The role of waiting lists in health care rationing

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Many would argue that society should do what it takes to treat the ill and save lives. Some would argue that economics or cost calculations have no role in the discussion, because human life should not be reduced to a calculation of dollars and cents. Many believe that society should pay whatever price to save a life and keep us in good health. Although, we spend more money on health care than ever before, we cannot avoid the economic reality of making choices. In a world of scarce resources, the notion of human life often does have a price when it comes to provision of health care.

INTRODUCTION

For years, publicly financed health care in Canada has drawn high approval ratings from Canadian citizens and been widely regarded as the nation's most cherished social program. However, it appears that Canadians' long-standing approval of their health care system has declined significantly during the 1990s. While 61 percent of respondents to a 1991 survey rated the system "excellent" or "very good", that figure had fallen to 52 percent by 1995, and only 24 percent in 1999 (Sanmartin et al, 2000). This erosion of confidence is partly due to increased media coverage of claims about increased waiting times for many surgical procedures.

The 2003 Fraser Institute study does indeed confirm that Canada-wide total waiting time increased significantly in 2003. Compared to 1993, for instance, waiting time for a variety of services ten years later "is 90 percent longer" (p.5).

Canadian health care consumers are desperately concerned with waiting time and general state of health care system. Consequently, policy makers give much attention to waiting times for medical care. In economic literature waiting lists are often regarded as nuisance and many would want to get rid of them because of their mostly negative impact on public opinion. However, as this paper describes, waiting lists do serve its purpose playing an important role in health care rationing. As such they are inherent in publicly funded health care systems and can never be completely eliminated.

In Canada, at the present time, there is no standard way of measuring waiting times and therefore the real scope of the problem is not known. So rather then trying to eliminate them completely by pouring funds into the system, a more standardized approach to measurement and reporting of waiting times, for example, might be the first step in solving the problem. In other words, a more transparent and open infrastructure for information about waiting lists in Canada might improve their image and thus help manage public expectations.

This paper is organized as follows: Part one explores one of the most important issues in health care: rationing of scarce resources. The emphasis is given on the type of rationing that involves no price, rationing by waiting lists. Part two, aims to show that waiting lists are intrinsic in a publicly funded health care system where they do have its function. Lindsay and Feigenbaum (1984) develop a formal model in which inevitable waiting queues function as a rationing process. The main implication of the model is that waiting lists ration only through the influence of delay on the value of the service delivered. Part three surveys the main articles found in the literature surrounding the issue of excessive waiting times. Among many cited in this section are

Glazer and Rothenberg (1999), and Martin and Smith (1996). These authors, for instance, examine an impact of an increase in capacity, the most often proposed remedy, on waiting times. As it is not feasible to eliminate waiting lists, Iversen (1992) proposes the optimum waiting list as the best solution to the problem. Further, in part four, the paper focuses on some the most visible waiting lists issues. Issue of equity and fairness and disutility of the time spent on the waiting list. The last part introduces the Canadian experience, summarizing the situation surrounding waiting lists in the country, persisting and emerging issues, as well as suggestions for improvements. The conclusion highlights importance of the study of waiting lists for policy purposes.

PART ONE - HEALTH CARE RATIONING

1.1 THE NEED FOR HEALTH CARE RATIONING

Many economists feel that the provision of medical care is indeed a case calling for government intervention. This view is based on characteristics which make health care sector different from any other sector of the economy.

Arrow (1963) points out some characteristics of medical care which distinguish it from other sector in the economy. The nature of the demand, and the high importance that consumers place on it, are just a few characteristics that make this sector very unique. "An individual's demand for medical services is not steady in origin as, for example, for food or clothing, but irregular and unpredictable" (Arrow (1963), p. 948). Medical care offers satisfaction only in the event of an illness: opposite to other commodities in life. In addition, there is a risk of death or more

importantly a risk of impairment leading to a potential loss of earning ability. Therefore, illness as Arrow points out "is a costly risk, apart from the cost of medical care" (p. 949). Further, Arrow (1963) points out some uncertainty elements in the healthcare markets that justify widespread government intervention. Recovery from an illness is very unpredictable; it is hard to think of any other commodity where uncertainty as to the quality of the product is more present.

As well, Lindsay (1969) explores the role of externalities in the demand of health care services as one unique characteristic. He introduces the model of health care in which everyone should have equal access to medical care, based on universal desire and willingness to share. In introducing the model, Lindsay (1969) assumes that all individuals have equal medical need. He further concludes that "one individual's activity to increase his own equality in shares provides a "free" extension of equality to all others" (Lindsay (1969), p. 353). Government action to promote greater equality needs to be called for to permit extension of this activity to the optimum level.

This paper derives from a continuing belief in an unpleasant truth: it is not possible to provide health care for everybody who could benefit from it when they need it. Raising expenditure can always produce some measurable improvements in health. But doing so becomes increasingly difficult, as marginal costs keep increasing, and marginal benefit keeps decreasing. Squeezing out that last drop of benefit is simply unaffordable. Therefore, hard choices have to be made in cutting down on unnecessary, non-urgent, but expensive medical procedures. As in every other part of life, available resources must be rationed among competing claims. It appears that no country can afford to do as much for the sick as is technically feasible. Excruciating and complex

decisions have to be made as we allocate scarce health care resources. A line has to be drawn somewhere, and the consequence is rationing with its sharp edges exposed.

1.2 DEFINITION AND TYPES OF RATIONING

First, it is important to distinguish between allocation and rationing. Allocation decisions occur at the aggregate or macro level, while rationing decisions apply to the individual or micro level. Rationing, then, takes place within the context of prior allocation decisions that limit resources. One definition of the term is that rationing is "making choices that best further one's ends given one's resource constraints" (Folland et al 2001, p.8). Ubel (1999) in his book "Pricing Life" explains that rationing simply means not carrying out every procedure that could conceivably generate some health benefits.

Basically, there are two types of rationing. The first type of rationing is the *explicit rationing* and refers to decisions made by an administrative authority, and to amount and types of resources to be made available, eligible populations, and specific rules for allocation (Mechanic 1997). Glazer and Rothenberg (1999) call this type of rationing *specific rationing*. In health care, such rationing would imply restricting care to a particular person, who knows he or she is denied service. Putting a limit on a number of services by pricing, involve specific restrictions – someone must tell an individual who wants care that he will be denied service.

The second type of rationing is the *implicit rationing* which refers to strategies used to control spending such as waiting lists, reducing the intensity of services, substituting more costly service for less expensive ones, and deciding whether services are necessary (Mechanic, 1997). This

form of health care rationing is called implicit rationing, because the practitioners must make implicit judgments concerning preferential allocation of scarce resources (Mechanic, 1997).

To Glazer and Rothenberg (1999) this is *abstract rationing*. As these authors describe, the moral or political revulsion at denying medical care is far greater than the pain of denying a movie ticket or a new car. Therefore, abstract rationing is especially common in health care. Supply limitations by capacity constraints fall in this category "since at the time the capacity is set the identities of the person who will be denied care are unknown" (Glazer and Rothenberg (1999), p.673).

The distinction is well defined by Schelling (1968). "Let a 6-year old girl with brown hair need a thousand dollars for an operation that will prolong her life until Christmas, and the post office will be swamped with nickels and dimes to save her. But let it be reported that without sales tax the hospital facilities of Massachusetts will deteriorate and cause a barely perceptible increase in preventable deaths – not many will drop a tear or reach for their checkbooks." (p. 129).

PART TWO - ECONOMICS OF WAITING LISTS

2.1 WAITING LIST AS A RATIONING MECHANISM

Waiting lists are a way of rationing healthcare dollars and services by creating a delay to access the system. Long waits can discourage demand. In health care, waiting list can simply be defined as a queue of patients waiting for access to a service and represent a common phenomenon in markets in which non-price allocation of goods and services occurs and are used

to equate supply and demand. Waiting lists occur, in theory, when the supply of services does not cover the demand, in a specified period of time, or, expressed in terms of resources, when supply of resources stays below the level of resources required for the demand. Even when demand is balanced by supply, waiting lists can arise due to stochastic elements of patient's arrivals to the hospital.

Waiting lists attempt to ration the scarce resources allocated to it by governments, not in accordance with the individual's ability and willingness to pay. Rather, waiting lists serve as a rationing process in accordance with each individual's relative need, which serves as a guideline in prioritizing patients. Regardless of the procedure needed, the more serious a patient's condition, the sooner he or she receives care.

