased by 5 percent while the total number of patients treated had increased by 5 percent. The overall average case weight (based on severity of illness and amount of resources required) had also increased slightly, which means that the increase in patients treated was not simply attributable to hospitals concentrating more on simpler cases to the detriment of complex ones (Duckett, 1995).

#### 4.4 United Kingdom

In 1991, a major overhauling of the National Health Service (NHS) began with the introduction of internal competition within the hospital sector by separating the “purchaser” from the “provider” of health services. This separation was achieved by making the hospitals (providers) into “trusts” which negotiated contracts with the District Health Authorities (DHAs) and fundholding doctors (purchasers) (Oliver, 2005). Further reforms took place in 1997 to shift the focus from competition to cooperation while leaving the basic funding structure intact. The government funds the DHAs on the basis

of population, and in turn the DHAs fund the hospitals on a service-based method, generally referred to as Payment-by-Results, or PbR (Street and Maynard, 2007).

Hospitals are paid according to a “case mix adjusted tariff” which is based on the average cost across all hospitals of providing that service. The tariffs, or rates, are set by the government and applied to all hospitals, but adjustments are made to account for “unavoidable regional differences, cost pressures, technological change, outliers (both positive and negative), critical care work and specialist work” (Miraldo, Goddard, and Smith, 2006). It has been suggested that in order to encourage greater efficiency, reimbursement should be based on best practice, not average practice (Street and Maynard, 2007).

One major criticism of the reform was that it resulted in significantly higher administrative costs. This increase is due to the “effort required to manage activity and the costs of collecting and verifying the more highly specified (patient-level) data upon which PbR is founded” (Marini and Street, 2006). It has been estimated that the increase in annual costs as a result of PbR ranges from £90 000 to £190 000 per hospital. Since the majority of costs are associated with the need to hire more staff to oversee the data collection and coding, these increases are likely to be permanent. These information-related costs are higher in England than in other countries such as the United States or Australia, which both have large private health insurance markets. The presence of such markets meant that hospitals had been receiving payment from more than one source and as such, they had more sophisticated infrastructure already in place at the time service-based funding methods were implemented. In regard to higher administrative costs,



hospital executives maintain that they are outweighed by the benefits of PbR, namely greater clarity of payment rules and increased incentives (Marini and Street, 2006).

As with the United States, the literature suggests that up-coding is an issue in England as well. Hospitals have an incentive to give patients a more serious diagnosis in order to receive a higher reimbursement. It has also been suggested that providers have categorized patients into specialist Health Resource Groups (HRGs – similar to DRGs) that are funded by alternative sources, thereby relieving the provider of the responsibility to pay for that patient’s treatment. Another way to “game” the system, which does not take length of stay into account, is for providers to discharge a patient before they are fully treated in order to receive another payment when that patient is later re-admitted (Carroll and Erwin, 1987). While the potential for up-coding is very serious, there has been no concrete evidence of it occurring in English hospitals; however, the situation calls for close monitoring. A recent study which examined the top 20 HRGs (by volume) in a sample of hospitals did not find explicit evidence of up-coding, but found some trends which suggest the matter should be investigated in more depth. One particularly alarming example saw one hospital state that the number of procedures performed “with complications” increased by 300 percent over a five-year period (Miraldo et al., 2006).

## 5. Issues to be Addressed

Of all potential funding methods, service-based funding is certainly one of, if not the, most objective and transparent ways to fund hospital activities. The above evidence from other countries demonstrates that the method promotes greater efficiency, but it does have drawbacks. That being said, in response to rising health care costs, service-based funding would be easier to implement than repealing sections of the *Canada Health Act* in order to allow a parallel private health care system. There are a number of issues to seriously consider before service-based funding could be applied to Canadian hospitals.

