

# Access to Spine Care: A Tale of Two Cities

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**ABSTRACT: Introduction:** As governments struggle with increasing demand for accountability within the Canadian Health Care System and set wait-time standards, it is important to objectify data to allow a true understanding of present limitations and to facilitate comparisons to other systems. The purpose of this study was to compare wait list times for a cohort of patients requiring spinal surgery in Calgary, Alberta to a similar cohort in Sydney, Australia. **Methods:** From January 1 until June 30, 2006 all outpatients admitted for spinal surgery to the Foothills Hospital were identified by the surgeons' office. Two time periods were quantified from their charts: (1) time from referral to surgical consultation; and (2) time from surgical consultation to operative intervention. From July 1 until December 31, 2006 patients were similarly identified through Neurosurgical offices at the Prince of Wales Public and Private Hospitals in Sydney, Australia. **Results:** Four hundred ninety-one surgical patients were captured during the six month period in Calgary and 155 patients during the subsequent six months in Sydney. The majority of patients in Sydney were treated in the Private Health Care system. Public patients in Sydney have access to a surgical consultant twice as fast as public patients in Calgary while private patients have access ten times faster. Access to operating room time within the public system is a rate limiting step in both countries. However, Sydney private patients receive their surgery four times faster than Calgary patients. **Conclusions:** Compared to Calgary, access to specialized spine care in Sydney appears more efficient not only in the Private but also the Public Health Care System. Part of this efficiency may arise from offloading from the public into the private system. Solutions proposed to reduce wait list times should consider benefits of a Private Health Care System.

**RÉSUMÉ: Accès aux soins spinaux : parallèle entre deux villes. Introduction :** Les gouvernements font face à des demandes de plus en plus pressantes de reddition de compte en ce qui concerne le système de santé canadien et des standards de temps d'attente fixes. Il est donc important d'avoir des données objectives pour une bonne compréhension des limites actuelles et pour faciliter les comparaisons à d'autres systèmes. Le but de cette étude était de comparer les temps d'attente de patients qui ont besoin d'une chirurgie spinale à Calgary, en Alberta, à une cohorte similaire à Sydney, en Australie. **Méthodes :** Tous les patients externes admis pour une chirurgie spinale au Foothills Hospital entre le 1er janvier et le 30 juin 2006 ont été identifiés par le bureau du chirurgien. À partir de leurs dossiers, nous avons déterminé : 1) l'intervalle entre la demande de consultation en chirurgie et le moment de la consultation; 2) l'intervalle entre la consultation et la chirurgie. Entre le 1er juillet et le 31 décembre 2006, nous avons obtenu des données identiques de bureaux de neurochirurgiens au Prince of Wales Public Hospital et au Prince of Wales Private Hospital de Sydney, en Australie. **Résultats :** Quatre cent quatre-vingt-dix patients ont été recensés à Calgary pendant la première période de six mois et 155 patients à Sydney pendant les six mois suivants. La majorité des patients de Sydney ont été traités dans le système de santé privé. Les patients du système public à Sydney ont accès à un consultant deux fois plus rapidement que les patients du système public à Calgary, alors que les patients du système privé ont accès dix fois plus rapidement. L'accès au temps opératoire dans le système public est une étape limitante dans les deux pays. Cependant les patients du système privé à Sydney ont leur chirurgie quatre fois plus rapidement que les patients de Calgary. **Conclusions :** L'accès aux soins spinaux spécialisés à Sydney semble plus efficace qu'à Calgary, non seulement dans le système de santé privé mais aussi dans le système public. Cette efficacité peut être due en partie à une décharge du système de santé public vers le système privé. Les solutions proposées pour réduire le temps d'attente devraient considérer les bénéfices d'un système de santé privé.