Waiting lists in healthcare are particularly characteristic of publicly funded health care systems in which patients do not pay directly at point of service (Naylor, 1993). "Facing zero monetary expense, consumers are not deterred from using services, and the health care market is characterized by excess demand." (Street and Duckett (1995), p.1) In practice, this leads to an inflation of waiting list which is in the eye of the public called 'excessive' waiting time. Priority for treatment is given on the basis of whether the patient "can afford" to wait, with the cost of waiting expressed in terms of the expected deterioration in the condition from the delay (Street and Duckett, 1996).

Waiting lists can serve a useful purpose. If hospital operates a booking system patients can plan their admissions in advance. Some level of waiting time is necessary to buffer for the efficient

planning of elective admissions and use of resources. Waiting lists also allow hospitals to optimize use of their resources. It is clear that it is not possible to operate at full capacity any system subject to random fluctuations in demand without a queue developing (Worthington 1987). Building onto this application of queuing theory, many authors have argued that waiting queues are inevitable in a public system. [1]

Waiting lists are known as tools of economic rationing which can be applied in situations where there is no price to act as a rationing mechanism. Such analysis can be useful in a wide range of settings beyond social provision of health care. In many legal systems the plaintiff faces the choice between settling the dispute immediately by accepting the defendant's offer or waiting for the case to go to court. The shorter the waiting time, the more likely the plaintiff is to reject the defendant's offer and go to court, (Martin and Smith, 1996).

2.2 RATIONING BY WAITING LISTS

Lindsay and Feigenbaum (1984) develop a formal model in which the above discussed waiting lists function as a rationing process. The central assumption of the theory is that a delay in the receipt of a good can lower its value to demanders. The morning's newspaper is worth more to readers this morning than this evening. "On the other hand, if the position in the queue was linked to the date of delivery, than the value and therefore the number of those enrolling per one period will be influenced by the length of the list" (Lindsay and Feigenbaum, p.404).

[1] See for example Street and Duckett (1995), Globerman (1991) and Luciani (1991).

Another assumption they make is that individual demand is unpredictable from period to period. For demands, which are readily predictable, like newspapers, for example, delay from the date of order to date of receipt need not reduce the number of demanders. Lists can grow indefinitely in such cases. Therefore, the authors conclude that queuing by lists will be employed more frequently in markets for which individual demands are episodic and unpredictable, like health care sector, for instance.

Standing in line, queuing by lists, say Lindsay and Feigenbaum, involves waste. "Yet waiting lists abound."(p.406). One explanation for survival of waiting list rationing could be found in the predictability of demand. The more predictable is one's demand, the less costly will be delay from the date of ordering to the date of delivery. One might anticipate delay and order in advance. Those with less uncertainty will crowd out those with highly uncertain demands, securing for themselves the rationed item. It is the variation in predictability of demand that is the number one characteristic in the rationing process, but there are others as well. In this paper, the authors assume sufficient uncertainty concerning future demand to make signing up in anticipation of future demand uneconomical for all.

The authors develop the model of queuing by list, beginning with the description of the individual decision to join the queue. If the position in the queue is linked to the date of delivery, than the value, and therefore the number of those enrolling per one period, is influenced by the length of the list.

A person will join a waiting list if the present value of the good when delivered exceeds the cost of joining the queue. On the basis of the above assumption, the value of the rights obtained by joining such a list will depend on the delay in receipt of the good as well as the price. Delay affects the present value of these rights in two ways. If the interest rate is positive, the right to consume the good in the future is discounted relative to its present exchange value due to simply to market expressed time preference. Delay may affect a good's value for other reasons, such as, location, health, or circumstances. The effect of both the discount rate and the diminishing demand may be expressed in exponential form, by an exponential demand decay rate. Their combined effect is expressed as an exponential demand decay rate *g*.

The present value of the rights obtained from joining a waiting list may in this case be expressed as the product of their current value *v*,(dependant on a vector of unknown attributes ũ and the price p), exponential in the decay rate *g*, and the expected delay in delivery *t*, as given by the following equation (1)[2]:

$$(1) \qquad v_i(\tilde{u}, p, g, t) = v_i(\tilde{u}, p) \cdot e^{-gt}$$

The cost of joining the list includes any cost incurred to qualify for joining other than the purchase price is c_1.

[2] Source: Lindsay and Feigenbaum (1984), p. 407.

Figure 1[3] below explains the relationship between benefits, costs, and time for such a queue. If the value at the date of ordering is v_1, the decay rate is g_1 and joining costs are c, then the delay for joining the list is given by $\hat{t}_1$. If expected wait in the queue is less than $\hat{t}_1$, the benefits of joining exceed the cost and the individual is going to join. If the expected wait is greater than $\hat{t}_1$, the benefits are less than the cost and the individual will decline to join. The decision of the person to join a queue is determined by the relation of $\hat{t}$ to the expected delay *t*. For those who join, $\hat{t}$ must be equal to or greater than expected delay *t*. For those who do not join, the opposite is true.

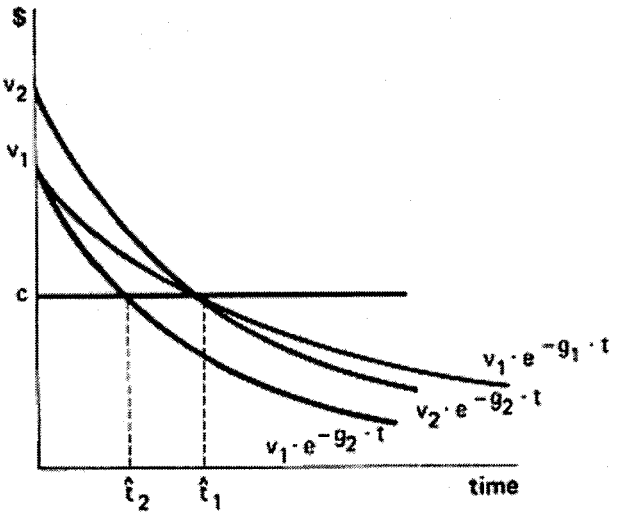

Figure 1

[3] Source: Lindsay and Feigenbaum (1984), Figure 1, p. 407).

More specifically, this model is interested in the marginal joiner for whom $\hat{t} = t$. As the expected delay varies, the equality $\hat{t} = t$ implies that the marginal queue joiners must satisfy the following condition given in equation (2)[4]:

$$(2) \qquad v \cdot e^{-gt} = c$$

For a marginal joiner, the present value of the rights obtained from joining a waiting list expressed as the product of their current value v, exponential in the decay rate g, and the expected delay in delivery t, equals c, the cost of joining the waiting list.

Basically, the waiting times are inversely related to the demand decay rate. That is, an increase in a decay rate will shorten the waiting time. From Figure 1, an increase in decay rate from g_1 to g_2 will shorten $\hat{t}$ for the individual who places a value of v_1 and he will no longer join the queue. As Lindsay and Feigenbaum (1984) explain, "At the original wait of $\hat{t}_1 = t$, the marginal joiner will now be the chooser who values the good at v_2 which is higher than v_1. Similarly, holding the decay rate constant at g_2 while increasing the expected wait from $t = \hat{t}_2$ to $t = \hat{t}_1$ also increases their value placed on the good by the marginal joiner from v_1 to v_2." (p. 407).

As for the rate of joining, the authors want to explain the relationship between expected wait for delivery and the rate at which people will join such a queue. For this reason Lindsay and Feigenbaum (1984) treat the purchase price as a given, the cost of joining as uniform across

[4] Source: Lindsay and Feigenbaum (1984), p.407.

individuals. As well they assume that everyone in a given queue has the same decay rate. Then they observe the effect of changes in the decay rate on particular properties of the queue.[5]
If the decay rate is not changing than "an expected wait of t_1 will imply that joining the list will be conditional on valuing the good by some amount v_1 or more." (p.408).The authors further conclude that the individuals who value the good more than the cost will join the queue. Those individuals are referred to as the number of potential joiners, since this is the number of people willing to sign up at no expected delay in delivery.

The complete theory of waiting lists does not end here. The expected delay itself must be determined, and this does not only depend on the rate of joining, but on the rate of supply. Waiting lists may exercise an additional influence on supply of services. The equilibrium wait is the one that clears the market of the available supply.

Further, the authors state that the costs of such queuing to the patients are only up-front. Once entered on the list, the patient returns to his or her private pursuits and bears no further costs of being in the queue. If such costs do not grow with time spent on the lists, these costs cannot act as the clearing mechanism in the market. Yet the market still clears.