### 5.1 Appropriateness of Service Mix

Under a service-based funding model, hospital administrators are able to choose the type and volume of services provided at their facility. Since hospitals are able to retain any “savings” as a result of efficient performance, they will try to provide services that maximize returns. Hospitals will attempt to specialize in the procedures they can perform most efficiently and cease offering procedures that are provided less efficiently. As a result of this specialization, economies of scale will be realized. In urban areas with large populations this will lead to the emergence of highly specialized facilities, or “centres of excellence” (Senate Committee, 2002). However, hospitals in rural areas with smaller population bases will not be able to specialize in the same way. Especially for hospitals located far from urban centres, it will be necessary to continue offering a broader range of services even though some may not be provided as efficiently as others.

Even though the majority of Canadians live in cities, many Canadians live in rural or isolated areas and still require access to health care. In order to ensure that rural hospitals are able to provide necessary services for those living in the region, it will be imperative to review payment rates on a regular basis and revise them if necessary. Depending on the relative isolation of the institution, grants may be awarded to compensate for the additional expense associated with providing services to a smaller population.

## 5.2 Up-coding

As mentioned in the literature concerning American and English service-based funding schemes, the potential for up-coding is a serious issue. With a service-based funding system, each individual case is given a weight corresponding to its severity and the amount of resources used. The greater the severity and resource use, the greater the case weight and, therefore, the greater the remuneration. In order to maximize reimbursement, hospitals have an incentive to report higher case weights, even if the weight does not accurately reflect the actual level of treatment required (Senate Committee, 2002).

There are three different types of up-coding, or DRG creep: misspecification (applying the wrong diagnosis), miscoding (reporting a treatment that was not performed), and re-sequencing (changing the sequence of diagnoses or reporting a secondary diagnosis as the main diagnosis in cases when this would result in higher reimbursement) (Christensen, Laegreid, and Stigen, 2006).

In the United States in 1996, up-coding resulted in improper Medicare payments amounting to 14 percent (US \$23.2 billion) of total Medicare fee-for-service payments. This amount decreased to 5.2 percent (US \$12.1 billion) in 2004, but it is still alarming (Steinbusch, Oostenbrink, Zuurbier, and Schaepkens, 2007). The evidence suggests that the practice of up-coding is more prevalent in for-profit hospitals than in not-for-profit hospitals (Silverman and Skinner, 2004).

In addition to hospital ownership, there are a number of other factors which influence up-coding: ambiguity of the classification criteria, the point in time of initial registration during the care process, the incentive of the medical coder, and the possibility to change the coding after initial registration. Many DRGs in the United States and Australia contain classification criteria that can be interpreted broadly and are not particularly “clinically meaningful” (Steinbusch et al., 2007). Ambiguous criteria lead to a greater chance of improper coding. In the Netherlands, patients are classified to a DRG when they first come in contact with a physician. In the United States and Australia, classification does not take place until after a patient is discharged. If classification occurs after discharge, the medical coder will be able to examine all of the opportunities for up-coding, making it more likely to occur (Steinbusch et al., 2007). Another difference between the Dutch system and the American and Australian systems is the incentive of the medical coder. In the Netherlands, the coders are the physicians themselves, and their salaries are based upon the codes being assigned – the more serious the classification, the greater the salary. In the United States and Australia, coders are employed by the hospital and their salaries are not dependent on the severity of DRG codes. There are also opportunities to change the DRG after it is assigned in the Dutch

system, but not in the American or Australian systems (Steinbusch et al., 2007). Based on these factors, there are fewer incentives to up-code in the United States and Australia than in the Netherlands.

Close auditing is necessary to make certain that up-coding is not taking place. This auditing may require additional investments in both human resources and technology, which could become quite costly. However, if DRG rates are detailed and accurate enough, the added cost of auditing should still be less than the potential costs resulting from up-coding.

### 5.3 Physician Payment

In Canada, hospital-based specialists are paid on a fee-for-service basis. The payment structure gives physicians an incentive to place quantity of patients treated over the quality of treatment provided. One way to keep the focus on quality provision of care is to change the method of payment for hospital-based specialists so they are no longer being paid on a fee-for-service basis (Senate Committee, 2002).

Studies from Canada, Germany, Norway and the United States have found that physicians paid a salary had fewer visits per patient, but longer consultations than physicians paid on a fee-for-service basis. Physicians paid by salary have an incentive to minimize their effort by under-serving patients or by selecting lower-risk patients, which is referred to as “cream skimming” (Simoens and Giuffrida, 2004).