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In 2005 the Canadian Spine Society (CSS) identified nine surgical diagnosis related to spinal pathology in an effort to begin objectifying acceptable wait time periods for this medical subspecialty area (Table). The efforts of the CSS continue, working with national and local stakeholders to define what constitutes appropriate care and what does not. As Federal and Provincial governments struggle with demands from an often disgruntled public and reflect on wait-list management recommended by the Wait Time Alliance of Canada, there exists a need to objectify current practices in Canada so that realistic

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benchmarks can be set and impact of policy change appropriately monitored. The purpose of this study was to establish baseline data for the nine surgical procedures identified by the CSS in a major Canadian referral centre and to compare these wait times to data obtained from a country in which private and public health care coexist. We hypothesized that a system supporting both public and private health care would operate more efficiently than one supporting public health care alone.

## METHODS

From January 1 until June 30, 2006 all surgical spinal cases were screened at the Foothills Hospital in Calgary, Alberta. Demographic, diagnostic, and procedural data were obtained through the outpatient records of the surgeon. All surgeons' offices within the Division of Neurosurgery (n=12) and the Division of Orthopedic Surgery Spine (n=5) were screened on a weekly basis for their inpatient and outpatient surgical cases. The Foothills Hospital is the only tertiary care spinal centre performing complex spinal surgery serving Southern Alberta and parts of Saskatchewan and British Columbia. Single, centralized referral access is available through both Divisions of Orthopedic Surgery and Neurosurgery for this purpose.

Over a similar period (July 1 – December 31, 2006) all surgical cases were tracked at the Prince of Wales public and private hospitals in Randwick, New South Wales, a metropolitan suburb of Sydney, Australia. The Prince of Wales Hospital is one of two major teaching hospitals in Metropolitan Sydney that divide the treatment of level 1 trauma cases and is representative of referral patterns for spine surgery in Australia. All surgeon's cases from within the Department of Neurosurgery (n=5) were screened during this period according to the CSS criteria. Cases from surgeons within the Department of Orthopedics - Spine (n=2) were not available.

Data from cases fitting within one of the nine surgical diagnoses were entered into an electronic spreadsheet, including age, diagnosis, procedure, time from primary care referral to

consultation (R-C), and time from consultation (surgical decision) to operative intervention (C-S). Non-operative cases and cases not encompassed by the CSS criteria were excluded from the analyses. Time from consultation to time of surgery was adjusted to include only the time from when the surgical decision was agreed upon to the time of operative intervention; excluded were any time intervals occupied by consideration of surgery, further diagnostic tests, or non-surgical management. Dates encompassing such intervals were extracted from the consultant's notes and subtracted from the total consultation-to-surgery time.

Data was stratified according to category and summary statistics performed. Comparisons of the means were made between and amongst categories. Similar comparisons were made for aggregate data for all patients from each health care system. Data are expressed as mean  $\pm$  standard error (std err). For the purposes of this study it was assumed that the incidence of spinal disorders in the Australian populations was roughly equivalent to the incidence of spinal disorders in the Canadian population, and that the data from the two institutions was fairly representative of their respective countries. All primary and post-hoc statistical testing was performed using non-parametric Kruskal-Wallis Chi Square techniques with SPSS software.

## RESULTS

In neither Australia nor Canada is spinal surgery recognized as a distinct specialty; therefore physician / population ratios are unavailable. Nonetheless, information about the two parent specialties is available. In 2006 the number of practicing orthopedic surgeons in Alberta was 133 while the number of practicing neurosurgeons was 28, within a total population of 3,326,700.<sup>1,2</sup> In New South Wales the number of practicing orthopedic surgeons in 2006 was 328 and the number of neurosurgeons 52, within a total population of 6,827,700.<sup>3,4</sup> Hence per 100,000 population the number of orthopedic surgeons and neurosurgeons was comparable between countries (Ortho: 4.8 Aus / 4.0 Can; Neuro: 0.8 Aus / 0.8 Can).