In the absence of such a mechanism, we should expect those queues to grow without limit by the amount of the excess demand. The authors view the waiting time as an equilibrium mechanism. But the market clears. How? If there is no cost, waiting lists ration only through the influence of delay on the value of the service delivered. The expected wait is the total number in the queue

[5] If a good is distributed to a population with varying v and g, those demanders with high valuations and low decay rates will crowd out demanders with lower v and higher g. (Lindsay and Feigenbaum1984).

divided by the service rate. The wait in such a list is very much like a price. Instead of clearing the supply and demand by raising the cost of obtaining the good, however, waiting time clears the market by making it less valuable.

Rationing process occurs on the basis of decay rates as well as value. Some obtain the rationed good who value it less than others discouraged from joining the waiting lists. In other words, it is the effect of time on demand. Some of those who joined the queue will have recovered or moved away, or even died awaiting treatment. It is safe to say that expected wait itself reduces the attractiveness of joining in the first place, i.e., longer waiting times increased the proportion no longer seeking treatment. Most theories until now are concerned with the structure of the joining function for these queues. The theory proposed by Lindsay and Feigenbaum (1984) state that the rate of joining is negatively related to the expected delay in supply, the decay rate, and the cost of joining, and positively related to the value of the service provided.

In short, Lindsay and Feigenbaum (1984) argue that an increase in supply is consistent with longer waiting lists, because it reduces the expected delay of receipt of treatment. The rate of joining is negatively related to the expected delay in supply and to the rate at which demand diminishes over time, the decay rate. With there being no costs associated with joining a list, "lists ration only through the influence of delay on the value of the service delivered" (p.417). And once again, the implication they draw is that a reduction in delay increases value, encouraging people to join the list. It is concluded that waiting lists can never be eliminated because any reduction awakens previously latent demand.

I am surprised to see that Lindsay and Feigenbaum (1984) suggest very little about welfare costs

of rationing by waiting lists, considering the very large implications of such costs. Also, the analysis is based completely on the private decision-making process, where the individual decides whether or not to join the waiting list. Such decision making ignores future costs of treatment and while accepting the results of their analysis, there is a reason to be a little cautious of their findings.

PART THREE – LENGTH OF WAITING LISTS

3.1 POLICIES DIRECTED AT REDUCING WAITING LISTS

Many authors have argued that waiting lists are inevitable in a public system. As seen above, they do have their function as a rationing mechanism. However, many failed to indicate what size the list should be to ensure optimum resource use as well as the proper composition of most lists. To the extent that waiting lists for healthcare services are perceived to be excessive, many propose policies which reduce demand and increase supply. From a welfare theoretic perspective, the situation may seem quite simple in the sense that a shorter time for surgery should always be preferred to a longer one.

Other than suggestions for increased funding, proposals to address hospital waiting lists tend to fall into two categories: those which favor some form of pricing, and those advocating different methods for assigning people a place on the treatment queue (Street and Duckett, 1996). Both approaches share one thing in common: recognizing that waiting lists reflect excess demand, they presume that resolution is to be found on the demand side. As such, waiting lists are seen as reflecting allocative inefficiency: available resources could be put to better use by treating

patients such as those facing long waits instead of those presently receiving treatment, because the reassessment of priorities would realize increased health benefits.

In the first category the suggestion favoring some form of pricing, Cullis and Jones (1984) for example, appraise a "number reducing" policy which would offer a price subsidy for private medical care. The subsidy would be directed at the cost of a treatment rather than at the health insurance premium. It is also assumed that the private sector is willing to provide treatment at lower unit costs than the public sector. This proposal rests on a premise that given excess demand for health services, some of those forced to wait may be encouraged to pay for earlier delivery of their care. It needs to be recognized that patients are only willing to absorb a portion of the cost of private treatment. If they were willing to pay the full amount they would not be waiting. It is argued that public sector would save money if the cost of the private subsidy is less that the cost of the treatment. The obvious criticism of this proposal is that involves a version of willingness to pay principle and therefore may sacrifice equity.

Iversen (1986) also examines the effects of a private sector on the waiting time associated with treatment in a public hospital. The existence of a private sector, he finds, may cause an *increased* waiting time in the public hospital. The author's conclusion depends on whether waiting lists are rationed or not. Iversen (1986) finds that if waiting lists admissions are not rationed, the presence of private sector results in "longer waiting time if demand for public treatment is not elastic with respect to waiting time" (p. 381). When rationing occurs, as Iversen (1986) explains, some patients who would prefer to be admitted to the waiting list are referred to another treatment. Further the author concludes that if waiting list admissions are rationed, the waiting time

increases "if the public sector consultants are permitted to work in the private sector in their spare time" (p.394). Otherwise, the waiting time does not change.

The second general approach is to prioritize patients waiting for treatment. In their paper Culyer and Cullis (1976) suggest admission criteria based on clinical judgments of urgency and the time prices faced by patients. Time spent waiting is weighted by the clinical, personal and social characteristics of the patients. The reason for such approach is that time spent waiting is not necessarily the best indicator of the potential benefits. Some wait long but they are placed on the lists by their doctors just to give them some hope rather than admitting there is little benefit can be expected. Such proposal do not attempt to eliminate waiting lists: their main focus is on achieving allocative efficiency in the distribution of resources by promoting better priority setting (Culyer and Cullis, 1976).

Street and Duckett (1996) analyze a policy where hospital financial incentives are related to the treatment of patients whose names were on waiting lists for services in Victoria, Australia. In Victoria, waiting lists are largely decentralized and there is no formal independent verification of the waiting list. In 1993 hospital funding arrangements were transformed – hospitals are able to influence their revenue by their workload. Hospitals are paid on the basis of their output – each patient treated case attracts payment according to the patient's diagnostic category. [6]

Unlike budgets, hospitals receive extra revenue for each and every patient treated. Patients are divided into categories – the most urgent category to be provided care within thirty days of

[6] Funds are allocated quarterly according to each hospital's proportional contribution to additional activity - the price paid per case fluctuates so that price per case times the number of cases treated is equal to available revenue.

waiting what is clinically desirable. They conclude in response to their policy "hospitals have achieved waiting list reduction in the face of increases in the number of elective surgery patients: the number of additions to the list is increasing...but offset by increase in the number of patients treated", (Street and Duckett, 1996, p. 12).

In practice, in counties that run two parallel systems, there have been incentives to encourage patients to use the private sector (Propper, 1995). However, past policy has mostly been directed at reducing the numbers waiting by increased funding. In most instances, it fails to provide long term solution to the existence of waiting lists. In the next two sections, I examine this often proposed policy in more detail.

3.2 WAITING LIST, CAPACITY AND SOCIAL WELFARE

Glazer and Rothenberg (1999) build a simple model allowing for denial for care, which results in social cost, and consider how a change in capacity changes quantity of care supplied and social welfare. For the purpose of the study they assume that the cost of capacity is zero and that the quantity demanded decreases with price. The price the consumer faces is fixed. In the absence of rationing, quantity supplied is where marginal private benefit equals price. The socially optimal solution is where marginal social cost equals marginal social benefit.

By assumption, an increase in capacity does not increase demand and does not increase marginal cost of service. But restricting care is costly and for any given level of service. It is costly partly because efforts by persons to obtain care will be low if they know that few additional persons can be served; and partly because "the cost will reflect moral and emotional pain suffered by a

person when he or she denies care to an individual when denying care to save money, rather than because there is no choice "(Glazer and Rothenberg 1999, p.673).

Capacity and provision of medical services is graphically represented in Figure 2[7].
Demand curve is DD, which is also a marginal benefit of services to the consumer and by assumption does not vary with capacity. The marginal social cost of service is c, and the price of waiting is p. In the absence of rationing, the quantity supplied is at Q_D, where marginal private benefit equals the price of waiting. The socially optimal solution is at Q_0, where marginal social cost equals marginal benefit.

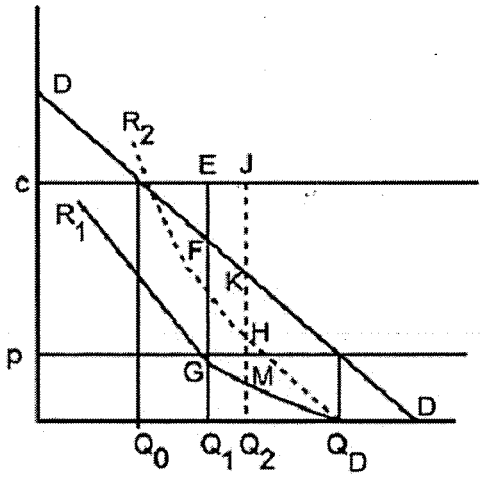

Figure 2

[7] Source: Glazer and Rothenberg 1999, Figure 1, p.675.