Given that both salary and fee-for-service payment schemes have positive and negative aspects, the best method for paying physicians may be a hybrid of the two.

## 5.4 Information and Data

Before a service-based funding system can be implemented, comprehensive data are required to establish reimbursement rates. At the present time, these data do not exist in Canada and obtaining them will take time and resources. In its submission to the Standing Senate Committee on Social Affairs, Science and Technology, the Canadian Healthcare Association stated that:

The costing data that has been developed in Ontario has taken 10 years to develop. While it has been an important and necessary initiative, there are still significant operational issues to deal with including: the fact that this process only covers 50-60 percent of hospital services (it does a good job of inpatient services and surgeries, but not outpatient services); there is a need to add “complexity factors” (such as recognizing the unique situation of remote hospitals and teaching hospitals); and the tendency to allocate administrative costs to services that are not covered by the process, thus appearing to be very efficient. Given the ongoing challenges of establishing an Ontario system, one can imagine the magnitude and complexity of issues that need to be resolved when developing a pan-Canadian costing system (Senate Committee, 2002).

Since 1983, the Canadian Institute for Health Information (CIHI) has collected data from hospitals for the purpose of establishing case rates (Senate Committee, 2002). When the information gathering process began, the lack of Canadian data meant that the CIHI had to use data from New York State and Maryland and adjust it for Canadian lengths of stay. Currently, data are provided by a small number of Alberta and Ontario hospitals. However, in order to establish rates that reflect the complexities of a country the size of Canada, all provinces and territories will need to participate by submitting data to the CIHI.

## 5.5 Innovation

Given that service-based funding encourages hospitals to provide services for the lowest possible cost, it is easy to see how hospitals may not be willing to invest in new technologies and procedures. In order to provide the highest quality of medical care, hospitals, especially teaching hospitals, must be able to develop new procedures. A rate-based system would penalize such experiments, since they are likely to be more costly (at least initially) than established procedures.

One way to resolve this likely imbalance is to provide additional funding in the form of grants to teaching hospitals and Academic Health Sciences Centres. Like Norway and Australia, provincial governments in Canada could award training and development grants to these hospitals to account for the added costs of training new doctors and developing better procedures.

## 5.6 Integrated Health Care

In moving to a system which reimburses providers based on each procedure performed there is a worry that health care will no longer be integrated or “seamless” (Senate Committee, 2002; Miraldo et al., 2006). Areas such as health promotion and disease prevention may suffer under an entirely service-based hospital system. Areas that are essential to the health care system but do not focus on treating individual episodes of illness should be funded by a method such as global budgeting.

## 6. Towards a Canadian Model of Hospital Funding

Service-based funding is not a perfect system for funding hospitals, but nevertheless, it is a viable option for bringing health care spending under control, without resorting to a parallel private sector. Unfortunately, not many empirical studies have been conducted to measure the increases in efficiency experienced in countries that have switched to a service-based funding method. However, the evidence from Australia is promising – total hospital expenditures fell by 5 percent while the total number of patients treated increased by 5 percent only a year after service-based funding was introduced (Duckett, 1995). Literature from other countries does suggest that an increase in administrative costs is unavoidable. A Canadian service-based funding model should combine the best aspects of systems from other countries in order to ensure that potential cost savings resulting from a greater efficiency in the provision of services will not be outweighed by increased administrative costs. This section will outline a framework for service-based funding of Canadian hospitals.

Service-based funding should be introduced gradually to Canadian hospitals, much like the system was introduced in Norway. This will allow all players involved time to work out any “kinks” in the system. The government could choose initially a certain number of procedures to fund using the service-based method, and increase the number of procedures funded in that manner in subsequent years until 100 percent of services performed in hospitals receive service-based funding. By implementing the system in this way, hospitals will have several years to develop their information gathering capacities. Given that Ontario and Alberta are currently the only provinces with hospitals submitting information to the Canadian Institute for Health Information,



comprehensive information from hospitals across the country will not be available for some time. By starting with only a few procedures, hospitals are able to develop and refine their information gathering as the service-based funding component increases. Canada is a diverse country with a mix of urban and rural populations, and in order to set DRG rates that appropriately reflect this, it is important for as many hospitals as possible to contribute information.

