

FRASER FORUM

CRITICAL ISSUES BULLETIN

WAITING YOUR TURN *HOSPITAL WAITING LISTS IN CANADA*

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with

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Preface

The Fraser Institute has published three books dealing with Canada's health care system.¹ While each author approaches the subject from a different perspective and from a different analytical orientation, all are concerned with the impact the economic arrangements regarding health care have on the quality and quantity of health care services delivered to Canadians.

The Fraser Institute has long had an analytical interest in the health care system and in providing information about it to those concerned about public policy. This interest was particularly peaked two years ago by the suggestion in the United States that Canada's health care system managed to produce the same quality of health care as was available in the United States but at a much lower cost. This view was surprising in view of the conclusions in the comparative research available to the Institute that service production in a predominantly state-dominated environment is likely to be more expensive than services provided in a competitive setting.

About the same time, anecdotal evidence began to emerge suggesting that hospital waiting lists were beginning to become significant in Canada.

Previous Institute studies had found that a lengthy waiting list was one way state-sponsored medical care systems controlled overall cost when faced with high demand volumes generated by the non-existence of pricing. The current Special Issues Bulletin is the Institute's first foray into the area of attempting to document the extent to which queuing or waiting lists are being used as a means of adapting to the conflict between limited budgetary allocations and unlimited demand for free health care.

The study, conducted by Professor Steven Gliberman with the assistance of Lorna Hoye, has been enthusiastically supported by the Fraser Institute, but the work undertaken by the authors has been independently conducted. The views expressed in this study, therefore, may or may not conform with the views of the members and trustees of the Fraser Institute.

The Institute is pleased to offer the results of the research to the public for consideration and debate in the hope that more attention will be focused on the issue of hospital waiting lists and on improving our measurements of and knowledge about this aspect of health care provision in Canada.

Michael Walker

¹ Ake Blomqvist, *The Health Care Business* (1979), Ronald Hamowy, *Canadian Medicine, A Study in Restricted Entry* (1984), and Malcolm C. Brown, *Caring for Profu*, (1987).

**Introducing
Steven Globerman
and
Lorna Hoye**

STEVEN GLOBERMAN is a professor in the Department of Economics at Simon Fraser University and an Adjunct Scholar at The Fraser Institute. He holds a Ph.D. in economics and has served on the faculties of management at York University, University of California, and the University of British Columbia. He has also undertaken an extensive number of consulting and contract research assignments for both private and public sector organizations including Imperial Oil, Bell Canada, Consumer and Corporate Affairs Canada, the Economic Council of Canada, and the Department of Communications. Dr. Globerman has published over 50 journal articles and 15 monographs and books, many of which deal with the impact of public policy on specific industries.

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WAITING YOUR TURN: HOSPITAL WAITING LISTS IN CANADA

Steven Globerman with Lorna Hoye

Introduction

Perhaps no aspect of public policy has drawn as much critical attention in recent months as the management of our health care institutions. A particular concern being manifested in the Canadian media is a perceived growing need to ration access to medical services, particularly to surgical procedures. Critics of the Canadian health care system point to the "under-provision" of hospital services, particularly those using new technologies, as evidence of the need either to increase government funding of the health care sector or to introduce new institutional arrangements to promote a more efficient allocation of resources in this sector.

One manifestation of the rationing of health sector resources is an alleged growing waiting list in Canada for medical procedures and treatments. To the extent that significant rationing of hospital capacity is occurring, monetary and non-monetary costs may

be borne by users of the Canadian health care system that are not explicitly recognized as costs associated with operating the system. 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.

Both policy analysts and hospital administrators are increasingly sensitive to the waiting list issue. Possibly reflecting this increased sensitivity, patients in Ontario and British Columbia have been sent to hospitals in neighbouring states in the United States for specific treatments. An increasing number of provincial health ministries are collecting hospital waiting list data for purposes of internal management, although these efforts have been fairly modest to date. Nevertheless, health sector administrators remain sceptical about the utility and meaningfulness of waiting list data. This scepticism relates to both the relevance of waiting

lists as an indicator of the performance of the health care sector and the reliability of such data as a measure of the extent of rationing of health care services.

Addressing both theoretical and empirical aspects of the waiting list phenomenon in Canada, the relevance of hospital waiting lists is discussed with particular attention paid to problems associated with interpreting waiting lists as measures of "excess demand" for medical services. This discussion establishes that waiting lists are a potentially important dimension of performance in the health care sector. Data on waiting lists in various Canadian provinces are then presented and analysed. This analysis helps put into perspective the magnitude of the "health care rationing problem" in Canada.

Waiting Lists as Measures of Excess Demand

The most straightforward interpretation of hospital waiting lists is that they are indices of excess demand for medical treatments performed in hospitals. As such, they represent the substitution of "non-price" rationing of scarce resources for rationing by price. The rationing, in this case, takes place through enforced waiting for the availability of hospital facilities to perform a given treatment or procedure.

Economists believe that non-price rationing is an inefficient way to allo-

cate resources for several reasons. First, it obscures differences in intensities of demand across different sets of consumers. To the extent that some consumers desire a given product more than other consumers, strict non-price rationing might result in those consumers who desire the product less actually obtaining the product. All other things constant, efficiency is promoted by consumers who value a product more obtaining the product. Second, it obscures supply and demand conditions from market participants, thereby increasing information and transactions' costs and delaying appropriate adjustments in the behaviour of market participants. The relevant notions here are that prices are efficient signalling mechanisms concerning current and future supply-demand relationships and that efficient signalling contributes to more efficient production and distribution of output. Finally, non-price rationing results in revenues being diverted from suppliers of the product to "black marketers" and other intermediaries. As a result, there will be increases in the quantities of "wasteful" intermediary services rather than in the quantity supplied of the product itself.

At least two prominent qualifications can be raised about the social inefficiencies of rationing by waiting. In the context of medical services, it might be argued that many procedures and treatments are performed where

the social costs outweigh the social benefits. (The reasons suggested for this condition are discussed below.) It would still be more efficient to “discourage” the consumption of a given amount of medical services by price rationing rather than by non-price rationing, unless one is willing to accept that patients will pay any price to receive specific treatments and that government bureaucrats are better able to determine whether treatment is warranted at any real cost of providing the treatment. A second and, in our view, more relevant qualification is that non-price rationing of a vital product such as medical services is fair and is perceived to be fair by society. To the extent that fairness is itself a desirable attribute of the economic system, one might argue that non-price rationing provides collective benefits that outweigh the inefficiencies identified above.