In the presence of rationing, the marginal rationing cost is positive, and increases as more persons are denied care[8]. The curve $Q_D R_1$ shows the marginal cost of rationing care, with a given capacity K. The number of persons denied care is measured by the distance to the left of Q_D and not to the right of Q_D. The total cost of specific rationing is the area under curve $Q_D R_1$ between the quantity of services provided and Q_D. Due to the presence of this rationing cost, the optimal solution at which social welfare is maximized is not at Q_0, but rather at Q_1, Quantity Q_1 is the one where marginal benefit of increasing the service equals marginal cost and it represents a higher quality than Q_0[9]. The distance EF equals distance $Q_1 G$ and therefore the net marginal benefit is zero.

An increase in capacity does not increase demand but leads to an increase in rationing costs. Therefore, the marginal cost curve shifts from $Q_D R_1$ to $Q_D R_2$, with a new optimal solution at Q_2. At this point on the graph, the net marginal benefit is zero as the distance JK equals the distance $Q_2 H$. Here, increased capacity increases the number of services provided but it reduces net social benefit.[10] As seen here, increased capacity can lower social welfare. Economists who favor rationing would still argue for a reduction in capacity, mainly because lower service reduces costs. Even though a reduction in capacity means more persons will be denied care.

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[8] Reason for the increasing marginal rationing cost is because as more persons are served, their benefit increases. At the same time the rent-seeking efforts by potential persons increase. Thus, marginal rationing costs are higher the higher the marginal benefit of a service, as given in the curve DD.

[9] In the presence of rationing costs marginal benefit of a new service consists of the marginal benefit to the patient (the height of the demand curve at Q_1 ,minus the cost c) plus the reduction in rationing costs (the distance $Q_1 G$).

The nature of marginal benefit is the reason why curve $Q_D R_1$ is U-shaped.

[10] First, increased capacity increases social loss (area $EJFK$). Second, since the marginal rationing cost have increased and quality supplied also increased, rationing costs have changed by the area of HMQ_D minus the area of $GQ_1 Q_2 M$ due to increase in marginal cost.

As Glazer and Rothenberg (1999) explain, it is almost impossible to test the model of loss of social welfare directly. However, the evidence certainly supports the assumption regarding capacity increase. "Most notably", state the authors, "government rarely denies important treatment when capacity exists" p. 675). Evidence shows that countries which restrict capacity are able to limit treatment more effectively than the United States, which for instance does not restrict capacity.

For example, Ontario controls both, the number of hospitals allowed to perform coronary artery bypass surgery (CABS) and the number of procedures. New York State limits only the number of hospitals offering the procedures and California controls no services. These differences affect the amount of treatment given. Older residents of Ontario, Canada were less likely than New Yorkers and Californians to receive CABS, while younger residents (20-44) and middle-age residents (45-54) of Ontario were more likely and less likely respectively, to receive CABS as their counterparts in California. The rate for older (65-74) and elderly (75 +) Californians was 2.1 and 6.6 times higher (Glazer and Rothenberg (1999).

As a second example, it is useful to compare the United States with Great Britain. Dialysis in Britain is more limited than in the United States because of high expenditure constraints and admission to intensive care units for all but the most severe cases is difficult due to limited facilities. In Britain, CAT scans are used at 20% of the US rate. As Glazer and Rothenberg (1999) point out in their article, "When the capacity is not a constraint, as in radiation therapy, British rates of treatment approximate U.S. rates. "(p. 677).

An increase in capacity can be viewed as an increase in capital or improved incentives. As far as the patient is concerned, an increase in capacity leads to shorter waiting time and shorter hospital stay. The usual view supposes that such a decrease in time required to serve a patient increases welfare but in economic terms it causes more persons to be treated, increasing total costs and reducing social welfare. As the authors state, since the capacity constraints needed to limit services can impose waits for all but emergency treatment, evidence from medical sector suggests that restricting services requires restricting capacity. Glazer and Rothenberg (1999) further suggest that waiting list might be a hallmark of successful rationing and are at their best when capacity is low.

3.3 WAITING LIST, CAPACITY AND DEMAND

Martin and Smith (1999) analyze to what extent an increase in capacity intended to reduce waiting times would induce additional demand. They construct an empirical model of the waiting list for elective surgery in United Kingdom, which is consistent with the economic model of supply and demand. In other words, the waiting list can influence both, the supply side and the demand side for the surgery.

The demand side of the waiting for surgery in this paper is really a synthesis of the work of Lindsay and Feigenbaum (1984) who say that the net gain to the patient undergoing treatment immediately declines as the treatment is delayed. More specifically, the value of the treatment is depressed by an exponential decay function. The decay factor reflects, not only the economic discount services, but suffering, loss of earnings, and reduced quality of life associated with the

delay of treatment. In any case, the net benefits to the patient are depressed by wait. The individual has three choices: to join the National Health Service (NHS) waiting list[11], to purchase private care, or seek no treatment. Martin and Smith (1999) focus on the demand for medical services and circumstances under which an individual chooses to join the NHS list. The demand equation[12]estimated in the model is given below, with the anticipated direction of each effect in parenthesis.

$$Utilization_{demand} = f(waitingtime(-), need(+), familypractitioner(?), provisionofprivatebeds(-)).$$

On the supply side, the authors develop a utility-based model of the supply of National Health Service (NHS) waiting lists of surgical resources. The focus is on the NHS managers who receive a fixed budget annually and determine the amount of the resources provided and intensity with which those resources are used. On the supply side, Martin and Smith (1999) focus on the maximization of the utility function of the NHS managers subject to the budget constraint. Waiting time in this situation is a function of the resources devoted to surgery, the efficiency with which they are used, and the current queue for surgery. The equilibrium condition to solve

[11] The National Health Service (NHS) is the principal provider of health care in the United Kingdom, and is one of the most celebrated waiting lists in the world. NHS comprises of one million or so people who are at any time waiting for elective surgery in the United Kingdom. It depends substantially on implicit decision-making and is funded out of general taxation. With its highly centralized financing structure and tight control over the proportions of gross national product devoted to health, the British NHS has focused much academic and public discussion on rationing approaches. Patients cannot refer themselves directly to an NHS. Instead, they are referred by a family practitioner, and put on a waiting list if surgery is required. The average wait for an elective surgery is about four months and should not be longer than eighteen months as stated by the national government's patent's charter. (Martin and Smith, 1999)

[12] Source: Martin and Smith (1999), the empirical demand equation, p.151.

the model is of course that supply must meet demand. The supply equation[13] estimated is the following:

$$Utilization_{supply} = f(waitingtime(+), provisionofNHSbeds(+))$$

In terms of data, the authors analyze only those who have received treatment. Martin and Smith (1999) base their study on an annual database of the hospital inpatient discharge and deaths in England, for the fiscal 1991-92 and a total 9,042,168 records. They estimate the model at the level of the area where the patient lives, called a "synthetic ward" as data are not available to estimate the model at the level of individual patient. The average wait across England in 1991-92 was 114.8 days, but there were considerable variations across the country. The magnitude of waiting time can be measured in a variety of ways: the average waiting time, the proportion waiting longer than three months, and the standardized waiting time. Authors choose the standardized waiting time, which is the ratio of actual waiting times in the ward to clinically expected waiting times. All variables used in this study are standardized for the size of the small area.

The main assumption in estimating this model is that, in each small area, the equilibrium has been met, in the sense that NHS resources available in an area are sufficient to keep waiting time stable, given the numbers of patients being referred. Shifts in the supply curve are mostly due to

[13] Source: Martin and Smith, 1999, The empirical supply equation, p. 151

changes in the local budget. Shifts in the demand curve can be brought about by changes in income, health status, preferences, and access to substitutes for NHS care. On the demand side, the authors explain "the local level of private care and the health care needs are considered exogenous. But because it is determined jointly by supply and demand equations, waiting time must be considered an endogenous variable," (Martin and Smith 1999, p. 154).

In terms of the choice of the functional form, Martin and Smith (1999) choose a multiplicative model. They estimate linear equations after taking natural logarithms of all variables. Therefore, the coefficients are interpreted as elasticities. After deleting wards for which data were unsatisfactory, a total of 4460 small area observations are available for estimation. However, the estimation faces an identification problem. What clearly points out at the identification problem is the fact that the model consists of three equations (supply, demand, and equilibrium) and three endogenous variables (supply, demand, and waiting time). Because of the endogeneity of variables, the equations are estimated using a two-stage least squares (2SLS) method using all of the exogenous variables as instruments.