DRG classification criteria must be closely linked to the diagnosis to avoid ambiguity and opportunities for up-coding. DRGs must be sufficiently detailed, but not so much so that the system becomes too complex and difficult to administer. The American and Australian systems have 559 and 665 DRGs, respectively, while the Dutch system has 29 000 (Steinbusch et al., 2007). While the Dutch system's DRGs are much more comprehensive, that level of precision is likely not required in a Canadian service-based funding system. An amount of DRGs closer to the levels found in the United States and Australia combined with close auditing should be sufficient. Registering each episode of care into the system at the time of first contact with the physician will make up-coding more difficult than assigning a DRG once care has concluded. It should also be impossible to change a DRG once it has been assigned to a patient. Independent medical coders, not the treating physicians themselves, should assign DRGs. A physician should submit information only regarding his or her patient's diagnosis and required course of treatment, and the coder will decide upon the DRG. Coders should be paid a salary that is not dependent in any way on the severity of DRGs assigned.

DRG rates should be set in a way that will encourage hospitals to be as efficient as possible, without compromising the quality of care patients receive. Setting rates at

the benchmark efficiency level, as in Australia, will achieve more optimal results than simply setting rates as the average cost of performing a certain procedure among hospitals in the province or region. A benchmark level below the average cost of provision will result in further cost savings for the provinces. As hospitals become more efficient at delivering certain services, it may be possible to lower the benchmark rate, but only if it does not compromise the quality of care that patients receive.

If the system works as it is designed to, waiting times will be decreased and more patients will be treated. While this means that hospitals are operating more efficiently, it also means that overall expenditures within the hospital will be increased, at least for the first few years until waiting times are lowered and stabilized. It would be prudent for the provincial governments to set aside funding in the form of an additional throughput pool, as the state of Victoria did when implementing service-based funding. The throughput pool was a policy judgment of the government and was based on estimated elasticity of hospital activity (Duckett, 1995). This additional funding would make certain that the more efficient hospitals still have an incentive to treat additional patients.

It makes sense that hospitals will want to specialize in those procedures which can be provided most efficiently. In urban areas this will lead to specialized hospitals or “centres of excellence” that specialize in one or two particular areas of medicine. While these types of centres are already in existence, such as the Mazankowski Alberta Heart Institute in Edmonton, there will likely be more as a result of service-based funding. Hospitals in rural or isolated areas will not be able to specialize in the same manner, as doing so could compromise the health of the local population if certain necessary procedures were no longer available because the hospital could not provide it at the same

low cost as urban hospitals. The provincial governments must recognize that the same efficiencies cannot be realized in rural hospitals as their urban counterparts, and therefore it will be necessary to adjust DRG rates to reflect this or provide rural hospitals with additional funding in order to bridge the gap.

In addition to the rural hospitals, teaching hospitals also face different costs than most regular hospitals. These teaching hospitals are responsible for the training of new doctors, and as such, a procedure performed in a teaching hospital is likely to cost more than the same procedure in a non-teaching hospital. Even though teaching hospitals have greater expenditures than regular hospitals, they are obviously essential to the Canadian health care system. Teaching hospitals would be penalized if funded under a strictly service-based funding system since their costs would be higher than the benchmark efficiency level set by the government. Teaching hospitals also devote significant resources to research, resulting in both medical and technological breakthroughs. Many important discoveries have been made in Canada, and it is important that the country remains at the forefront of medical advancement. Service-based funding alone does not provide incentives for teaching and research, so it will be necessary for the additional funding to be provided in the form of teaching and research grants.