**Table: Surgical diagnosis (Canadian Spine Society 2005)**

Category	Surgical Diagnosis	Number of Patients		
		Calgary Public	Sydney Public	Sydney Private
1	C1/2 Instability secondary to Rheumatoid Arthritis – neurologically intact	5	0	2
2	Cervical Myelopathy secondary to Cervical Spinal Stenosis	41	1	7
3	Cervical Radiculopathy from Degenerative Disc Disease	85	2	30
4	Mechanical Neck Pain from single level Cervical Spondylosis	2	0	5
5	Adolescent Idiopathic Scoliosis	0	3	0
6	Neurogenic Claudication secondary to Lumbar Spinal Stenosis	152	13	29
7	Sciatica from Lumbar Disc Herniation	98	7	42
8	Low Back Pain from Segmental Instability	105	2	12
9	Spinal Metastasis without Neurological Deficit	3	0	0
<b>Total</b>		<b>491</b>	<b>28</b>	<b>127</b>

Over the six month data acquisition period 491 patients underwent surgery at the Foothills Hospital within the Canadian public health system for one of the nine CSS diagnoses (average = 29 cases per surgeon). Over a similar time period 127 patients were treated within the Australian private health system at the Prince of Wales Hospital and 28 patients were treated within the public health system (total = 155 surgeries, average = 31 cases per surgeon).

Within the nine surgical categories defined by the Canadian Spine Society, there were no cases of adolescent scoliosis assessed and operated on at the Foothills Hospital during the study period (Table). Varying numbers of patients were treated within the other categories ranging from two patients who received surgery for mechanical neck pain to 152 patients who underwent operations for lumbar claudication. Within the Prince of Wales hospital (public and private) there were no cases of spinal metastases without neurological deficit surgically treated during the observation period. The number of patients in other groups ranged from 2 (C1/2 instability) to 49 (sciatica from lumbar disc herniation).

**Referral to Consultation**

In general the waiting period from referral to consultation in Calgary reflected the urgency of the referral (Figure 1). For example, the average time it took for a patient to see a surgeon for symptomatic spinal metastases without neurological deficit was 2 (± 1 std err) weeks compared to 21 (± 2) weeks for someone with low back pain. On average patients with myelopathy from cervical stenosis waited 15 (± 3) weeks to see a surgeon compared to 24 (± 2) weeks for patients with lumbar stenosis. These differences were statistically significant (K-W Chi Square 27.8; df 7; p=0.000). Post-hoc analyses revealed that patients with spinal metastases, cervical myelopathy, cervical radiculopathy, and sciatica from lumbar disc herniation waited significantly shorter times than patients with non-life

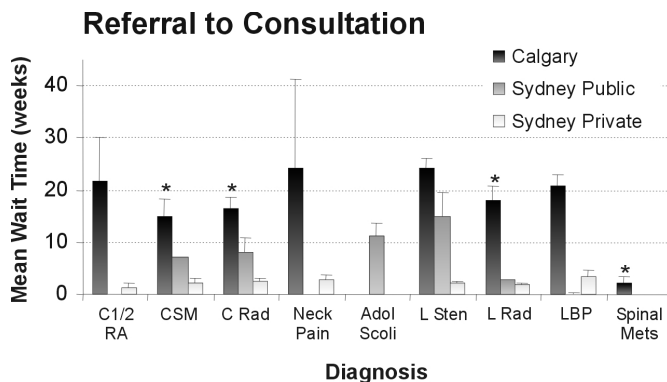
threatening, non-neurologically compromising diagnoses (K-W Chi Square 13.9; df 4; p=0.008).

Within the Sydney public system a similar trend was observed in that patients with cervical myelopathy, cervical radiculopathy, and lumbar radiculopathy (sciatica) waited less time to see a specialist than patients with lumbar stenosis or adolescent idiopathic scoliosis (Figure 1). Because of the small numbers of patients in these public system groups, statistical comparisons were not performed. In all cases however, wait times from referral to consultation in both the Sydney public and private systems were less than those in the Calgary public system. No differences were seen in referral to consultation wait times amongst the nine surgical categories for patients assessed in the Sydney private system (K-W Chi Square 3.43; df 6; p=0.75).