The following results are obtained. On the demand side, the needs variable is clearly significant and has the expected positive impact on demand. The waiting time variable is also significant, and has negative effect. Family practitioner provision has a negative association with utilization. On the supply side, utilization is positively associated with both provision of NHS beds and waiting time. The authors go further to analyze the robustness of the model by re-estimating the model to explore some issues related to sensitivity analysis: examine variations across the

country; adding the gynecology specialty to the analysis, and measuring waiting time as the proportion of patients waiting longer than 90 days.

The results remain stable even in this case which leads to a conclusion that the broad policy implications of the results remain valid whichever specific version of the model is chosen. Since the results show consistency, they can be used to understand predictions of the utilization rate and waiting times that will arise in an area, given its pattern of the need and health care. The provision of NHS beds and the availability of family practitioners have little influence on utilization.

NHS inpatient provision does indeed have a negative impact on waiting times. However, the magnitude of these effects appears to be very modest. As a result, in claiming that an increase in beds leads to a reduction in waiting times and a small stimulation of demand, the authors imply that a long run increase in beds is required. "In general, short run boosts to surgical provision to clear waiting times will not secure long run improvements in the waiting times. This is in line with elementary theory of queuing, which suggests that the long run average waiting time for service is a function of the arrival rate and the service capacity. Only a permanent increase in capacity will reduce the long run waiting time, given a constant level of demand", (Martin and Smith, 1999, p. 159).

Martin and Smith (1999) observe the impact of the health care provision using data for just one year. Thus they can only provide a snapshot. This represents the main weakness of the study.

However, the assumption of their model is that all areas are in equilibrium. Therefore the equations they estimate represent the long run link between supply and demand.

3.4 'OPTIMAL' WAITING LIST

As many would prefer, the waiting list of zero, would mean that any hospital is ready to meet immediately any demands. But the likely resource commitment this would entail would be very costly and would likely outweigh the benefits. As seen in the above discussion, waiting lists in health care cannot be eliminated completely with an increase in capacity. The principles of economics suggest the society should aim for an 'optimum' level of waiting lists. Such optimal level occurs where the marginal cost of treating a patient now rather than later equals the marginal benefit from inpatient treatment, as explained in this section of the paper. Only taking into consideration the supply side of the market, can optimal waiting lists be derived. It is Iversen (1992) who sets such a discussion of hospital waiting lists on the supply side of the waiting lists explanation.

As Iversen (1992) points out, persistently long waiting times imply inefficiency, because the hospital's resources are drawn away from medical work due to the costs long waits represent. Yet, the hospital has to preserve the waiting time to achieve the desired budget. Hospital managers know it is to their advantage to have a long waiting list when it comes to annual bargaining round with those who set hospital budgets. Indeed, Iversen (1992) argues that hospitals take the lead in such negotiations, governments making resources allocation in response to provider decisions about the size and composition of the list. The government decides the level of spending by the budget.

In his article, Iversen examines the equilibrium condition by looking at the supply side of the hospital as a healthcare market and the interaction between a hospital and its public sponsor. First he looks at the production structure of the hospital. "In most national health services a referral is sent from a patient's general practitioner to the hospital department" (p.56) and the pattern and consequently the arrivals of the patients have stochastic elements. In order to treat all the patients when they prefer to be treated requires an excess capacity in some periods. This excess capacity can be reduced if some patients can be admitted to a waiting lists and have their treatment postponed. But, as Iversen (1992) says, a system of waiting lists requires resources and among those are resources needed for the administration of the system as well as resources needed for the examination and treatment of patients.

One of the assumptions of Iversen's article is that the resources required for waiting list purposes increases when the waiting list grows and when the waiting times increases. The reason for this is simple: when the waiting times increases, there are more patients to manage and there is an increasing amount of enquires and complaints by patients. There is also a possibility of a change in medical conditions which increases with the wait, adding to the costs. So, an increase in the length of the waiting time has two effects. First, it leads to an increase in capacity utilization and number of admissions. Second, it leads to a decrease in treatment capacity and number of admissions because resources are being pulled away from medical treatment. For long waits, for instance, a further increase in the wait only increases capacity utilization and number of admissions by a small amount because capacity utilization is already high. A decrease in medical treatment comes from an increase of administrative work, repetition of tests, and cancellations are large.

Finally, Iversen (1992) suggests that "for every capacity there is a wait maximizing number of admissions" (p.58). Accordingly, the hospital tries to allocate its budget to the point at which it is indifferent between further admitting patients and marginal wait reduction. Iversen (1992) adds that in health systems where hospitals are rewarded with additional funds if they maintain long waits, government initiatives to address the waiting list problem will have little long term effect.

PART FOUR - WAITING LIST ISSUES

4.1 DISUTILITY OF TIME SPENT ON A WAITING LIST

From the above discussion it appears that waiting lists are not used solely for the greater convenience of patients or to ensure efficient use of facilities. Far from benefiting the patients, waiting is normally an inconvenience, giving rise to avoidable stress. Not only do patients endure pain and discomfort associated with their unresolved condition but many are distressed by the lack of information about when they can expect treatment. Clearly, queuing in person imposes positive costs to the person waiting. But recently Lindsay and Feigenbaum (1984) argue that the time spent on a waiting list has no cost. The cost, the authors point out, is because the good to be received is worth less if received later rather than sooner. Although having to wait for medical treatment does not necessarily prevent every demander of care in engaging in work or leisure activities, some negative features of waiting on a list for treatment have to be considered.

Basically, to the extent that there is rationing of hospital capacity by means other than price, monetary and non-monetary costs are nevertheless borne by citizens, even though these costs are not explicitly recognized. These unrecognized costs may include, for example, lost work time,

decreased productivity associated with physical impairment and anxiety, and physical and psychological pain and suffering.

There have been a few attempts to cost the waiting lists. To express more concretely the costs of the effect of being on a waiting list, economists have attempted to infer the monetary costs associated with waiting for treatment. In Great Britain, as an example, paying for private care is an alternative to waiting for publicly-provided care. Cullis and Jones (1986) deduce that the cost of waiting for treatment in terms of reduced morbidity and mortality is, at a maximum, the cost of private care for British residents. Taking the actual cost of private care for a variety of common treatments, Cullis and Jones (1986) estimated the cost of waiting in the UK in 1981 was about 200 British pounds (1981 prices) per patient.

Furthermore, Propper (1995) argues that these lists do indeed have a cost to consumers. As pointed out by the author costs other than a pure discontinuing or decay rate effect are: disutility associated with being on a waiting list. First, the demander is in lesser state of health than her normal state. Second, the demander may be anxious about the outcome of the medical treatment. Third, the individual on the list is often uncertain of the length of the wait. Her paper presents an attempt to estimate the value of a reduction in time spent on a NHS waiting list.

Since such estimation cannot be derived from the observed actions of demanders of care, Propper (1995) proposes a method of contingent valuation to estimate the value of time spent on certain types of the British NHS. Contingent valuation is a "valuation derived from trade-offs made within an experimental or hypothetical context" (Propper 1995, p.678). Such context is

specified as a choice between immediate treatment at some positive cost in a public sector hospital and treatment after some positive wait in the same hospital at zero money cost. Proper estimated the cost by an experiment in which subject were asked to choose between immediate treatment (at varying range of out-of-pocket costs), and delayed service (at varying range of time intervals) at no out-of-pocket cost.

The data for this study were collected between March and May 1987, respondents are drawn from a random sample of the population in England aged between 25 and 70 and the achieved sample consists of 1,360 individuals. The respondents are given a waiting time for treatment and asked to state the minimum sum of money they would be prepared to pay to avoid the wait. Also, some respondents are presented with sum of money and asked to state the minimum which they would be prepared to accept rather than pay. From this, she determined that the estimated average value, to the demander, of a reduction of a month in time on a waiting list for non-urgent treatment, is in the order of 40 British pounds (1987 prices).

Such results based on contingent valuation in economic analysis should be used with caution. "If this is an income effect, it could be overcome by the use of difference replications for individuals of different incomes", (Propper 1995, p.1999). However, if because of the political belief in 'free' health care this represents an unwillingness to trade, it means a more difficult problem, "one that must be recognized if the methodology is to be used in the analysis of the public health care system", (Propper 1995, p.1999).

In Canada, despite the increased concern regarding surgery queues, little systematic evidence exists regarding the medical effects of treatment delays. Among the few is Globerman (1991) who analyses the Canadian system of publicly provided health care. He explores the economic relevance of hospital waiting lists and offers estimates of the economic costs of waiting for different hospital procedures in Canada. Globerman (1991) treats waiting time as a period during which productive activity is low. Thus, using the Canadian average wage, the cost of a day of waiting is the lost wage. Of those who report experiencing "significant difficulties in carrying out their daily activities", about 41 percent of those waiting, are counted as experienced the cost of lost wages, meaning that the cost per patient was about $2,900 in Canada per year in 1989 (in 1989 prices).

