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The private cost of public queues



NADEEM ESMAIL

In December 2010, the Fraser Institute released its twentieth annual measurement of waiting times for medically necessary treatments in Canada (Barua et al., 2010). This most recent measurement shows that the national median waiting time from specialist appointment to treatment increased from 8.0 weeks in 2009 to 9.3 weeks in 2010.

But the measurement of waiting times, or the examination of the absolute delay Canadians must endure in order to receive medically necessary care, is only one way of looking at the burden of waiting for health care. We can also calculate the privately borne cost of waiting: the value of the time that is lost while waiting for treatment.¹

The privately borne cost of waiting for care

One way of estimating the privately borne cost of waiting for care in Canada was originally developed by Steven Gliberman and Lorna Hoye (1990).² They calculated the cost of waiting by estimating the amount of time that

could not be used productively by a patient while waiting for treatment.

Gliberman and Hoye's methodology is relatively simple. First, multiply the number of patients waiting for treatment by the wait times for those treatments in order to derive an estimate of the total number of weeks all patients will spend waiting for care. Then multiply this value by a measure of the proportion of time spent waiting for treatment that is rendered unproductive by the physical and emotional impact of an untreated medical condition. The monetary value of this lost productive time can then be estimated.

In 2010, an estimated 825,827 Canadians were waiting for care after an appointment with a specialist (table 1). These Canadians waited, on average, 9.3 weeks for treatment, though those wait times varied significantly when broken down by province and medical specialty (figure 1). Multiplying the number of Canadians waiting in each of the 12 medical specialties in each of the 10 provinces by the weighted median wait time for that medical specialty in that province gives a rough estimate of the total amount of time that Canadians waited for treatment in

Table 1: Estimated number of procedures for which patients were waiting after appointment with specialist, by specialty, 2010

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic surgery	5,591	1,093	1,554	1,331	3,458	2,554	576	1,211	29	416	17,813
Gynecology	4,069	3,736	1,353	952	7,818	4,543	404	934	127	676	24,613
Ophthalmology	16,602	14,950	3,166	1,587	28,261	75,185	1,374	5,954	271	1,124	148,475
Otolaryngology	5,490	2,849	4,981	1,232	8,529	3,386	709	895	45	566	28,682
General surgery	10,410	9,608	4,534	2,986	17,836	28,554	1,087	3,253	165	3,373	81,805
Neurosurgery	1,319	512	406	45	2,246	2,483	--	128	--	--	7,139
Orthopedic surgery	14,517	10,745	8,888	3,682	28,240	12,327	2,161	5,700	2,526	1,545	90,331
Cardiovascular surgery	211	106	70	25	457	34	101	29	--	1	1,035
Urology	4,420	2,070	--	388	15,379	13,116	1,555	4,559	--	2,068	43,555
Internal medicine	5,016	8,982	4,065	1,581	14,423	25,562	339	2,039	8	3,489	65,503
Radiation oncology	73	69	--	--	139	168	51	--	4	3	507
Medical oncology	89	90	--	--	643	391	--	136	4	38	1,391
Residual	42,328	40,707	22,141	10,051	85,390	76,960	5,528	18,517	2,149	11,209	314,978
Total waiting	110,135	95,518	51,158	23,858	212,818	245,264	13,886	43,356	5,327	24,507	825,827

Note: Totals may not match sums of numbers for individual specialties/provinces due to rounding.

Source: Barua et al., 2010.

2010: about 10.24 million weeks. This estimate is much greater than the estimated 6.92 million weeks for 2009 due to an increase in both wait times and in the number of Canadians waiting for care (Barua et al., 2010; Esmail, 2009a).