However, the plausibility of the fairness argument depends very much on how non-price rationing occurs. For example, non-price rationing in the housing market often takes the form of bribes or “key-money” or the “willing” of rent-controlled apartments to relatives. The resulting redistribution of income is not necessarily an improvement on the pre-existing distribution of income. Another important qualification of the fairness argument is the potential for implementing direct cash transfers to assist poorer consumers to

compete for the rationed goods. The argument against so doing relates to the difficulty of targeting direct rather than in-kind subsidies to appropriate recipients. In the context of health management, one would presumably want to subsidize lower income people in need of health care. But given the unexpected nature of many illnesses or accidents, it might be quite difficult to identify such individuals *ex ante*. Moreover, given the potential for catastrophic illness and the associated high costs of treatment, direct subsidies might ultimately be extended over a relatively large portion of the population. In this case, the deadweight efficiency losses associated with the tax transfer process may be quite comparable to those associated with transferring income in-kind through non-price rationing.

To push the analysis a bit further, purchases of private health insurance by poorer individuals could be subsidized by the government. In this way, the relevant assistance would be “targeted” to health care. Presumably, those with the highest *ex ante* expectations of requiring health care would be most likely to avail themselves of the subsidy. At the same time, prices would be relied upon to “clear” the market for medical services.

It would take us much too far afield to consider arguments for and against private medical insurance systems. As a practical matter, public insurance and

the provision of medical services is an institutional feature of Canadian society and using pricing mechanisms to ration scarce capacity continues to be eschewed. Under these circumstances, the extent of excess demand and how excess demand is rationed have clear public policy relevance, since the social costs associated with non-price rationing must be set against whatever benefits are seen in terms of greater fairness.

Potential Manifestations of Excess Demand

There are several ways non-price rationing of medical services might proceed. One is by individuals substituting private medical services for public services. In the Canadian context, this implies going outside the country for medical services. In fact, only emergency medical services outside of Canada are covered by provincial health care plans, and then only to the amount that such services "cost" in Canada.² Of course, given sufficient incentives, Canadians would seek to buy private insurance for non-emergency medical treatment outside of Canada, much as they currently buy supplementary private insurance for emergency treatment.

The fact is that insurers currently do not offer non-emergency U.S. medical

insurance to non-U.S. residents, although there is no legal restriction against doing so. In the authors' discussions and correspondences with U.S. insurance industry representatives, the opinion was expressed that there was simply insufficient demand for such insurance. This view was confirmed by a survey carried out by the authors and discussed in a later section. At the least, therefore, Canadians typically have found it cheaper to endure waiting in Canada than to buy access to immediate medical treatment in the United States.

Another way in which non-price rationing might occur is through formal or informal lobbying or outright bribery of the "gatekeepers" to the hospital system. One obvious concern in this regard is that individuals who are personal friends or acquaintances of surgeons, hospital administrators, and/or politicians may obtain preferred positions on the queue for medical services. Given the extensive attention the media pays to the provision of health care and the risks of sanctions attached to being caught, it seems unlikely that this could be a widespread and persistent practice. Moreover, no evidence has emerged to date which provides a basis of support for such a concern.

A third potential form of non-price rationing involves physicians implicitly or explicitly rejecting candidates for

2 A recently announced policy by the British Columbia government to pay for heart surgery carried out in Seattle-area hospitals represents a departure from the policy of paying only for emergency services outside Canada.

medical treatment whom they would otherwise treat. In the absence of explicit criteria, doctors would presumably reject those candidates with the lowest probabilities of suffering morbid consequences from non-treatment. The British experience suggests that some doctors implicitly adopt a forgone present value of earnings criterion for selecting patients for early treatment. This means that older and more critically ill patients receive lower priority.³

To be sure, medical practitioners would deny that they are rejecting (as opposed to queuing) patients for treatment who in their medical judgement require such treatment. While the available morbidity data are extremely difficult to interpret given the range of influences on morbidity rates, there is no clear evidence that morbidity rates in Canada are increasing significantly owing to a failure to provide medical services.

Perhaps the most ubiquitous manifestation of excess demand for medical services is an increase in the time spent waiting for surgical treatments by users of the Canadian health care system. The social costs of this increased time spent waiting are primarily associated with prolonged pain, anxiety, disability, and the incon-

venience of being unable to schedule treatments when the patient's opportunity cost of time is relatively low. Tangible and intangible costs associated with enforced waiting for hospital procedures therefore include reduced productivity, greater expenditures (than are perhaps optimal) on preventative health care and personal safety, and reductions in various dimensions of the affected individual's "quality of life."

Real Social Costs of Rationing Health Care

Observers who argue that hospital waiting lists are not a particularly important social issue believe that waiting lists tend to be inaccurate estimates of rationing and/or that there is little social cost associated with enforced waiting in any case.

One frequently expressed concern is that doctors encourage a greater demand for medical care than is socially optimal. As a result, waiting lists exist for specific treatments. However, there may be no significant social costs associated with rationing since many (perhaps most) individuals on waiting lists are not in "legitimate" need of medical treatment. In a related version of this argument, doctors are suspected of placing a substantial number of

3 See Henry J. Aaron and William B. Schwartz, *The Painful Prescription: Rationing Hospital Care*, Washington: D.C.: The Brookings Institution, 1984. The experience of Canada's largest cancer treatment centre suggests that doctors are giving priority for radiation treatment to people whose cancers may be curable. See Christie McLaren, "Cancer Patients Face Wait For Treatment," *Globe and Mail*, September 13, 1989, A1.

patients on hospital waiting lists simply to exacerbate a public perception of a health care crisis so as to increase public funding of the medical system.

The available evidence on the magnitude of supplier-induced demand for medical services is, at best, ambiguous. In support of a view that this is a modest problem is the argument that competition among physicians will promote a concordance between the physician's interests and those of the patient. General practitioners usually stand as agents for patients in need of specialists. Specialists carry out the bulk of hospital procedures. General practitioners who can mitigate medical problems while sparing patients the pain and discomfort of hospital treatments are more likely to be perceived as doing a good job than those who encourage short-term or long-term hospitalization as a cure. This suggests that general practitioners have an incentive to direct patients to specialists who will not "overprescribe" painful and time-consuming hospital treatments.