Hamilton et al. (1996) discusses the cost of wait time for hip surgery in Canada on post-surgery length of stay in hospital and inpatient mortality. He finds that patients from higher income-postal codes undergo surgery more quickly than lower income-postal codes patients, but the magnitude of these effects is very small. After controlling for hospital and patient's characteristics, he finds no evidence of a significant effect of income on post-surgery outcomes. Hamilton et al. (1996) adds "Certainly queuing for services implies higher costs while waiting for care, and increased physical and mental stress." (p. 183).

These results give a good indication that health care rationing by waiting lists is costly. Queuing for hospital services undoubtedly represents higher costs to patients, and increased physical and mental stress. It certainly remains as economic burden on any public health care system, including Canadian (Hamilton et al. 1996). However, I believe that a lot more research of the

consequences of being on a waiting list for treatment is needed before we can asses its true impact on patient welfare.

4.2 EQUITY- FAIRNESS: A CORE PUBLIC EXPECTATION

Along with the issue of the cost to those who wait for hospital services, the equity argument carries particular weight. In particular, this applies in Canada as well as abroad in countries with similar healthcare systems. Fairness and equity are one of the main concerns regarding waiting list organization and management. A core principal of any publicly financed health care system is "to each according to his or her need" (Lewis, 2000). In terms of waiting lists, this means universal, equitable access for all medical procedures based on the patient need (Kelly, 2002). Canadian health care system is based on universal and equitable access for all procedures. Reducing inequalities in accessing Canada's national health services is a key government priority.

Research in the area of the equity in the waiting lists is limited. A study done by Kelly et al. (2000) examines clinical and non-clinical determinants of the length of time patients wait for major joint arthroplasty in Canada. The authors compared waiting times for elective surgery of patients living in low and high socio-economic areas. Medical charts of all patients who underwent elective surgery at one Canadian academic health care centre between 1995 and 1997 are reviewed. The researchers assigned each patient a socio-economic status by using five characteristics in the 1996 census data. The research team has compared waiting times for surgery for 22 common procedures for people from the regions in the lowest third socio-economic group with that for patients from regions in the upper third group. The report notes that

on average patients in the high socio-economic group waited about 31.1 days while those in the low group waited 29.3 days. Basically, waiting lists in this case are managed in a socially equitable fashion and preferential treatment was not given to specific social or economic group. However, it is found that waiting lists are not managed in terms of clinical equity as priority is not given to those with more severe symptoms.

One limitation of this study is the fact that it examines only urban patients and thus cannot be generalized to rural patients. This is potentially important as rural patients may differ with respect to the level of pain and function they experience at the moment they are placed on the waiting list. Furthermore, the authors are limited in the availability of variables to clearly asses the impact of socio-economic status on waiting time, as variables other than education and work status may be related to the length of waiting time. Further studies including additional variables are needed to address the question of what actually drives the length of time patient spent on a waiting list for this type of medical treatment.

Equity, justice, and fairness are key ethical concepts in rationing. In other words, those with greatest need for the intervention should be served first and that is like patients should be treated equally and unlike patients unequally to the extent that their differences are morally acceptable. In a well-organized health care system, patients should not be discriminated against because of social or economic factors.

It is crucially important that non-price rationing of a vital product such as medical care in order to be efficient is indeed fair. In Canada, available data suggest that although the well-to-do still

make more use of ambulatory specialist care and receive more preventive services than the poor do, universal first-dollar coverage indeed has led to more equitable access to health services (Globerman, 1991). Yet many inequalities have been discovered in Canada. Residents of suburban Toronto and Vancouver have longer waiting times than do their urban counterparts (Ramsey, 1997). As well, low-income Canadians and fewer years of schooling are less likely to visit medical specialists (Dunlop et al 2000). The authors examine the extent to which Canadian universal health care system has eliminated socio-economic barriers in the use of physician services by examining the role of socio-economic status in the different use of specific, publicly-insured, primary and specialist services. After adjusting for differences in health need there remained some significant differences in the utilization of physician services between socio-economic classes.

Alter et al., (1999) also examines clinical non-clinical determinants of waiting times, in this case, for coronary angiography in Canada. They employ a single-centre prospective cohort study conducted in the fall of 1997. They follow 308 patients in one Canadian medical centre.
In the absence of a formal queue management, physicians seek to protect patients by ensuring shorter times for those with more severe symptoms or at higher risk of adverse events. It is also found that non-clinical factors, such as referring physicians' ties to the hospital, significantly influenced the actual waiting times for patients in this study. This study sheds a new light on queuing practices in Canada. These inequalities in waiting times in delivery of cardiac procedures reinforce the need to implement queue-management systems to help ensure that all patients in need receive service in a timely and fair fashion. This study provides evidence to support the monitoring of waiting times. Equity is rarely monitored and should not be assumed.

There is a need to identify and remove inequalities from routine waiting list systems. One way to do this is to ensure that decisions about prioritizing patient are made according to clear, transparent and agreed criteria that reflects patient's need (Hacker, 2004).

This evidence indicates that rationing by waiting is often a façade for a system of personal privilege, and perhaps even greater inequality than rationing by price. Despite the fact, that implicit rationing by queue is commonplace in public health care systems, equity has seldom been studied. It is rarely monitored and yet equity should not be assumed (Hacker, 2004).

PART FIVE - CANADIAN SITUATION

5.1 BACKGROUND

Canada's publicly funded health care system is more than a social program; it is unifying force, a national obsession, and, not least, one of the few features that allows Canadians to differentiate themselves from their neighbors to the south (Ramsey et al., 2003). As Naylor (1999) explains, "Administered in ten provinces and two northern territories, the twelve nonprofit Medicare plans have common element as a result of federal funding conditions. Each plan offers universal first-dollar coverage of necessary medical and hospital services, including long-term care; none impedes the patient's choice of physician; and all cover drug benefits for senior citizens" (Naylor, p.10

Unlike other industrialized nations, Canada has no parallel private system. Canadian governments at all levels have wrestled over the past decade to balance budgets and reduce

massive public debts. Health care has been financially squeezed and restructured to an unprecedented degree across the nation, and Canadian's confidence in their Medicare program has ebbed. As governments return to fiscal health, the key question has become: can Medicare be strengthened?

5.2 THE STATE OF WAITING LISTS IN CANADA

A major reason for such low level of confidence in the Canadian health care system lies in the waiting lists. Waiting lists have been a defining character of the Canadian health care system since the late 1980s. Today, when it comes to access to specific diagnostic and surgical procedure waiting lists and waiting times are too long. International surveys show that Canadians wait longer for elective surgery than Americans, Germans, Swedes, although not as long as the British or New Zealanders (Esmail and Walker 2003). The Fraser's Institute's thirteenth annual waiting list survey found that waiting times for surgical and other therapeutic treatments grew in 2003. Total waiting time, between referral from a general practitioner and treatment, averaged across all twelve specialties and ten provinces surveyed, rose from 16.5 weeks in 2001-02 to 17.5 weeks in 2003 as seen in Table 1[14] . This nation wide deterioration reflects waiting-time increases in seven provinces, while concealing decreases in waiting time in British Columbia, Saskatchewan, and Manitoba.

[14] Source: The Fraser Institute, Annual Waiting List Survey, 2003, Table 2, p.42.

Table 1 Median total expecting waiting time from referral from GP to treatment, by specialty, 2003, in weeks.