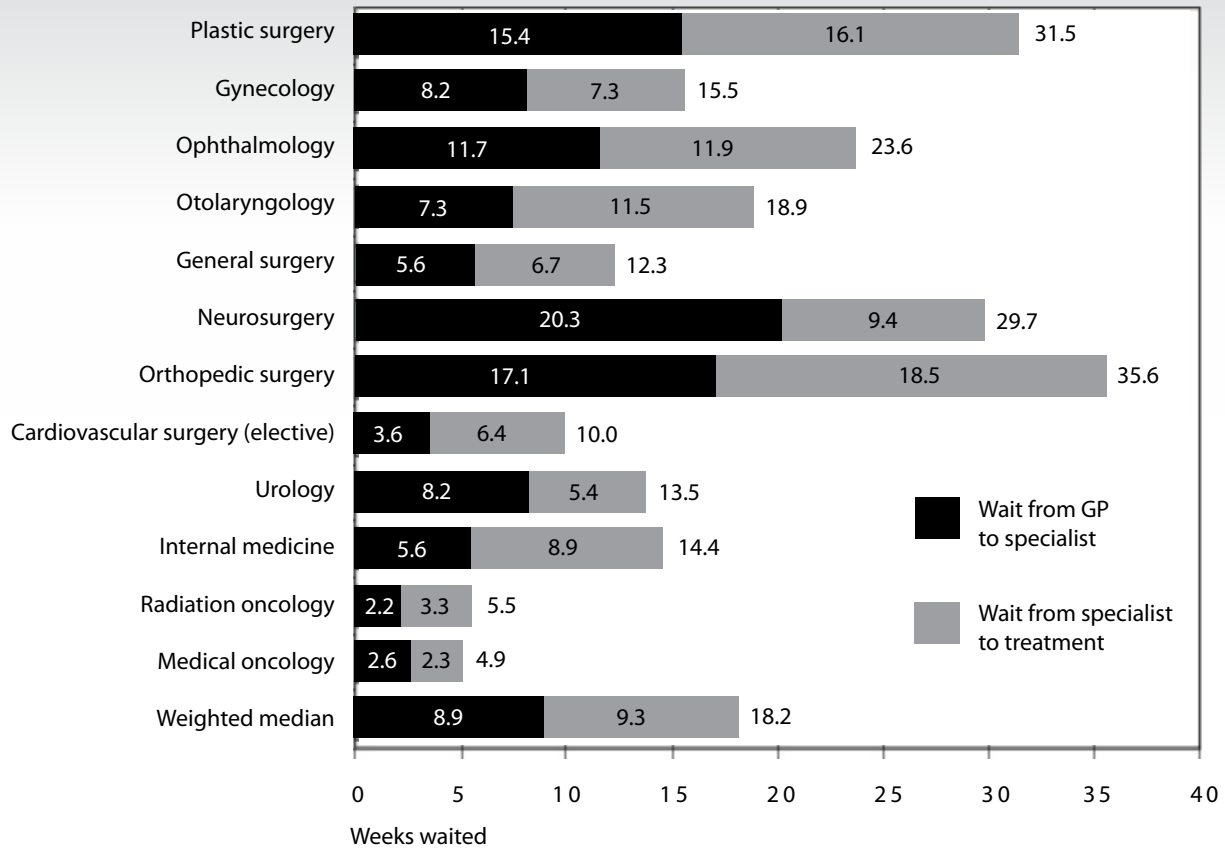
Globerman and Hoye's original estimate for the cost of waiting, which came from responses to a survey of physicians, used specialty-specific measures of the proportion of patients who were "experiencing significant difficulty in carrying on their work or daily duties as a result of their medical conditions" (1990: 26). The proportions they estimated ranged from 14% of patients in gynecology to 88% in cardiovascular surgery, and averaged 41% overall (Globerman with Hoye, 1990; Esmail, 2009a).

However, the estimates of lost productivity measured by Globerman and Hoye cannot necessarily be applied today because of advances in medicine and the medical system's ability to deal with pain and discomfort with pharmaceuticals. These advances may allow many Canadians who are suffering significant difficulties to function at a higher level today than they would have in 1990,

or even to maintain their normal activity levels. For this reason, this author's estimation of the cost of waiting in 2010 uses a Statistics Canada finding that 11.0% of people were adversely affected by their wait for non-emergency surgery in 2005 (Statistics Canada, 2006). This percentage is below even the lowest specialty-specific measure estimated by Globerman and Hoye (1990).³

An assumption that 11.0% of people waiting for treatment in 2010 experienced significant difficulties in their daily lives as a result of their medical condition, and thus lost productivity while waiting for treatment, results in an estimate that nearly 1.13 million weeks were "lost" while patients waited for treatment. However, because this estimate is based on the assumption that all individuals face the same wait time for treatment in each specialty/province combination, it is mathematically equivalent to assuming that 11.0% of the productivity of all Canadians waiting for care was lost to a combination of mental anguish and the pain and suffering that accompany any wait for treatment. Multiplying this lost time by an estimate of the average weekly wage of Canadians in 2010 (given in table 2), which provides an estimate

Figure 1: Median wait by speciality in 2010
Weeks waited from referral by GP to treatment



Source: Barua, Rovere, and Skinner, 2010.