Placing "excessive" numbers of patients on hospital waiting lists may also have direct costs for "opportunistic" specialists. For example, the latter may come to be seen as using a disproportionate share of hospital resources. This may make it more difficult for them to provide quick access to those resources for patients who are in more obvious (to themselves and their

general practitioners) need of hospital treatment. In a related vein, patients facing the prospect of a relatively long waiting list may be tempted to search out other doctors with better "connections" to hospital facilities.

As an additional consideration, there is no necessary reason for any single physician or group of physicians to believe that individual physician waiting lists will significantly affect government funding policies or that they will be net beneficiaries of any increased funding that does occur. In the face of obvious incentives to "free-ride" on the strategic behaviour of other physicians, there may be no significant bias for physicians to inflate hospital waiting lists or even to over-report the number of patients they have waiting for admission to hospital.

A potentially more important qualification to the argument that hospital waiting lists are associated with significant social costs is the possibility that a significant portion of waiting is voluntary. Specifically, some "customers" for medical treatments and procedures may actually place a higher value on future treatment than on present treatment of specific health problems. For example, present treatment may involve forgoing income and other benefits that exceed the expected costs associated with delaying treatment. It may, therefore, be optimal for an individual to delay treatment until some point in the future

when his or her opportunity costs of time are expected to be lower. In fact, results from a survey we conducted of specialists in British Columbia indicate that most waiting for hospital treatments is involuntary.

A related concern is that hospital waiting lists are biased upward by a failure of reporting authorities to identify individual patients listed by more than one doctor and/or a failure to prune waiting lists of individuals who have either already received the requested treatment or who, for some reason, are no longer likely to require treatment. Our survey results suggest that doctors generally do not believe that their patients have been booked on waiting lists by other physicians. Moreover, the possibility exists that would-be patients increasingly anticipate being made to wait indefinitely for hospital admission and postpone or forgo "marginal" visits to their physicians which, on the margin, reduces the number of patients entering queues.

In summary, while there are hypothetical reasons to expect that hospital waiting list parameters will overstate true excess demand for hospital treatments, the magnitude of any resulting bias is unclear and might be relatively small given countervailing factors that may reduce measured amounts of waiting.

Hospital Waiting List Survey

In order to develop a more detailed understanding of the magnitude and nature of hospital waiting lists in Canada, a prototype survey was conducted of specialist physicians in British Columbia. Specialists were surveyed rather than hospital administrators because a substantial number of hospitals either do not collect waiting list data in a systematic manner or do not make such data publicly available.

A pragmatic reason for choosing to survey doctors in British Columbia is that the British Columbia Medical Association (BCMA) offered to assist in generating a mailing list of specialists and arranging for pre-testing of questionnaires. Both the BCMA and a substantial number of individual physicians have publicly expressed concerns about growing waiting lists for surgical and diagnostic procedures in B.C. Quite clearly, the medical profession has a collective interest in promoting an increased flow of financial and other resources to the health care sector, and this interest was certainly a factor encouraging the BCMA's co-operation in the project. Nevertheless, it should not be assumed that the survey results are therefore unreliable. In particular, it should not be assumed (for reasons suggested earlier) that individual physicians responding to the survey have a strong incentive to skew their responses in a particular direction.

We should also note that the Fraser Institute is planning to undertake similar surveys in other provinces.

Survey questionnaires were prepared for ten different medical specialties: plastic surgery, gynecology, ophthalmology, otolaryngology, general surgery, neurosurgery, orthopedics, cardiology, urology, and internal medicine. Each questionnaire was pre-tested on a sample of individual member specialists serving on the relevant BCMA specialty committee. The final versions of the questionnaires were administered to a randomly selected sample of physicians in each

specialty through a mailing process with a small scale follow-up of non-respondents through telephone calling. Specialists were chosen for surveying rather than general practitioners since the former have primary responsibility for health care management of surgical candidates. The selection of each specialty sample was made from specialty membership lists provided by the BCMA. Given the relatively small number of specialists practising plastic surgery, otolaryngology, neurosurgery, cardiology, and urology, all physicians practising these specialties in B.C. were surveyed. In the case of

Table 1

Specialty	Summary of Responses		Rate (percent)
	Number of Questionnaires	Number of Responses	
Plastic Surgery	38	16	42
Gynecology	71	22	31
Ophthalmology	73	19	26
Otolaryngology	67	19	28
General Surgery	83	10	12
Neurosurgery	21	10	48
Orthopedics	56	15	27
Cardiology	27	5	19
Urology	62	11	18
Internal Medicine	108	18	17
Total	606	145	24

gynecology, ophthalmology, and orthopedics, a 50 percent sample was employed. For general surgery and internal medicine, 33 percent of all specialists were surveyed.

Table 1 reports the number of questionnaires mailed out for each specialty and the number of usable responses received. The overall response rate (24 percent) is somewhat higher than average for unsolicited mail surveys although we had anticipated an even higher response given the professions' concerns about waiting lists for hospital treatments and procedures.

There is substantial variation in the response rate across specialties and (unreported) variation across regions of the province. The latter is unlikely to qualify inferences drawn for overall provincial waiting lists for each specialty in any significant way since the bulk of all specialists (71 percent) are located in the lower mainland (including Vancouver). Consequently, conclusions about overall provincial waiting lists are unlikely to be significantly biased by differences in regional response rates, although waiting list comparisons across regions, as well as comparisons across specialties within regions, may well be sensitive to the regional distribution of sampling responses. Moreover, other sampling biases may exist. For example, there may be a propensity for physicians with above average waiting lists to be over-represented in the results.

Survey Results

The major findings from the survey responses are summarized in tables 2 through 11. These tables report several characteristics of waiting lists for a sample of treatments in each of the specialties identified. It should be noted that the treatments identified for consideration represent a cross-section of "common procedures" carried out in each specialty. They were suggested by the BCMA specialty boards. It would be inappropriate to assume that the waiting list characteristics of the procedures identified are identical to those that are not identified in the survey, although there are no a priori reasons for assuming otherwise. Since extrapolations of total waiting times for hospital procedures are based only upon the treatments explicitly identified, our estimates of overall waiting time could be biased downward significantly.