Another consideration is the purchase of medical equipment, such as MRI machines. Under service-based funding, only hospitals that are consistently delivering services at costs below the benchmark efficiency level will have enough “leftover” funding to purchase new medical equipment. If the more inefficient hospitals are unable to purchase new equipment, they will likely fall further and further behind. Hospitals

should be able to apply to their Regional Health Authority or the provincial government for additional funding to purchase such equipment on a case-by-case basis.

One final area of health care which may not have as much attention under service-based funding is the promotion of general health and wellness. Service-based funding focuses on treating illness and it is critical that health promotion does not fall by the wayside. These initiatives could be funded through global budgets so that individual regions can decide which areas need the most attention.

Service-based funding will not cover all hospital activities, but it is certainly a more transparent and objective funding method than the mixture of methods currently used by the provinces. The best way to switch to this type of system is likely a gradual implementation with careful auditing to decrease the risk of up-coding.

## 7. Conclusion

Service-based funding is certainly not the only option for reforming Canada's ailing health care system; however, it would be one of the options most palatable to Canadians. Even though most Canadian hospital services are delivered by non-profit, private organizations, many people seem to believe that hospitals services are both funded and delivered by public institutions. Due to this difficulty in separating the two, any proposals for privatization within the system are typically met with public opposition. Service-based funding changes the manner in which hospitals are funded, but these changes may not be evident to the general population. Compared to the current methods of funding the provinces are using, service-based funding is the most objective and transparent, as well a system which gives hospitals an incentive to perform efficiently. Other methods, namely global budgeting, actually reward the inefficient hospitals while penalizing the more efficient ones.

Since health care is under the jurisdiction of the provinces, implementing service-based funding on a nationwide scale will be no easy feat. If this method is to be adopted across the country, it is likely that a few provinces will adopt it at first, and once the results are favourable, the other provinces will come on board. Alberta and Ontario are currently the only provinces submitting detailed hospital statistics to the Canadian Institute for Health Information, so it would make the most sense if service-based funding began there while the other provinces work at updating their information gathering technology.

The most important thing is that changes are made to the health system sooner rather than later. The federal government and many provinces have commissioned

reports on the status of the health care system and sought suggestions for reform, but it has been almost a decade since these reports were released and no major reforms have taken place. If no action is taken, the proportion of provincial budgets devoted to health care spending will continue to increase, to the likely detriment of other areas such as education and social programs. A service-based funding model along the lines of the one discussed in the previous section will bring health care costs better under control and while still allowing all Canadians access to a similar quality of care.

## References

- Alberta Health and Wellness. (2011). Premiums Elimination. Retrieved from <http://www.health.alberta.ca>
- Banting, K.G., and S.M. Corbett (Eds.). (2002). *Health Policy and Federalism: A Comparative Perspective on Multi-Level Governance*. Montreal; Kingston: McGill-Queen's University Press.
- Canada Health Act*, RSC 1985, c C-6.
- Caroll, N.V., and W.G. Erwin (1987), Patient Shifting as a Response to Medicare Prospective Payment, *Medical Care*, 25, 1161-1167.
- Carter, G. M, J.P. Newhouse, and D.A. Relles (1990). How Much Change in the Case Mix Index is DRG Creep? *Journal of Health Economics*, 9, 499–504.
- Chauolli v Quebec (Attorney General)*, 2005 SCC 35, 1 SCR 791.
- Christensen, T., P. Laegrid, and I.M. Stigen (2006). Performance Management and Public Sector Reform: The Norwegian Hospital Reform. *International Public Management Journal*, 9(2), 113-139.
- Crowley, B.L., B. Ferguson, D. Zitner, and B.J. Skinner (2002). *Definitely Not the Romanow Report: Achieving Equity, Sustainability, Accountability and Consumer Empowerment in Canadian Health Care*. Halifax: Atlantic Institute for Market Studies.
- Duckett, S.J. (1995). Hospital Payment Arrangements to Encourage Efficiency: the Case of Victoria, Australia. *Health Policy*, 34, 113-134.
- Duckett, S.J. (2008). The Australian Health Care System: Reform, Repair or Replace? *Australian Health Review*, 32(2), 322-329.