Table 2: Average of average hourly and weekly wages*, by province, January to December 2010

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Nominal average hourly wage	\$22.81	\$25.02	\$22.41	\$20.54	\$23.23	\$21.14	\$19.02	\$19.87	\$18.67	\$20.69	\$22.53
Nominal average weekly wage	\$824.39	\$945.89	\$834.87	\$745.09	\$848.68	\$745.71	\$718.72	\$732.17	\$686.02	\$792.10	\$820.90

*The wages reported here are earned wages or salaries including tips, commissions, and bonuses before taxes and other deductions.

Source: Statistics Canada's CANSIM database; calculations by author.

Table 3: Calculated cost of waiting for medically necessary health services from specialist appointment to treatment, by province and specialty, 2010 (\$ thousands)

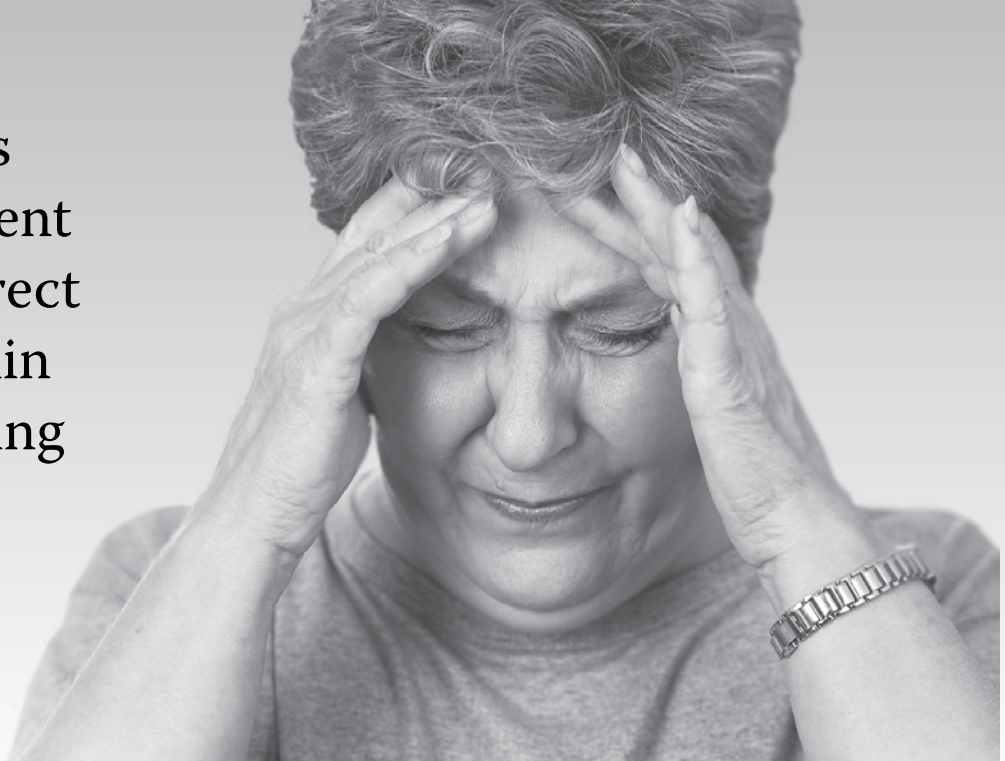
	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	CAN
Plastic surgery	\$17,031	\$1,312	\$5,540	\$3,392	\$2,419	\$2,437	\$769	\$4,353	\$16	\$1,106	\$38,374
Gynecology	\$3,369	\$3,863	\$1,390	\$548	\$4,392	\$2,483	\$172	\$615	\$59	\$473	\$17,364
Ophthalmology	\$21,082	\$35,642	\$3,051	\$782	\$21,498	\$76,734	\$886	\$10,095	\$244	\$976	\$170,990
Otolaryngology	\$9,354	\$4,016	\$22,706	\$1,458	\$6,470	\$1,785	\$424	\$964	\$16	\$551	\$47,744
General surgery	\$6,820	\$8,801	\$4,656	\$1,822	\$6,416	\$19,489	\$532	\$2,195	\$38	\$3,837	\$54,606
Neurosurgery	\$1,380	\$322	\$454	\$9	\$1,529	\$2,604	\$-	\$159	\$-	\$-	\$6,456
Orthopedic surgery	\$26,840	\$25,243	\$42,203	\$5,404	\$35,929	\$14,321	\$2,807	\$17,758	\$19,456	\$3,116	\$193,077
Cardiovascular surgery	\$24	\$12	\$25	\$2	\$43	\$0	\$48	\$2	\$-	\$0	\$155
Urology	\$1,956	\$661	\$-	\$106	\$6,280	\$6,245	\$1,066	\$5,935	\$-	\$2,681	\$24,929
Internal medicine	\$2,685	\$13,562	\$5,203	\$811	\$6,946	\$24,772	\$203	\$1,646	\$2	\$6,007	\$61,836
Radiation oncology	\$29	\$40	\$-	\$-	\$28	\$53	\$16	\$-	\$1	\$1	\$168
Medical oncology	\$15	\$19	\$-	\$-	\$135	\$64	\$-	\$110	\$1	\$7	\$350
Residual*	\$40,671	\$51,700	\$40,137	\$7,315	\$49,172	\$62,534	\$3,934	\$23,061	\$3,628	\$14,071	\$296,221
Total cost	\$131,255	\$145,192	\$125,365	\$21,648	\$141,257	\$213,521	\$10,857	\$66,892	\$23,460	\$32,824	\$912,270