In tables 2 through 11, the first column identifies the specific treatment. The second column reports the mean number of patients reported waiting (per respondent) for each treatment and the standard deviation around the mean. The third column reports the total number of patients waiting. The fourth column reports the average weeks spent waiting per patient. The fifth column reports the range of responses for the average weeks spent waiting from the lowest response by a

Table 2
Waiting List Characteristics for Plastic Surgery

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Mamoplasty	18.9	12.6	303	19.0	7 - 50
Neurolysis	5.7	5.1	91	7.4	1 - 20
Blepharoplasty	5.8	4.4	87	12.3	2 - 25
Rhinoplasty	8.7	6.4	132	19.6	5 - 32
Scar Revision	7.6	5.5	121	13.1	5 - 35
Hand Surgery	22.7	16.1	340	12.4	5 - 24

Table 3
Waiting List Characteristics for Gynecology

<u>Treatment</u>	<u>Number of Patients Waiting</u>		<u>Number of Patients Waiting</u>	<u>Length of Waiting Period</u>	
	<u>Mean</u>	<u>Standard Deviation</u>		<u>Average Number of Weeks Waiting per Patient</u>	<u>Range of Number of Weeks Spent Waiting</u>
D & C	6.8	6.0	136	5.9	2 - 16
Tubal Ligation	10.6	12.3	212	15.7	2 - 40
Hysterectomy	10.3	13.3	206	16.3	2 - 32
Vaginal Repair	3.7	5.0	70	25.5	2 - 60
Tuboplasty	2.4	3.6	46	24.2	2 - 60
Laparoscopy	13.1	15.2	236	12.7	2 - 32

Table 4
Waiting List Characteristics for Ophthalmology

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Cataract Removal	58.8	67.1	882	18.2	4 - 30
Extropion	1.8	3.4	28	5.7	1 - 11
Lacunal Duct	1.9	4.3	30	19.1	13 - 30
Stabismus	3.2	8.1	51	12.0	3 - 30
Ptosis Repair	1.4	2.7	22	7.1	3 - 11
Blepharoplasty	1.1	2.3	17	8.3	3 - 11

Table 5
Waiting List Characteristics for Otolaryngology

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Myringotomy/Tonsillectomy/ Adenoidectomy (Children)	29.0	34.0	522	14.1	2 - 40
Tonsillectomy/ Adenoidectomy (Adults)	9.6	14.0	173	15.8	2 - 34
Tympanoplasty	8.3	9.8	149	19.3	2 - 35
Rhinoplasty/ Septal Surgery	24.1	4.7	434	33.0	2 - 52
Nasal Polyps	4.4	4.4	70	13.1	2 - 34

Table 6
Waiting List Characteristics for General Surgery

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Hernia Repair	6.8	8.1	68	24.6	3 - 52
Cholecystectomy	3.9	4.6	39	31.7	4 - 52
Breast Biopsy	3.6	4.2	18	2.5	2 - 3
Mastectomy	2.0	1.0	6	1.8	1.5 - 2
Hemorrhoidectomy	4.9	4.1	34	27.7	3 - 53
Colonoscopy	3.3	6.6	33	6.2	4 - 7.5
Varicose Veins	2.1	4.6	21	36.1	24 - 52
Surgery for Morbid Obesity	2.3	7.3	23	40.0	40 - 40

Table 7
Waiting List Characteristics for Neurosurgery

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Neurolysis (Peripheral Nerve)	6.2	7.6	62	10.3	3 - 16
Intervertebral Disc Surgery	31.5	20.8	315	14.1	8 - 20
Elective Cranial Bone Flaps, etc.	10.6	9.6	106	16.4	4 - 72

Table 8
Waiting List Characteristics for Orthopedics

Treatment	<u>Number of Patients Waiting</u>		<u>Length of Waiting Period</u>		
	Mean	Standard Deviation	Number of Patients Waiting	Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Meniscectomy	21.2	16.0	254	12.0	3 - 24
Removal of Pins	5.7	3.9	74	12.7	2 - 32
Arthroplasty (Hips, etc.)	6.2	6.0	71	17.0	6 - 52
Arthroplasty (Interphalageal)	3.8	8.0	53	21.3	1.5 - 32
Digital Neuroma	3.5	2.5	21	15.0	7 - 32
Rotator Cuff Repair	2.0	2.2	26	16.9	6 - 42
Osteotomy	5.2	6.2	57	7.8	3 - 40
Hollus Valgus, Hammer Toe	5.1	5.8	71	10.5	2 - 40

Table 9
Waiting List Characteristics for Cardiology

Treatment	<u>Number of Patients Waiting</u>		<u>Length of Waiting Period</u>		
	Mean	Standard Deviation	Number of Patients Waiting	Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Coronary Artery					
Bypass	62.6	58.9	313	23.7	15 - 30
Other Open Heart Surgery	16.6	11.6	83	21.4	15 - 30
Inguinal/Femoral Hernia Repair	3.2	7.2	16	41.0	41 - 41
Varicose Vein Surgery	0.4	0.9	2	10.0	10 - 10

Table 10
Waiting List Characteristics for Urology

Treatment	<u>Number of Patients Waiting</u>		<u>Length of Waiting Period</u>		
	Mean	Standard Deviation	Number of Patients Waiting	Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Prostatectomy	41.5	56.0	456	30.9	4 - 52
TUR Bladder	4.4	2.4	48	4.0	2 - 8
Cystoscopy	94.4	128.4	944	23.6	3 - 60
Hernia/Hydrococle	6.7	5.5	67	27.6	6 - 56
Bladder Fulguration	9.9	20.4	109	29.4	3 - 40

Table 11
Waiting List Characteristics for Internal Medicine

Treatment	<u>Number of Patients Waiting</u>		Number of Patients Waiting	<u>Length of Waiting Period</u>	
	Mean	Standard Deviation		Average Number of Weeks Waiting per Patient	Range of Number of Weeks Spent Waiting
Colonoscopy	2.1	3.4	32	5.05	1 - 12
Gastroscopy	4.0	6.1	60	2.04	1 - 6

responding physician to the highest response.

Several observations might be made about tables 2 through 11. One is that B.C. residents are generally waiting significant periods of time for hospital treatments. While for some procedures such as mastectomy the average waiting time is as short as two weeks, most procedures require waits of at least three months. For some procedures, the waiting times can be as long as nine or ten months. Hospital waiting lists can be significantly influenced by a relatively small number of specialists, as suggested by the wide ranges in reported waiting times across respondents as well as by the high standard deviation of responses relative to their means. However, it is not obvious what implications this observation has for the social costs of rationing health care. While it supports concerns of hospital administrators that relatively few doctors can contribute to a waiting list "problem," it does not necessarily follow that waiting is less of a problem.