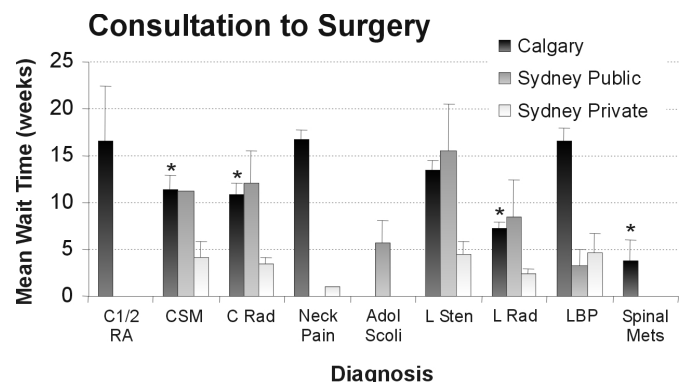
**Consultation to Surgery**

Significant differences within wait times from consultation to surgical intervention were observed amongst the indexed surgical procedures in the Calgary data (K-W Chi Square 53.6; df 7; p=0.000). Similar to referral to consultation, the wait times for consultation to surgery also appeared to reflect a degree of surgical urgency (Figure 2). Post-hoc analyses showed that patients with neurological compromise (cervical myelopathy, cervical or lumbar radiculopathy) or metastatic disease waited less time for surgery than patients with simple structural pathology alone (K-W Chi Square 47.9; df 4; p=0.000). On average in Calgary patients with metastatic disease had the lowest wait times (4 ±2 weeks) while patients with axial neck pain or low back pain waited the longest (17 ±1 weeks).

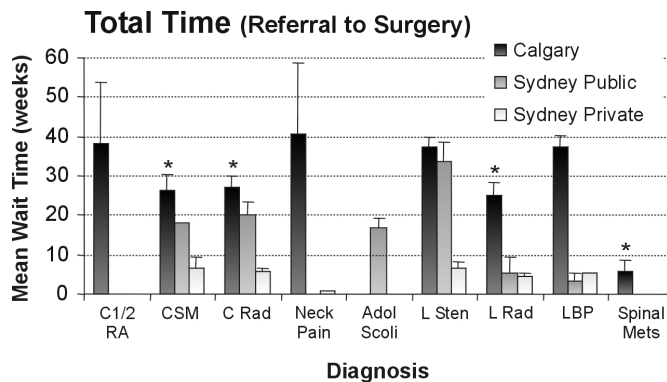
Although statistical comparisons were not performed because of small numbers, time to surgery in the Sydney public system was interestingly similar to the Calgary data (Figure 2). However, even though patients in diagnostic categories with neurological compromise waited less time than patients with



**Figure 1:** Mean wait time in weeks (± std err) for patients in Calgary, Canada and Sydney, Australia from initial referral until seen by a spinal surgeon. Asterisks indicate diagnoses in which wait times were significantly less (p=0.000) compared to other wait times in the Calgary system.



**Figure 2:** Mean wait time in weeks (± std err) from time of consultation or decision to undergo surgery (whichever was later) until time of surgery. Asterisks indicate diagnoses in which time to surgery was significantly less (p=0.000) compared to other wait times in the Calgary system.



**Figure 3:** Total wait time from primary care referral until time of surgery. Within the Canadian Public Health Care System access times ranged from 6 ( $\pm 3$ ) weeks for metastatic disease to 41 ( $\pm 18$ ) weeks for axial neck pain. With the exception of lumbar stenosis, wait times in both the Australian Public and Private Health Care Systems for each indexed procedure were substantially lower. Asterisks indicate diagnoses in which time to surgery was significantly less ( $p=0.000$ ) compared to other wait times in the Calgary system.

lumbar stenosis for surgery, individuals with low back pain and adolescent idiopathic scoliosis had the shortest wait for surgery. There were no differences observed in consultation to surgery wait times amongst the nine surgical categories for patients treated within the Sydney private system (K-W Chi Square 2.72; df 5;  $p=0.74$ ).