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic Surgery	35.5	26.2	44.8	35.3	17.3	28.4	55.1	76.9	—	71.3	28.6
Gynaecology	12.1	19.7	25.7	15.8	12.9	17.1	17.9	11.6	16.7	16.4	15.3
Ophthalmology	17.9	14.4	38.3	22.5	28.4	35.2	38.4	21.4	52.1	40.0	30.0
Otolaryngology	16.6	22.8	50.6	10.9	13.2	15.0	13.3	14.8	—	27.8	16.4
General Surgery	12.7	9.4	20.4	8.0	8.3	11.2	10.1	11.9	12.2	15.9	10.3
Neurosurgery	19.7	22.1	12.8	—	19.8	19.3	55.1	8.7	—	13.7	20.1
Orthopaedic Surgery	40.7	42.1	63.4	26.1	26.4	26.2	23.2	46.4	24.9	32.8	32.2
Cardiovascular Surgery (Elective)	22.3	26.1	33.0	13.0	8.3	8.4	25.0	26.3	—	60.1	14.1
Urology	10.9	16.3	17.0	15.8	9.5	16.1	26.2	11.9	13.8	15.0	13.0
Internal Medicine	11.4	12.3	12.6	8.6	9.0	12.8	10.6	12.7	23.6	11.8	11.1
Radiation Oncology	3.0	13.4	8.3	9.2	7.6[1]	9.5	6.7	6.6	—	10.9	8.1
Medical Oncology	3.0	6.5	—	—	5.7[1]	6.3	6.0	15.0	4.0	13.8	6.1
Weighted Median	17.6	18.5	29.9	15.1	14.3	20.1	21.1	19.4	19.9	21.8	17.7

As seen in Table 2[15], among provinces Ontario achieved the shortest total wait in 2003, 14.3, while Saskatchewan exhibited the longest total wait 29.9 weeks. Statistics gathered in this survey, indicate that waiting times for medical treatment in Canada continue to grow and patients seeking treatment are most likely to be disappointed (The Fraser Institute,2003).

[15] Source: The Fraser Institute, Annual Waiting List Survey, 2003, Table 10, p.56.

Table 2 Comparison of median weeks waited to receive treatment after appointment with specialist by selected specialties, 2001-02 and 2003.

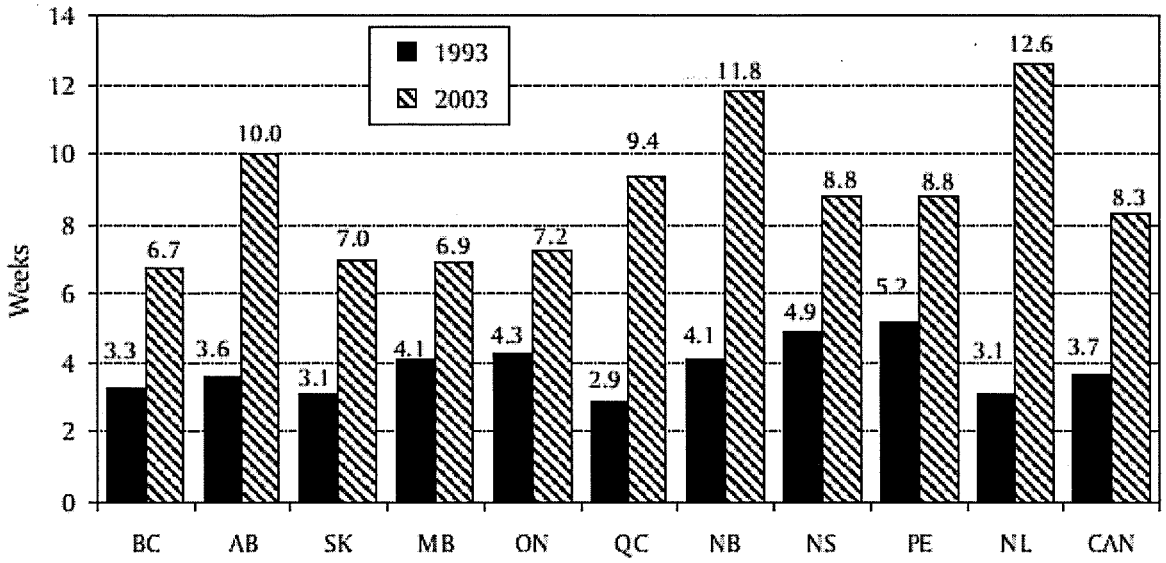
	British Columbia			Alberta			Saskatchewan			Manitoba			Ontario		
	2003	2001-02	% chg	2003	2001-02	% chg	2003	2001-02	% chg	2003	2001-02	% chg	2003	2001-02	% chg
Plastic Surgery	25.5	26.6	-4%	14.2	14.6	-3%	32.8	43.6	-25%	19.3	50.9	-62%	9.3	9.2	1%
Gynaecology	8.1	9.9	-18%	7.7	7.1	8%	16.7	38.3	-56%	7.8	8.0	-3%	5.9	5.7	4%
Ophthalmology	9.9	16.8	-41%	6.4	6.2	3%	30.3	40.2	-25%	14.5	21.5	-32%	14.4	15.0	-4%
Otolaryngology	12.6	12.9	-2%	9.8	8.3	18%	46.6	35.8	30%	7.9	10.0	-21%	7.2	7.2	0%
General Surgery	7.2	7.3	-1%	5.4	5.3	1%	14.4	16.3	-12%	5.0	5.7	-14%	4.3	4.2	2%
Neurosurgery	9.7	7.2	35%	6.1	7.9	-23%	6.8	5.9	16%	—	5.8	—	7.8	6.8	14%
Orthopaedic Surgery	24.7	23.3	6%	18.1	18.5	-2%	53.4	71.0	-25%	15.6	18.0	-14%	14.4	13.2	9%
Cardiovascular Surgery (Urgent)	3.2	3.2	0%	11.2	7.0	59%	2.4	1.9	25%	2.0	1.1	78%	1.1	1.2	-15%
Cardiovascular Surgery (Elective)	16.6	9.9	67%	20.6	25.7	-20%	30.0	13.1	130%	5.0	14.6	-66%	5.3	5.1	4%
Urology	6.9	5.7	22%	4.3	3.4	26%	10.5	6.0	75%	3.8	2.8	34%	3.5	3.6	-3%
Internal Medicine	7.4	8.3	-10%	8.3	7.0	18%	7.6	4.0	93%	4.6	5.2	-13%	5.0	5.3	-7%
Radiation Oncology	1.3	2.2	-43%	10.4	3.7	181%	4.3	9.2	-53%	7.7	7.9	-2%	5.6	6.6	-15%[1]
Medical Oncology	1.5	1.6	-8%	4.0	5.5	-28%	—	—	—	—	7.0	—	2.7	2.0	34%[1]
Weighted Median	10.9	11.6	-6%	8.5	8.2	4%	23.0	26.9	-15%	8.2	10.8	-24%	7.1	7.0	1%

Note: Percentage changes are calculated from exact weighted medians. The exact weighted medians have been rounded to one decimal place for inclusion in the table.

The more disconcerting issue, as Ramsey et al. 2003 point out, than the length of the waiting times in Canada is the fact that waiting lists have grown over 90 percent since 1993, as seen from Figure 3.[16]

[16] Source: The Fraser Institute, Annual Waiting Lists Survey, 2003. Graph1, p. 31.

Figure 3 Median wait between referral by GP and appointment with specialist, by province, 1993 and 2003.



Hard survey data obviously highlight the complex realities behind the public's perceptions. Patients awaiting treatment not only face lengthy waiting times but major reductions in functional status and quality of life as well. This growth in waiting has occurred despite increases in government spending in Canada. In 1993, government health expenditure was $1,836 (1995 dollars) per person. A short nine years later, this expenditure had burgeoned by 21 percent to $2,223 per person (OECD, 2003a). Even more discouraging is the evidence that provinces that spend more on health care are not rewarded with shorter waiting times (The Fraser Institute 2003). More money does not mean more access! The strange disconnection between funding and services provision is not unique to Canada only.

Over the past few years, there has also been increasing media coverage of the length of time patients wait to access needed medical services. At the present time in Canada it is impossible to understand the true magnitude of wait lists and is virtually impossible to know how to interpret any particular claims about the length of time patients are currently waiting for any particular procedure. The first misleading source in perceptions about waiting lists is the lack of standards governing whether and when a patient is placed on a waiting list. For example, in the absence of systematic clinical thresholds and audits some physicians may feel impelled, in their patient's interest, to add patients' names to long lists in anticipation of future need for a service. And the last but not the least, Canadian waiting lists are not audited. As a result, the validity and reliability of statistics based on those lists are simply not known.

As such, most of waiting lists currently in use: "Are at best misleading sources of data on access to care, and at worst instruments of misinformation, propaganda, and general mischief" (Sanmartin (2000), p.2).

A recent Health Canada – commissioned report on the issue of waiting lists in Canada, noted among its conclusions that "with rare exceptions, waiting lists in Canada, as in most countries, are non-standardized, poorly managed and even more poorly understood" (MacDonald et al. (1998), p.1). So despite concerns expressed in the newspaper headlines about waiting times and access to the necessary treatment, waiting-time data, are not generally collected in Canada. With a few exceptions, our current understanding of the 'wait list situation' is totally dependant on data based on inconsistent definitions, used for a variety of purposes, and overseen by no one, that it is little wonder that we find so much confusion. As Roy Romanow (2002), in the

commissioned report on the future of health care in Canada explains, the public are both confused and frustrated. "They do not understand why they wait so long, whether the time they wait is appropriate or too long, and why something cannot be done to address their concern."(p. 143). Clustered events reported by the media sometimes create the impression of a crisis, despite the fact that there has been very little objective information about waiting lists or waiting times for medical or surgical care in Canada. Consequently, in Canada one of the most serious concerns is not only the length of time some people wait but the way in which lists are managed. As Romanow (2002) further conclude, "This affects the health of people who wait and seriously undermines Canada's confidence in their health care system." (p. 141).