Table 12 extrapolates the responses from our survey to an estimate of waiting in the entire provincial population. It reports the result of multiplying the number of patients waiting in the sample of respondents by the reciprocal of the ratio of the number of respondents in each specialty to the number of physicians practising the specialty. The resulting quantity is an estimate of the

total number of people in the province waiting for treatments in each of the specialties identified. By multiplying this number by the average weeks spent waiting estimated from our respondents, we arrive at the estimates in the last column of table 12 which reports total waiting times for treatments associated with each specialty.

Assessing the Survey Results

Ultimately, the social significance of hospital waiting lists is related to the indirect costs they impose in the form of lost productivity, physical and psychological pain and suffering, time and money spent trying to improve one's position on the queue, and so forth. The eclectic nature of these associated costs makes it difficult to identify a single measure of the costs of waiting.

One possible approach is to use the costs of private hospital treatments, say in the United States, as a proxy for the costs of waiting for admission to public hospitals to the extent that individuals choose to buy private hospital treatment. The problem with this argument is that inframarginal patients may have lower opportunity costs of waiting than those on the margin, where marginal patients are those willing to purchase private hospital treatments. As a result, the use of private medical system costs as an opportunity cost for all patients on waiting lists could significantly

Table 12
Extrapolation For British Columbia

Specialty	Sample		Respondents as a Percent of Population	Provincial Estimate of Total Waiting	Total Waiting (Weeks)
	Total Waiting	Average Wait			
Plastic Surgery	1,074	14.7	42	2,557	37,588
Gynecology	906	14.8	16	5,663	83,812
Ophthalmology	1,030	17.2	13	7,923	136,276
Otolaryngology	1,348	20.9	28	4,814	100,613
General Surgery	242	23.9	4	6,050	144,595
Neurosurgery	483	14.2	48	1,006	14,285
Orthopedics	627	13.2	13	4,823	63,664
Cardiology	414	23.8	19	2,179	51,860
Urology	1,624	25.6	18	9,022	230,963
Internal Medicine	<u>92</u>	3.1	6	<u>1,533</u>	<u>4,752</u>
Total	7,840			45,570	868,408

overstate the overall perceived costs of waiting.

Some insight into the potential magnitude of this bias is provided by survey responses to a question concerning the percentage of patients who sought non-emergency medical treatment outside the province (and outside the country) in the past year. Most non-emergency medical treatments would not be covered by provincial health plans unless such treatments were not offered by B.C. physicians but were recognized as "legitimate" procedures by the provincial health authorities. In fact, most patients waiting for admission to B.C. hospitals appear to be inframarginal in that they would rather wait than pay for private treatment. For most specialties, the median response of physicians was that only about 1 percent of their patients had sought medical treatment outside the province in the past year.

Another possible measure of the costs associated with hospital waiting lists is the forgone income associated with reduced on-the-job productivity. One problem with this measure is that many patients are elderly or very young and are therefore not in the formal work-force.⁴ An average wage measure may therefore be a misleading index of the opportunity cost of their impaired physical and/or mental capabilities. However, to the extent

that retired individuals have an option to participate in the workplace, as increasingly they do in the form of service sector jobs, an income-based measure of opportunity cost may not be inappropriate since it is the relevant alternative to leisure for such individuals.

An additional potential problem with an income-based measure of opportunity cost is the possibility that many individuals on waiting lists can continue to work at or near their normal productivity levels while awaiting treatment. One would expect this objection to have greater or lesser relevance depending upon the types of treatment involved, and this expectation is supported by the survey responses. Respondents were asked to identify the percentage of their patients who are experiencing significant difficulty in carrying on their work or daily duties as a result of their medical conditions. The reported percentage ranged from 88 percent in the case of cardiovascular surgeons to 14 percent in the case of gynecologists.

An overall estimate of the costs of waiting based upon the use of average weekly earnings in B.C. as the relevant opportunity cost of waiting was developed by multiplying the estimated total weeks spent waiting over the past 12 months for each specialty (the last column of table 12) by the

4 We have been informed by the Province of British Columbia's Ministry of Health that 20 to 30 percent of surgery carried out in the province is provided to those over the age of 65.

reported percentage of patients in each specialty who are experiencing significant difficulty carrying on their work. This product term is then multiplied by the average weekly earnings (industrial aggregate) for B.C. in 1989 and summed across the various specialties. The total dollar value should be seen as an estimate of the income losses associated with waiting for the treatments covered by our survey.

The costs of waiting amounted to slightly over \$132 million in 1989. This is approximately 0.2 percent of provincial gross domestic product in that year, a relatively small figure which is in line with estimates we have made for another Canadian province and is also consistent with relatively modest cost estimates for Great Britain. Nevertheless, it is useful to point out that total forgone wages and salaries associated with strikes and lockouts in British Columbia in 1989 were approximately equal to the foregoing estimated costs of waiting for hospital treatments. Hence, queuing for hospital treatments may be at least as important an issue as industrial relations insofar as industrial productivity in British Columbia is concerned.

Comparisons to Other Survey Results

It would be instructive to compare results from our survey of B.C. doctors

with other surveys employing different methodologies. However, at the present time most provincial ministries of health do no regular collection of data on queues for hospital procedures. The major municipal hospitals apparently collect some information, in greater or lesser detail, for purposes of scheduling facility usage, and government policy-makers draw on these data (largely on an ad hoc basis) with reference to specific procedures, for example, cardiac surgery. We were able to identify and collect some data from provincial ministries of health which, in turn, were collected from specific reporting hospitals, and we will discuss these results below.

Before so doing, let's review a 1982 survey undertaken by the Ontario Medical Association of its members in seven surgical specialties.⁵ The results were based on the responses of 836 specialists from a total of 2,100 surgeons surveyed. Given the differences in wording of the Ontario survey and our survey, differences in the precise treatments identified, and so forth, comparisons between these two surveys are problematic. We did identify 17 treatments for which average waiting times in the two surveys could be compared. In 12 cases, average waiting times in B.C. exceeded those in Ontario. Patients in our survey were reported waiting on average more than

5 See Gene O'Keefe, "Survey of Waiting for Elective Surgery," *Ontario Medical Review*, November 1982.

16 weeks longer than those in the Ontario survey for these 12 treatments. In contrast, for the five treatments for which average waiting times were lower in B.C., the average difference was approximately two weeks. Moreover, across all surveyed treatments, average (unweighted) waiting time in the Ontario sample was 5.1 weeks. In the B.C. sample, average (unweighted) waiting time was 16.9 weeks. While provincial differences in health care funding and demand patterns may be relevant in interpreting these data, the impression conveyed is that average waiting times for most surgical procedures increased substantially in Canada during the 1980s.