### Comprehensive Wait Times

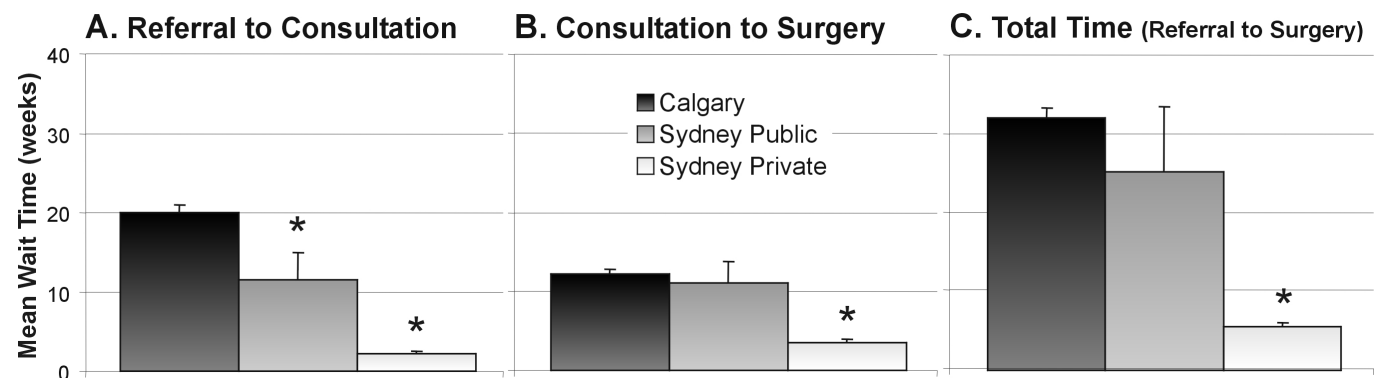
Total access time from referral to surgery reflected trends similar to those observed in each group for the two component

time periods (Figure 3). Patients with neurological compromise of radiculopathy or myelopathy, and patients with metastatic disease made it to surgical intervention significantly faster than patients with asymptomatic instability, neck, or back pain (post-hoc K-W Chi Square 30.6; df 4;  $p=0.000$ ). A similar phenomenon was seen in the Sydney public system. However, there were no differences in wait times between diagnostic groups within the Sydney private system (K-W Chi Square 4.01; df 5;  $p=0.55$ ).

Combined data from all nine surgical categories was examined to provide a more global overview of general spine care access amongst the three health care systems evaluated (Figure 4). The average wait from the time the referral request was submitted until the time of consultation in Calgary over the six month study period was 20 ( $\pm 1$ ) weeks. Sydney public patients waited almost half as long (12 $\pm 3$  weeks) while Sydney private patients were seen ten times more quickly than Calgary patients (2 $\pm 0.2$  weeks). These differences were statistically significant (K-W Chi Square 120; df 2;  $p=0.000$ ). Once the decision for surgery had been made Calgary and Sydney public patients waited another 11-12 weeks for their operation (no difference between groups; K-W Chi Square 3.01; df 1;  $p=0.83$ ). Sydney private patients received their surgery four times more quickly within the significantly shorter time period of three weeks (K-W Chi Square 58.1; df 2;  $p=0.000$ ).

In summary, it took Calgary patients an average of eight months (32 weeks) to receive surgery for a spinal problem after the referral was initiated. This was not statistically different from the six months (25 weeks) waited by Sydney public patients because of low numbers and wider variability (K-W Chi Square 1.80; df 1;  $p=0.18$ ). However Sydney private patients waited on average only 6 weeks from the time of their referral to the time of their surgery (K-W Chi Square 87.4; df 2;  $p=0.000$ ).

## Composite Wait Times



**Figure 4:** Composite wait times for all study patients by health care system in weeks. A. Referral to consultation. On average Calgary patients wait ten times as long to see a surgeon as Sydney private patients and almost twice as long as Sydney public patients. B. Consultation to surgery. Wait times for surgery within the Canadian and Australian public systems are similar once the decision has been made. Private health care provides much quicker access. C. Total time from referral to surgery. On average Calgary patients wait seven weeks longer than Sydney public patients and 26 weeks (6.5 months) longer than Sydney private patients for assessment and surgery. Asterisks indicate statistically significant differences from other groups ( $p=0.000$ ).

