

Profile of the cardiovascular specialist physician workforce in Canada, 2004

Canadian Cardiovascular Society Workforce Project Team*

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The Canadian Cardiovascular Society (CCS) examined the demand for cardiovascular care, the supply of specialist physicians to provide that care and physician survey data on human resource issues, including workload, wait times, satisfaction and future intentions. The CCS used data from the National Physician Survey 2004, the CCS Cardiovascular Specialist Physician Workforce Survey 2001, the Canadian Medical Association's Physician Resource Evaluation Template and procedural volumes from the Canadian Institute for Health Information to analyze key human resource planning issues for cardiologists and cardiac surgeons. There are indications in the 2004 survey data that the average workload continues to be very heavy, with an average workweek of between 55 h (cardiologists) and 64 h (cardiac surgeons), and an additional on-call responsibility of between 106 h (cardiologists) and 196 h (cardiac surgeons) per month, of which 38 h (cardiologists) to 45 h (cardiac surgeons) are spent with patients. As a result, many patients are waiting too long for nonurgent referrals. In addition to the toll that this heavy workload exacts from the current workforce and the long wait times for nonurgent referrals, the workload may also compromise the profession's ability to attract physicians into cardiovascular care. Medical graduates, particularly female graduates, tend to consider workload flexibility and predictability when choosing a specialty area. Supply projections already show a decline in the number of cardiovascular specialists per 100,000 elderly population over the next 15 years. If cardiology and cardiac surgery are perceived by female medical graduates (which now make up over 50% of all graduates) as unattractive areas of specialization, the profession may have difficulty attracting needed new entrants in the future. The CCS Workforce Project Team endorses and supports the 2003 Canadian Medical Association's recommendation for the federal government to establish an independent institute for health human resources to foster and conduct research on the supply, mix, distribution and sustainability of Canada's health workforce. The CCS should also renew its commitment to invest in related activities to improve access to cardiovascular care. The CCS Workforce Project Team also believes that the profession's ability to recruit and retain new medical graduates will depend on how well it addresses the identified quality of work life issues.

Key Words: *Canadian health system; Health care delivery; Health policy; Population health*

In 2004, the College of Family Physicians of Canada, the Royal College of Physicians and Surgeons of Canada, and the Canadian Medical Association (CMA) collaborated to conduct a National Physician Survey (NPS). The NPS looked at workforce issues, including workload, satisfaction and demographics of the current and future supply of physicians in Canada.

Le profil des effectifs spécialisés en santé cardiovasculaire au Canada en 2004

La Société canadienne de cardiologie (SCC) a examiné la demande de soins cardiovasculaires, l'approvisionnement en spécialistes pour prodiguer ces soins et les données d'un sondage auprès des médecins sur les problèmes d'effectifs, y compris la charge de travail, les listes d'attente, la satisfaction et les intentions pour l'avenir. La SCC a utilisé des données du sondage national de 2004 auprès des médecins, du sondage de 2001 sur les effectifs en santé cardiovasculaire de la SCC, de la grille d'évaluation des effectifs médicaux de l'Association médicale canadienne et des volumes de procédure de l'Institut canadien d'information sur la santé afin d'analyser les principaux enjeux en matière de planification des effectifs en cardiologie et en chirurgie cardiaque. D'après les données du sondage de 2004, la charge de travail moyenne continue d'être très lourde, la semaine de travail moyenne oscillant entre 55 heures (cardiologues) et 64 heures (chirurgiens cardiaques), conjuguée à des gardes mensuelles de 106 heures (cardiologues) à 196 heures (chirurgiens cardiaques), dont 38 heures (cardiologues) à 45 heures (chirurgiens cardiaques) avec les patients. Par conséquent, de nombreux patients attendent trop longtemps pour obtenir des consultations non urgentes. En plus des effets néfastes de cette lourde charge de travail pour la main-d'œuvre et des longues listes d'attente de consultations non urgentes, la charge de travail pourrait également compromettre la capacité d'attirer de nouveaux médecins en cardiologie. Les diplômés de médecine, et surtout les femmes, ont tendance à évaluer la flexibilité et la prévisibilité de la charge de travail avant de choisir une spécialité. Les projections d'approvisionnement révèlent déjà une diminution du nombre de spécialistes en cardiologie par tranche de 100 000 personnes âgées au cours des 15 prochaines années. Si les diplômées en médecine (qui représentent désormais plus de 50 % de l'ensemble des diplômés) perçoivent la cardiologie et la chirurgie cardiaque comme des domaines de spécialisation peu attrayants, la profession pourrait éprouver de la difficulté à attirer les nouveaux effectifs dont elle aura besoin. L'équipe du projet sur les effectifs de la SCC avale et appuie la recommandation de l'Association médicale canadienne présentée en 2003 selon laquelle le gouvernement fédéral devrait mettre sur pied un institut indépendant des effectifs en santé afin de favoriser l'approvisionnement, la composition, la répartition et la durabilité des effectifs canadiens en santé et de mener des recherches à cet égard. La SCC devrait également renouveler son engagement à investir dans des activités connexes afin d'améliorer l'accès aux soins cardiovasculaires. L'équipe du projet sur les effectifs de la SCC est également d'avis que la capacité de la profession de recruter et de retenir de nouveaux diplômés en médecine dépendra de la qualité de sa réaction aux problèmes connus reliés à la qualité de vie en milieu de travail.