A more recent (1989) survey of teaching hospitals across Canada determined the average wait for in-patient surgery for three elective procedures: hip replacements, coronary artery bypass operations, and cholecystectomies. Results were based on 48 responding hospitals. On average, hip replacements had the longest wait (136 days), followed by heart surgery (108 days), and cholecystectomies (60 days). Our estimated waiting time for cholecystectomies (32 weeks) is substantially above this estimate. Our estimate for coronary artery bypass (24 weeks) is also above this survey's estimate. However, our estimate for arthroplasty (17 weeks) is somewhat

below the 136-day estimated wait for hip replacements.⁶ The survey data did show wide variation both across and within regions. There was no specific pattern, except that the West had higher average wait times for all procedures. This latter observation may account for part of the difference between our reported waiting time and those reported by the sample of teaching hospitals.

Other and more contemporary estimates of hospital waiting lists are shown in table 13 which reports estimates of the number of patients waiting for in-patient and day surgery treatments for selected hospitals in three provinces: Prince Edward Island, Saskatchewan, and British Columbia. (To satisfy commitments to respect confidentiality, we cannot identify the precise hospitals referred to in this table.) The general trend of these data are relatively clear. The number of patients waiting is growing relative to the number of beds.

Data are unavailable to develop a profile of changes in average waiting times. However, for two of the provinces it is possible to report estimates of average waiting times as of a single month in 1989. Unfortunately, differences in the way these numbers are aggregated makes combined reporting impossible as province 2 reports on a

⁶ See Philip Jacobs and Warren Hart, "Admission Waiting Times: A National Survey," *Dimensions*, February 1990. Average wait time is defined as the time between the specialist's application for the patient's admission and the point of hospitalization.

Table 13
Number of Patients Waiting, Selected Provinces

	<u>Province 1</u>	<u>Province 2</u>	<u>Province 3</u>
Hospitals in Sample	1	3	10
Ratio of Number of Patients Waiting for In-patient Surgery to Total Number of Beds	2.31 (1987) 1.07 (1983)	3.49 (1989)*	n.a.
Ratio of Number of Patients Waiting for Day Surgery to Total Number of Beds	1.14 (1987) .57 (1983)	2.81 (1989)*	2.63 (1987)** 2.28 (1984)**

* Number of beds based on 1988 data.

** Total number of in-patients plus day surgery patients.

finer chronological basis than does province 3.

As shown in table 14, approximately 28 percent of the patients waiting for hospital treatment in province 2 had been waiting for up to one month. Approximately 20 percent had been waiting between one and two months. Approximately 33 percent had been waiting between two and six months, while 22 percent had been waiting more than six months. It should be noted that the averages reported in the last row of this table are weighted by the number of patients waiting for admission at each of the sample hospitals.

In province 3, approximately 66 percent of all those waiting as in-patients and 75 percent of all those waiting as day care patients were reported as waiting less than eight weeks for elective surgery (see table 15). Approximately 14 percent of in-patients and 11 percent of day care patients were waiting between eight and 12 weeks. Around 20 percent of those waiting as in-patients and 14 percent of those waiting as day care patients were waiting more than three months. Since we were not provided with total numbers of patients waiting at each of the sample hospitals, the foregoing averages are simple rather than weighted.

The distribution of average waiting times from our survey are reasonably comparable to those reported for province 2, at least at one tail of the

distribution, that is, at the longest average time spent waiting. Approximately 43 percent of the patients in our sample were reported to be waiting more than 16 weeks (more than 112 days) for treatment, while 33 percent of listed patients in province 2 had been waiting more than 120 days. However, average waiting times are apparently significantly lower in province 3 where only 20 percent of waiting in-patients and 14 percent of waiting day patients had been waiting more than 84 days.

With respect to the shortest average waiting time periods, our survey results tend to exceed those of the provincial governments. For example, 28 percent of all listed patients in province 2 had been waiting less than 30 days. Our results report 22 percent of patients waiting less than eight weeks. Province 3 reports the overwhelming majority of all patients waiting less than eight weeks.

Given the differences in the sample coverage, sampling methodologies, and sample time periods, it is difficult to reconcile these differences in reported average waiting times. However, several considerations seem worthy of mention. One is the possibility that our survey results contain an upward bias owing to the timing of our survey. Specifically, our survey was conducted in the winter of 1989 following a relatively lengthy nurses' strike and subsequent work slowdown in the preceding summer. This undoubtedly

Table 14
Days Spent Waiting, Selected Hospitals in Province 2
(Percent of Patients Waiting)

	<u><10 Days</u>	<u>10-30 Days</u>	<u>31-60 Days</u>	<u>61-120 Days</u>	<u>121-180 Days</u>	<u>>181 Days</u>
Hospital 1	11	22	25	26	10	7
Hospital 2	7	16	16	15	11	35
Hospital 3	13	18	19	22	11	17
Average	9	19	20	20	11	22

Table 15**Time Spent Waiting, Selected Hospitals in Province 3
(Percent of Patients Waiting)**

		<u><8 Weeks</u>	<u>8-12 Weeks</u>	<u>12-16 Weeks</u>	<u>>16 Weeks</u>
Hospital 1	91.1	3.7	3.7	1.5	
	100.0	0.0	0.0	0.0	
Hospital 2	84.3	6.1	3.5	6.1	
	87.7	3.5	5.3	3.5	
Hospital 3	76.0	13.3	6.7	4.0	
	82.1	12.6	5.3	0.0	
Hospital 4	52.8	22.6	7.6	17.0	
	69.0	10.3	8.6	12.1	
Hospital 5	69.0	7.6	8.1	15.3	
	79.7	6.8	8.4	5.1	
Hospital 6	78.7	9.3	7.4	4.6	
	76.7	11.7	4.6	7.0	
Hospital 7	43.1	17.2	8.7	31.0	
	55.2	10.1	4.3	30.4	
Hospital 8	25.0	34.4	0.0	40.6	
	53.8	16.7	11.6	17.9	
Hospital 9	74.7	7.2	6.0	12.1	
	65.7	29.5	1.9	2.9	
Hospital 10	73.5	12.2	6.1	8.2	
	86.3	9.6	9.1	0.0	
Hospital 11	73.4	13.3	5.0	3.3	
	89.0	4.1	1.4	5.5	
Hospital 12	50.6	20.0	18.7	10.7	
	59.0	14.6	15.3	11.1	
Hospital 13	65.6	12.5	7.8	14.1	
	70.5	13.3	12.7	3.5	

Note: Top number in each couplet refers to in-patients; bottom number refers to day care patients.

reduced the rate of admissions and processing of patients which would have contributed to a backlog extending into the remainder of the year. In this regard, we asked our respondents to identify the factors contributing to longer average waiting times in 1989 than in the preceding year. A significant percentage, although well less than the majority, cited the nurses' strike as a factor.