## DISCUSSION

Access to health care in the socialized Canadian health-care system is a growing concern amongst patients, medical professionals, and politicians alike. Although commentaries abound and initiatives are in progress, little has been done to objectify the scope and depth of the problem within specialty interests.<sup>5-12</sup> The stakes are high. Not only are patient health and satisfaction in jeopardy, but liability has become a very real concern at all levels. Recently in Alberta a class action suit has been brought to bear on the Ministry of Health and the local health region over denied and timely access for hip replacement.<sup>13</sup>

The data from this paper not only help to establish benchmarks from which to compare wait time progress in Canada, but also provide some insight into the differences between a country in which health care is funded publicly versus one in which both public and private systems exist.

It was not unexpected to find that in a Canadian system of relatively restricted access a pattern of triage appears to influence wait times. Average wait times for metastatic disease were clearly the shortest both from referral to consultation and from consultation to surgery (two weeks and four weeks respectively). Of the nine surgical categories metastatic disease would be generally accepted as the most urgent. Similarly patients with neurological compromise are generally regarded as more urgent than patients with structural pathology alone. This too was borne out in our analyses.

In contrast the more rapid access private system in Australia generated wait times of a more consistent nature irrespective of the surgical category (average = six weeks from referral to surgery). As shown in Figure 3, wait times for all surgical categories in the Australian private system were similar to those for metastatic disease in the Canadian public system.

While patients in Canada have only one system in which they may receive their health care, Australia's health system is a unique mix of both public and private health care designed to make sure all Australians are covered for their health needs. Private health insurers and the public government run system (Medicare) work in tandem with multiple benefits including shorter waiting times for elective surgery and less demand for hospital beds.<sup>14</sup>

The inherent efficiencies delivered by the private system have resulted in over 55% of all operations in Australia being delivered within private hospitals, despite approximately one-third of the population choosing to invest in private health care.<sup>15</sup> Private health insurers charge patients a levy and the government subsidizes the private system to support both capital and operating costs. Patients may have to pay an additional "gap fee" depending on the service provided or level of insurance coverage they have invested in. Additionally, a patient not in a health fund can pay up-front for a privately delivered service with the doctor of their choice thereby avoiding waiting times or "queues" within the public system. Patients can switch between the public and private systems at any time they choose as long as the additional private fees can be paid.

Although in Canada this would be similar to many dental plans provided to families by their employers, the private medical system in Australia is unique in that it is heavily subsidized by the National Government. Payments are made to

private hospitals to support both capital and operating costs. In addition the National Government also functions as a third party insurance provider covering pro-rated gap fees for assessments and procedures.

Hence private health care is available to the majority of Australian citizens who wish to make use of it. This is demonstrated in our data where over a six month period 127 patients underwent elective spinal surgery at the Prince of Wales Private Hospital while only 28 had their surgery in the public system. In other words just over 80% of spine care in Sydney is facilitated by private health insurance.

It is clear from our results that the combination of private and public health care enhances efficiency in Sydney compared to Calgary, reducing wait time from referral to consultation and from consultation to surgery. These differences were most apparent in the Australian private system, but also were present for the minority of patients in the Australian public system for their initial consultation (Figure 1). However, once the decision for surgery was made, both Calgary and Sydney public patients waited similar times to receive their operation, on average three months (Figures 2 and 4). It is attractive to speculate that the Sydney private health system off-loads the public system enough to improve access times for a specialist opinion. However, the same is obviously not true for surgical wait times. This may suggest that government-run health care institutions tend to operate at a limited or fixed efficiency, perhaps determined by fixed budgets rather than patient demand.