5.3 ADDRESSING THE PROBLEMS

The Canadian debate about access to care, and waiting lists in particular, is characterized by disturbing divide between widely held views and research evidence. This disconnect appears to be the product of a number of factors. Among them, lack of standard approaches to measurement and a general reporting of waiting-list lengths and waiting times in Canada.

The solution to Canada's problem is a change. This means that only substantial reform of the regime is likely to alleviate the medical system's most curable disease – longer and longer waiting times for medical treatment.

No doubt, some investment is needed to address certain problem areas in the health care sector, but the key concerns are arguably more systematic assessments and audits, together with strengthening public accountability and enhanced service integration. As Lewis et al.(2000) point out, "the waiting lists "non-system" is a classic case of forced decision making in the absence of

good management information" (p.166). Some encouraging work has been done by two centralized waiting lists registries, the Cardiac Care Network of Ontario and by the Western Canada Waiting List project. Both develop tools to allow the system to prioritize patients according to their need and their risk, and ensuring that waiting lists are managed in a comprehensive, objective and transparent manner. Such and other projects across the country are important first steps towards better managed waiting lists which provide clear information for patients waiting for care.

Among suggestions for addressing the problem, found in the Romanow report (2002), is establishing "care guarantee". "Care guarantee provide patients with guarantee that they will have access to the treatment they need within a certain period of time." (p.144). Although, this would give reassurance to the patients, it could mean reallocation of resources away from life-saving procedures in order to meet the guarantee. Even though, care guarantees have been implemented in the United Kingdom, Sweden and other countries in Europe, a lot more research needs to be done before it can be offered as a solution.

More importantly, the public need access to those lists so they can make better informed decisions. The trend should be toward much more openness and transparency in the system, including public access to data. Common and transparent system would return focus to the patient's need as well as create an incentive to ensure that the data are accurate. Public will be encouraged to think about the limits of medicine, and of the costs of pursuing those limits. Without this, discussions about access to care will almost certainly continue to generate more heat than light.

In addition, there is a growing need for a collective and centralized initiative to a shift in public attitudes toward healthy lifestyles in which individual would have to accept a very much greater degree of responsibility for his or her - well-being. Even though, we are all aware of the political belief in "free" health care, any right also implies a corresponding obligation. In terms of health care, it could be argued that a person has an obligation to care for himself in a way that promotes good health. If one has a claim on society for some minimal level of care, then one also has a responsibility to minimize the overall costs to others in society by living as healthy as possible (Blank 1988).

Although individuals have some degree of freedom in such choices, the greater capacity to curb unhealthy habits and evolve healthy ones lies at the social level (Blank 1988). A major part of this effort must be aimed at reducing the expectations of the public regarding the availability of health care resources and thereby reducing their unrealistic demand for unlimited use of curative medicine society must realize the necessity for limits and the assumption of unlimited resources.

CONCLUSION AND DISCUSSION

This paper describes the economics of the waiting list and the important role they play in health care rationing. As this survey of literature points out, waiting lists are inevitable in a publicly funded health care system and do serve a purpose. Lindsay and Feigenbaum (1984), for example, show that waiting queues can function as a rationing process through the influence of delay on the value of the service delivered. As such, waiting lists can never be eliminated because any reduction in a waiting list increases value, encouraging people to join the list.

However, waiting for health care remains a big concern among the public and it has become a preoccupation of health care professionals, managers, and governments. Many argue that waiting times are too long and more resources are needed to shorten them. However, as Glazer and Rothenberg (1999), and Martin and Smith (1996) show, an increase in capacity, the most often proposed remedy, may not produce the best results in terms of reducing waiting times. Glazer and Rothenberg (1999) find an increase in capacity may lead to a loss of social welfare even though more persons can be treated. Martin and Smith (1996) in their empirical analysis find that only a substantial increase in capacity will result in a shorter wait time. Iversen (1992) proposes that the best solution is to aim for an "optimum" waiting list as they cannot be eliminated completely.

Rationing by waiting lists does indeed have its drawbacks. Undoubtedly, waiting for medical services represents a cost, and increased physical and mental stress. Propper (1995) estimates the actual monetary value of a reduction in time spent on the British National Health Service (NHS) waiting lists. Globerman (1991) uses the Canadian average wage and calculates the cost per patient of $2,900 in Canada per year (in 1989 prices). However, there has been little done in the area despite of increasing concerns regarding waiting times for medical procedures in Canada. More research is needed before the true impact on patient welfare can be assessed. In the area of equity in waiting lists, some studies show that waiting lists are managed in an equitable manner (Kelly et al. 2000). Other studies though show some degree of inequality. As equity is one of the core principal of Canada's publicly financed health care system, this points to a need to identify and remove inequalities from waiting lists in Canada.

Despite the problems inherent in rationing by waiting lists, I maintain, along with authors cited throughout this paper that waiting lists are here to stay and will become even more prevalent in the future. As seen from the literature review presented in this paper, waiting lists can never be completely eliminated and simply pouring more money into the system is not going to solve the problem. Furthermore, waiting lists do serve its purpose playing an important role in health care rationing and from an economic point of view are inevitable.

In Canada, the most serious concern is the way in which waiting lists are managed. As mentioned throughout this paper, due to the lack of a central source for information on patients and resource availability it is difficult to determine the extent and severity of the problems, and the potential solutions to them. Therefore, addressing the problem of waiting lists in Canada by shortening them or getting rid of them - is not an option. The number one priority I believe is building a national waiting list system for different elective procedures; a system that facilitates the referral process, monitors patient access, as well as provides a comprehensive national information database.

Such system can provide information to the public and planning tools to the government working in the following way. First, such a system means an accurate, reliable database using common terminology that would standardize the process. Second, the system develops and maintains a computerized registry documenting surgical volumes and waits, from the time the patient is accepted until the procedure is performed for different hospitals across the country. In terms of setting clinical priorities, each hospital uses a patient intake assessment questionnaire to calculate an urgency rating score and help prioritize patients when they are placed on the list. Basically,

regardless of the procedures needed the more serious the patient's condition, the sooner he or she receives care.

If however, an economist were to compose a waiting list, the patients who are to be prioritized this way are these who are likely to derive the most benefit. Unfortunately, we cannot escape the realities and constraints of economic costs and benefits, even regarding questions of life and death. Therefore, from an economic point of view, the procedure to be carried out is the one where marginal benefit of doing so is equal to or greater than the marginal cost of performing the procedure. This is where managing a waiting list can become extremely difficult. However, the question remains as to what degree an economics plays a role at setting waiting list priorities.

Such a national waiting list registry means managing waiting lists more efficiently for a number of reasons. First, such system with standard approaches to measurement and a general reporting of waiting list lengths and wait times in the country, can only promote equitable, timely and appropriate access to care. Second, it offers rational planning advice to the federal government as to the provision of care for specialized medical procedures, resource allocation, research and continuous improvement and investment in the healthcare sector.

At the same time, as health care differs from any other commodity, "Canadians also need to understand that immediate service is not always possible" (Romanow, p.149). As consumers, individuals have come to expect their needs attended immediately. The unpalatable truth is: it is not always possible to provide health care for everybody who could benefit from it. Therefore, such high public expectation should be addressed. Unless we act to limit the current expectations

of the public and make hard decisions now, the scope of the problem we are going to pass on to our children is staggering.

I introduce the controversy of the issue here with a purpose in believing that only through debate in an open dialogue we as a society will be able to minimize the emerging crisis in health care. Although a society may never reach a consensus on how to distribute health care, at least, in an open dialogue among all affected parties it is possible to come to an agreement on some steps necessary to better understand the situation. Rationing by waiting certainly offers many flexible opportunities in most instances. In order to function properly waiting lists require monitoring, proper checks, and transparent rules and regulations. Fairness requires that rationing take place in an informed context. The consequences of implicit rationing should be as open as possible, should be reviewed routinely by medical peers and through outside audit, and should be an important topic among health care institutions. An open process makes it less likely that social biases will prevail and helps to fine-tune clinical decision-making. It requires continuing engagement, flexibility, research, and humility.

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