A second possibility is that our physician respondents may have used a more liberal interpretation of waiting than those used by hospital admissions officers. In particular, our respondents may have interpreted "waiting" as encompassing waiting time whether or not a patient is booked for admission to hospital for treatment. A number of respondents indicated to us that they were not formally placing all patients awaiting treatment on hospital waiting lists given the long queues that already existed for the relevant treatments. However, they may (with justification) consider such patients to be waiting for treatment. Unfortunately, it is not possible to assess the empirical relevance of this potential explanation, although this observation would suggest that waiting times drawn from surveys of physicians are more comprehensive than those drawn from hospital admission booking lists.

Our survey results do shed some light on several other potential sources of influence on reported waiting lists.

One is the possibility that individual patients might be on more than one waiting list. To gain some insight into this issue, respondents were asked to identify the percentage of their patients who might have been placed on a waiting list by another physician. Given the potential for physicians to have incomplete knowledge of this condition, the reported results must be interpreted cautiously. However, the consensus response is unambiguous—between 70 and 80 percent of respondents report no duplicate bookings of patients on waiting lists. The remaining respondents report only 1 to 2 percent of their patients may be on waiting lists held by other physicians as well.

Another possibility noted in an earlier section is that some portion of patients are on waiting lists voluntarily. We attempted to gain some measure of the magnitude of this phenomenon by asking respondents to our survey the percentage of patients waiting because of their own wish to postpone or delay treatment. A companion question asked for the percentage of patients who would prefer immediate treatment but who cannot receive such treatment because of the rationing of hospital facilities. Again, the responses are quite consistent, although they vary somewhat across specialties. The percentage of patients reported to be waiting voluntarily ranges from 0.4 percent in the case of internal medicine to 9 percent in the case of plastic surgery.

Apparently voluntary waiting does not significantly mitigate the relevance of hospital waiting lists as measures of excess demand.

Summary and Conclusions

There has been a great deal of controversy surrounding both the theoretical and empirical relevance of hospital waiting lists as an indicator of the performance of publicly funded health care delivery systems. Notwithstanding a number of specific caveats, hospital waiting lists are associated with certain social costs that must be set against the anticipated resource savings associated with lower expenditures on the medical infrastructure, including hiring and training specialized staff, purchasing capital equipment, and so forth.

While the social costs associated with non-price rationing of scarce capacity is only one element of an overall cost-benefit assessment of Canada's public health care system, they should not be ignored. This paper uses original survey data to identify a portion of these costs for the province of British Columbia. The results are in line with a very limited number of other estimates, suggesting that while these costs may be small in relation to total provincial economic activity they may be quite comparable to output losses associated with strikes, lockouts, and other disruptions of the labour relations process. In conjunction with other data, our results also suggest that average waiting times on hospitals' waiting lists in Canada grew substantially during the 1980s.

Appendix

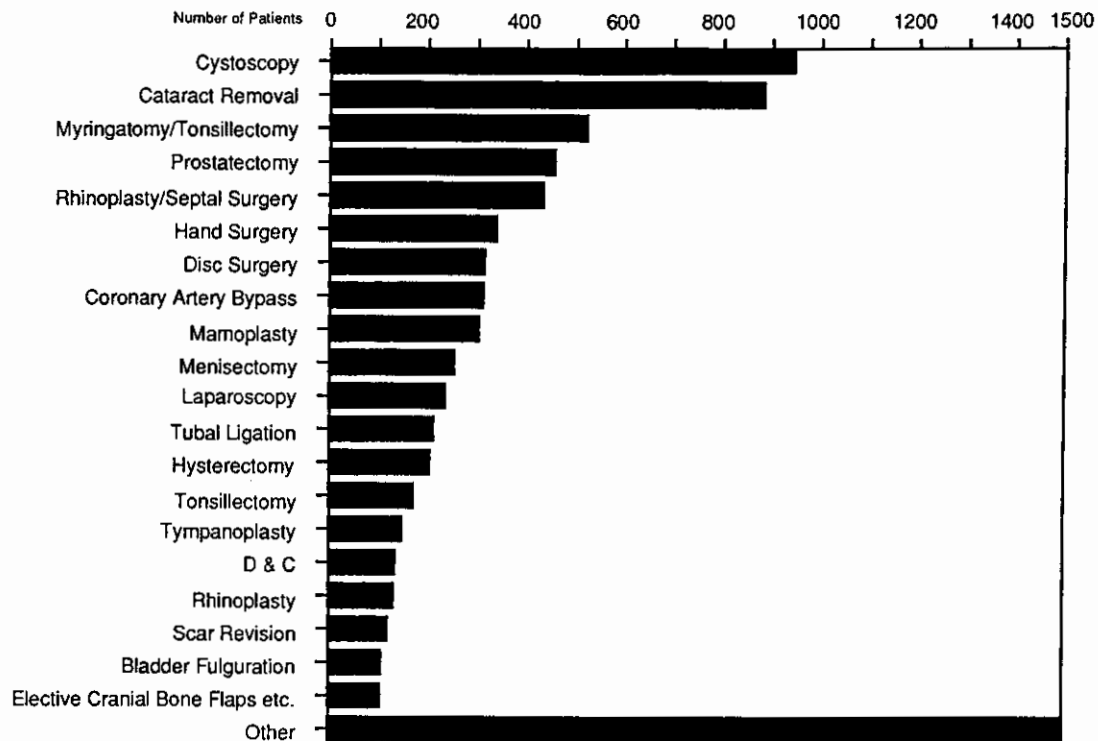
Several characteristics of hospital waiting lists are highlighted in this study. Figure 1 shows the total number of patients reported waiting for the "top 20" treatments, which account for 80 percent of all patients reported waiting by our sample of respondents. The data in figure 1 suggest that a relatively small number of procedures account for the bulk of all waiting.