- Esmail, N. and M. Walker (2005). *How Good is Canadian Health Care? 2005 Report: An International Comparison of Health Care Systems*. Vancouver: Fraser Institute.
- Esmail, N. and M. Walker (2008). *How Good is Canadian Health Care? 2005 Report: An International Comparison of Health Care Systems*. Vancouver: Fraser Institute.
- Himmelstein, D.U. (2004). Health Care Administration in the United States and Canada: Micromanagement, Macro Costs. *International Journal of Health Sciences*, 34(1), 65-78.
- Hurley, J. (2004). Health Care at a Premium. *Canadian Medical Association Journal*, 170(13), 1906-1907.
- Kirby, M.J.L., and W. Keon (2004). Why Competition is Essential in the Delivery of Publicly Funded Health Care Services. *IRPP: Policy Matters*, 5(8), 103-135.
- Lohr, K.N., et al. (1986). Use of Medical Care in the Rand Health Insurance Experiment: Diagnosis and Service-Specific Analyses in a Randomised Controlled Trial. *Medical Care*, 24 (supplement).
- Marini, G., and A. Street (2006). *The Administrative Costs of Payment by Results*. York: Centre for Health Economics Research Paper 17.
- Ministère de la Santé et des Services Sociaux. (2001). *La Budgétisation et la Performance Financière des Centres Hospitaliers*. La Direction de Communication du Ministère de la Santé et des Services Sociaux, Quebec City.
- Miraldo, M., M. Goddard, and P.C. Smith (2006). *The Incentive Effects of Payment by Results*. York: Centre for Health Economics Research Paper 19.
- Oliver, A. (2005). The English National Health Service: 1979-2005. *Health Economics*, 14, 75-99.
- Phelps, Charles E. (2010). *Health Economics*. (4th Ed.). New York: Addison-Wesley.



- Premier's Advisory Council on Health. (2001). *A Framework for Reform*. Edmonton:  
Premier's Advisory Council on Health.
- Silverman, E., and J. Skinner (2004). Upcoding Across Hospital Ownership. *Journal of Health Economics*, 23(2), 369–389.
- Simoens, S., and A. Giuffrida (2004). The Impact of Physician Payment Methods on Raising the Efficiency of the Healthcare System: An International Comparison. *Applied Health Economics and Health Policy*, 3(1), 39-46.
- Skinner, B.J. (2009). *Canadian Health Policy Failures: What's Wrong? Who Gets Hurt? Why Nothing Changes*. Vancouver: Fraser Institute.
- Standing Senate Committee on Social Affairs, Science and Technology. (2001a). *The Story So Far, vol. 1, The Health of Canadians – The Federal Role*. Ottawa: Queen's Printer for Canada.
- Standing Senate Committee on Social Affairs, Science and Technology. (2001b). *Issues and Options, vol. 4, The Health of Canadians – The Federal Role*. Ottawa: Queen's Printer for Canada.
- Standing Senate Committee on Social Affairs, Science and Technology. (2002). *Recommendations for Reform, vol. 6, The Health of Canadians – The Federal Role*. Ottawa: Queen's Printer for Canada.
- Steinbook, R. (2006). Private Health Care in Canada. *New England Journal of Medicine*, 354, 1661-1664.
- Steinbusch, P.J.M., J.B. Oostenbrink, J.J. Zuurbier, and F.J.M. Schaepkens (2007). The Risk of Upcoding in Casemix Systems: A Comparative Study. *Health Policy*, 81, 289-299.

Street, A., and A. Maynard (2007). Activity Based Financing in England: The Need for Continual Refinement of Payment by Results. *Health Economics, Policy and Law*, 2, 419-427.

U.S. Congress Office of Technology Assessment. (1995). *Hospital Financing in Seven Countries*. Washington, D.C.: Government Printing Office.

U.S. Department of Health and Human Services (2011). Understand the Affordable Care Act. Retrieved from <http://www.healthcare.gov/law/introduction>

Woolhandler, S., T. Campbell, and D.U. Himmelstein (2003). Costs of Health Care Administration in the United States and Canada. *New England Journal of Medicine*, 349, 768-775.