As with any study, the limitations of this research must be recognized. Patients were identified through the surgical booking forms necessary to secure operating time. Hence all emergent patients admitted directly to hospital and undergoing surgery during their primary admission were excluded from the analyses. In addition, large numbers of patients are assessed by surgeons and never offered surgery by the nature of their spinal condition. No attempt was made to capture this non-surgical group. Because of screening tools often used by surgeons and their staff to prioritize referrals it is possible that surgically equivocal patients who do not ultimately get offered intervention wait longer than the times reported here. For the same reason, wait times for individual surgeons may be disparate. Finally, it must be acknowledged that the data presented are representative of the cities from which they were collected. It is possible that wait times in more remote areas of Canada such as Sudbury or Australia such as Perth are quite different. However, it is unlikely that patients in more remote areas are handled in a more efficient manner by a tertiary care specialty. Determination of appropriate wait times is beyond the scope of this paper.

In summary, wait times for spine care from referral to consultation and from consultation to surgery in Calgary range from 2 – 24 weeks and appear to be stratified to a degree according to severity of the presenting problem. Although wait times to see a consultant are generally shorter for patients in the Sydney public system, wait times for a surgical procedure are similar between the two countries. However, over 80% of Sydney spine patients access health care through the private system. From the time of referral surgery is completed within 1½ months in contrast to 8 months on average for Calgary patients. At the present time in Calgary, only patients with metastatic spinal disease receive care as quickly. These results

suggest that from the perspective of wait times, two-tiered health care can be beneficial for a majority of the population while maintaining the status quo for those who choose or are otherwise restricted to the public system.

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#### DISCLOSURE

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#### REFERENCES

1. College of Physicians and Surgeons of Alberta Medical Directory. Published by the Council of the College of Physicians and Surgeons, Province of Alberta, 2006: 235-41.
2. Alberta Finance Census of Canada, Population & Dwelling Release 2006. Available from: [www.finance.gov.ab.ca/aboutalberta/census/index.html](http://www.finance.gov.ab.ca/aboutalberta/census/index.html).
3. Royal Australasian College of Surgeons Annual Report 2006. Available from: [www.surgeons.org/Content/NavigationMenu/WhoWeAre/ReportsandPublications/Publications/2006\\_annual\\_report.pdf](http://www.surgeons.org/Content/NavigationMenu/WhoWeAre/ReportsandPublications/Publications/2006_annual_report.pdf).
4. Australian Bureau of Statistics 2006. [www.abs.gov.au/AUSSTATS](http://www.abs.gov.au/AUSSTATS).
5. Comeau P. Wait time benchmarks fall short (letter to the editor). *CMAJ*. 2006;174(3):299-300.
6. Conner-Spady B, Estey A, Arnett G, Ness K, McGurran J, Bear R, et al and the Steering Committee of the Western Canada Waiting List Project. Determinants of patient and surgeon perspectives on maximum acceptable waiting times for hip and knee arthroplasty. *J Health Serv Res Policy*. 2005; 10(2):84-90.
7. Eggerston L. Wait time alliance first to set benchmarks (letter to the editor). *CMAJ* 2005;172(10):1277.
8. Noseworthy T, McGurran J. Top priority. *Can Healthcare Manager* (chmonline.ca). 2004; October:43-5.
9. Pitt DF, Noseworthy TW, Guilbert J, Williams JR. Waiting lists: management, legalities, and ethics. *Can J Surg*. 2006;46(3):170-5.
10. Taylor MC, Hadorn DC, and the Steering Committee of the Western Canada Waiting List Project. Developing priority criteria for general surgery: results from the Western Canada Waiting List Project. *Can J Surg*. 2002;45(5):351-7.
11. Time's Up! Achieving meaningful reductions in wait times. Progress Report by the Wait Time Alliance for Timely Access to Health Care. Canadian Medical Association, April 2007.
12. Webster P. National wait time standards remain elusive (letter to the editor). *CMAJ*. 2005;173(11):1308-9.
13. Court of Queen's Bench of Alberta, Judicial Centre of Calgary 2006; Aug: Action No. 0601-09319.
14. Australian Institute of Health and Welfare (AIHW) 2007. Australian Hospital Statistics 2005-06.
15. Pollard L, Metherell M. The private life of health care. Sydney Morning Herald 06/04/2007. Available from: [www.smh.com.au/news/national/the-private-life-of-health-care/2007/04/05](http://www.smh.com.au/news/national/the-private-life-of-health-care/2007/04/05).