Figure 2 reports average waiting times for the top 20 treatments. There is obviously significant variation across treatments in average waiting times. However, in comparing figures 1 and 2, it is obvious that no meaningful correlation exists between number of people waiting and average waiting times. This latter observation suggests that the primary determinant of aver-

age waiting time is the speed at which patients are admitted and processed. Why this speed varies across treatments is an issue for further research.

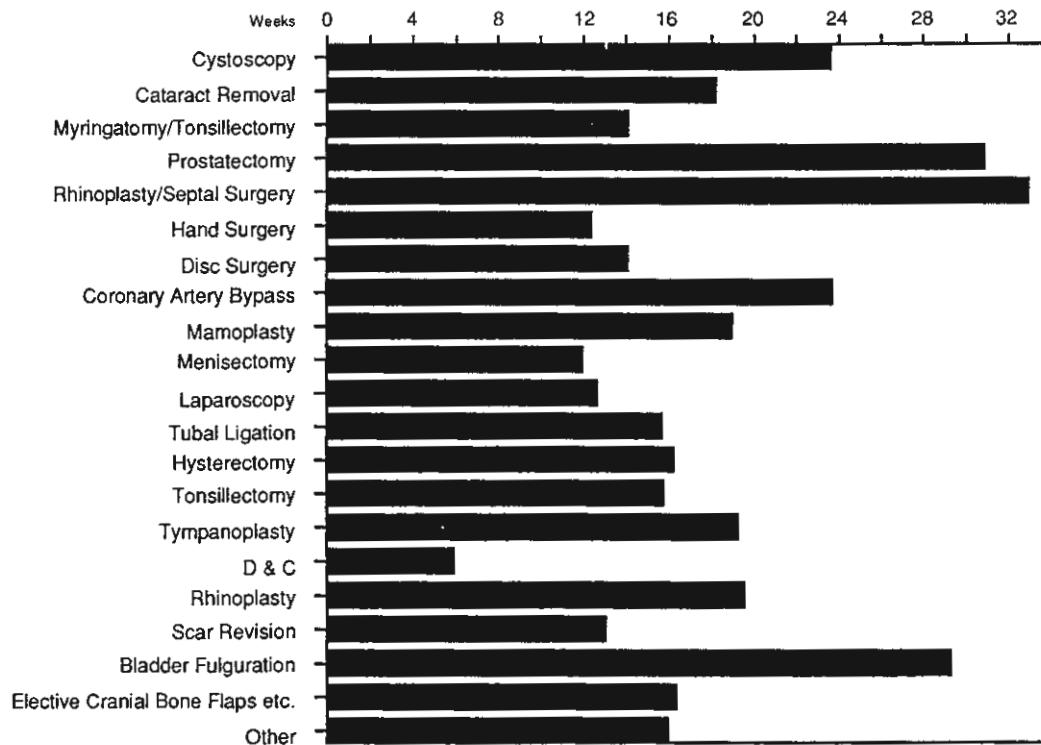
Figures 3 and 4 show provincial estimates of total numbers waiting and average waiting times for major specialties. These latter figures underscore the variation in waiting list characteristics across treatments. In conjunction with tables 14 and 15, they reinforce a basic conclusion that there is significant variation in access conditions both regionally and across patients in the health care system. Whether the observed variation reflects intended policies or unintended consequences of imperfect planning and administration remains to be determined.

Figure 1
 B.C. Patients Waiting for Top 20 Treatments



Note: Survey data was collected between November 1989 and February 1990.

Figure 2
Average Waiting Time in B.C. for Top 20 Treatments



Note: Survey data was collected between November 1989 and February 1990.

Figure 3

Estimate of Total Waiting Time by Specialty for Province of British Columbia

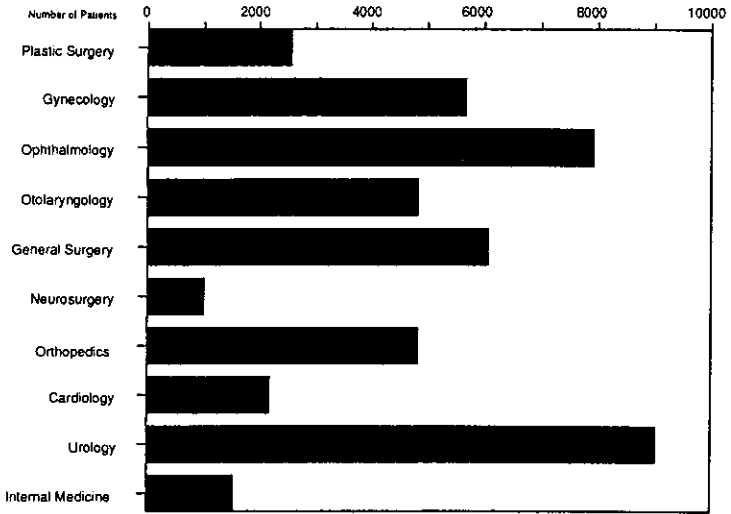
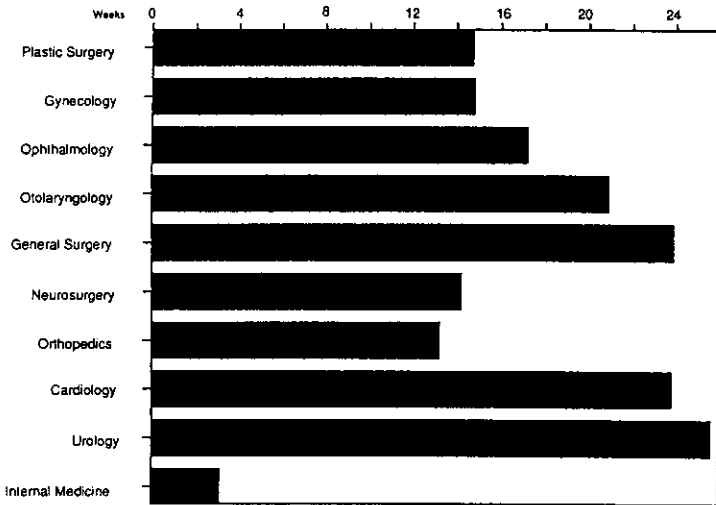


Figure 4

Average Waiting Time by Specialty for Province of British Columbia



Note: Survey data was collected between November 1989 and February 1990.