Note: Totals may not match sums of numbers for individual specialties/provinces due to rounding

*The "residual" count is a count of the number of non-emergency procedures for which people are waiting in Canada that are not included in the Fraser Institute's survey. The wait time used for calculating the residual cost is each province's weighted median wait time for all specialties included in *Waiting Your Turn*.

Sources: Barua et al., 2010; Statistics Canada's CANSIM database; Statistics Canada, 2006; calculations by author.

Long waits for treatment impose direct costs in pain and suffering



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of the value of the lost time to each individual,⁴ gives an estimate of the cost of the productive time that was lost while individuals waited for medically necessary treatment in 2010 (table 3).

The estimated cost of waiting for care in Canada for patients who were in the queue in 2010, according to calculations based on the methodology produced by Gliberman and Hoye (1990), was roughly \$912 million—an average of about \$1,105 for each of the estimated 825,827 Canadians waiting for treatment in 2010. Alternatively, that cost works out to roughly \$10,043 for each individual among the 11.0% of patients in the queue who were suffering considerable hardships while waiting for care.⁵

Of course, this number is a conservative estimate of the private cost of waiting for care in Canada. This estimate assumes that only those hours during the average work week should be counted as lost. It places no intrinsic value on the time individuals spend waiting in a reduced capacity outside of the working week. Valuing all hours of the week, including evenings and weekends but excluding eight hours of sleep per night, at the average hourly wage (given in table 2) would increase the estimated cost of waiting to more than \$2.79 billion, or about \$3,384 per person.

This estimate only counts costs that are borne by the individual waiting for treatment. The costs of care provided by family members (in terms of time spent caring for the individual waiting for treatment) and their lost productivity due to difficulty or mental anguish are not valued in this estimate.⁶ Moreover, non-monetary medical costs, such as increased risk of mortality or adverse events that result directly from long delays for treatment, are not included in this estimate (Esmail, 2009a).

In 2009, the estimated private cost of waiting for treatment using the 11.0% estimate, adjusted for inflation,⁷ was slightly less than \$611 million in total—about \$880 per patient. If the cost of the hours lost outside of the work week were included, this estimate would increase to about \$1.87 billion or about \$2,695 per individual after adjusting for inflation. From 2009 to 2010, therefore, the cost of waiting increased by roughly \$225 per Canadian in the queue if only working hours are valued, or by roughly \$689 if all non-sleeping hours are valued. In summary, both the wait time for treatment after seeing a specialist in 2010, and the privately borne cost of enduring that wait time have deteriorated markedly relative to their levels in 2009.

Conclusion

The rationing of health care in Canada through queues for medically necessary health services imposes direct costs on those waiting for care. The ability of individuals who are waiting to enjoy leisure time and earn an income to support their families is diminished by physical and psychological pain and suffering. In addition, friends and family may be asked to help those waiting for treatment, or may suffer similar reductions in their productive lives because of their own psychological pain.

In 2010, the estimated 825,827 Canadians who were waiting for treatment endured an estimated private cost of at least \$912 million, if not substantially more, in lost productivity and leisure time. That cost was, on a per-patient basis, notably greater than the cost in 2009.

Notes

1 The measurement below measures only the cost of the wait time from specialist to treatment and does not capture the cost of the wait time from general practitioner referral to seeing a specialist. Thus, this estimate of the privately borne cost of waiting is an underestimate of the true privately borne cost of waiting.

2 Globerman and Hoye employed this methodology in 1990 to develop an estimate of the cost of waiting for medically necessary treatment in the first measurement of waiting times in Canada published by the Fraser Institute. Follow-up examinations of the privately borne cost of queuing in 2004, 2005, 2006, 2007, 2008, and 2009 published by the Fraser Institute also employ this methodology.

3 Statistics Canada's findings are based on the percentage of survey respondents who reported that "waiting for none-emergency surgery affected their life." Globerman and Hoye's estimate measures the number of patients who "experienced significant difficulty carrying on their work or daily duties as a result of their medical condition." Notably, in a 2003 survey of Canadians, only 13% of those who reported being affected by their wait in the Statistics Canada study reported a loss of income, while 14% experienced loss of work. At the same time, 60% experienced worry, anxiety, and stress, 51% experienced pain, and 31% experienced problems with activities of daily living (Sanmartin et al., 2004). In the most recent Statistics Canada survey, 49% of those who were affected by their wait for care experienced worry, anxiety, and stress, 51% experienced pain, and 36% experienced problems with activities of daily living (Statistics Canada, 2006). The methodology employed here for the estimate of the private cost of waiting attempts to measure much more than just lost work or lost income. Rather, it estimates lost productivity in total, including lost on-the-job productivity, lost enjoyment of life, inability to play sports, etc. In other words, the private cost of waiting for care estimated here values the amount of time Canadians spend waiting for care during which these individuals are unable to participate fully in their lives. Also, this estimate does not necessarily assume that 11.0% of individuals are losing all of their productivity while 89.0% are completely unaffected. Rather, the estimates are constructed in such a way that the lost productivity can be 100% for 11.0% of patients, or 11.0% for 100% of patients, or any combination thereof.

4 Though extending this value of time to all individuals may seem questionable, given that some children and retired seniors will be included in the number of patients in the queue, one need only understand that the lost leisure or ability to concentrate suffered by these individuals must have some value. Since most seniors are enjoying increasing opportunities to seek at least part-time employment in the service sector, their labour/leisure trade-off will be such that the last unit of leisure

enjoyed by a senior citizen is equal in value to the last unit of work that is undertaken. Seniors who do not choose to work are clearly placing a higher value on their leisure time than the labour market will offer for their labour. For children, the value of their leisure (which can potentially be viewed as time for personal growth) or productivity at school (which can be viewed as an investment for the future) is assumed to be, for simplicity, not significantly different from that of a working adult. Furthermore, as there are likely to be few children waiting for treatment, any variation from adult reservation wages is not likely to have a marked effect on the average calculation.

5 Globerman and Hoye estimated the cost of queuing for medically necessary care to be about \$2,900 per patient in 1989. In 2010 dollars, this works out to approximately \$4,517.

6 A 2003 Statistics Canada survey found that 20.2% of individuals whose wait times affected their lives reported increased dependence on family or friends (Sanmartin et al., 2004).

7 The estimate from Esmail (2009b) was revised and is now based on average wage data for all 12 months of 2009 (the originally published figures were based on an average of average wage data for the first eight months of 2009 as data for September to December was not available at the time of publication).

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