Human resource planning for Canada's cardiovascular specialist physician workforce has been a priority for the Canadian Cardiovascular Society (CCS) for some time. The NPS provides recent and detailed information for the subspecialties of cardiology and cardiac surgery because respondents were asked to indicate their area of specialization. The CCS,

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TABLE 1
Response rates of the National Physician Survey 2004

	Cardiologists	Cardiac surgeons
Number of responses	267	68
Response rate	27%	32%
95% CI	±6%	±12%

with the assistance of the CMA, has analyzed the results of the NPS to develop a current profile of the cardiovascular specialist workforce in Canada.

METHODS

The CCS established a Workforce Project Team to review the detailed analyses of the survey responses. This team included representation from cardiovascular specialists across Canada and a representative from the CMA. Based on this analysis, the team identified key human resource issues for the cardiovascular physician workforce as documented in the present article.

The survey results reported in the present article are from two sources: the NPS and the CCS's Cardiovascular Specialist Physician Workforce Survey (1), which was conducted in 2001. To provide additional insights into physician human resources issues, the CMA provided projections of the future supply of cardiologists and cardiac surgeons using its Physician Resource Evaluation Template. These three data sources are described below.

Data on physician demographics were taken from the same database as published on the CMA Web site (2).

NPS 2004

The NPS 2004 was a self-reported survey that was sent to all licensed physicians in Canada. The surveys were sent by mail (66%) and by e-mail (34%) using lists generated from the CMA Masterfile. Surveys received by June 30, 2004, were included in the analysis.

A total of 267 cardiologists responded to the NPS, for a response rate of 27%, as shown in Table 1. Sixty-eight cardiac surgeons responded, for a response rate of 32%. Detailed responses to all of the survey questions were provided by the CMA.

Cardiovascular Specialist Physician Workforce Survey 2001

Many of the Workforce Project Team members also participated in the development and analysis of the CCS Cardiovascular Specialist Physician Workforce Survey in 2001, a self-reported survey that was sent to a sample of cardiovascular specialist physicians in Canada. The survey distribution was based on the CMA Masterfile, as was the NPS. Responses were received from 474 cardiologists and 108 cardiac surgeons (response rates of 55% and 58%, respectively).

The CCS survey included many of the same questions posed in the NPS. Therefore, some of the findings from the NPS can be compared with the results from the 2001 survey.

CMA Physician Resource Evaluation Template

The CMA Physician Resource Evaluation Template is a spreadsheet-based stock-and-flow model that incorporates the key parameters in estimating physician supply over the next two decades and enables planners to create various scenarios to test the effects on future supply. Physicians are removed from the model each year to account for retirement, death and emigration. New physicians are added each year based on the number of physicians who have completed their

TABLE 2
Total hours spent on the following activities (excluding on-call activities) in an average week according to the Canadian Cardiovascular Society's Cardiovascular Specialist Physician Workforce Survey 2001 and the National Physician Survey 2004

	Cardiologists (n=257), %	Cardiac surgeons (n=67), %
Patient care and teaching		
Direct patient care without a teaching component	26.6	24.6
Direct patient care with a teaching component	8.9	16.8
Indirect patient care	4.8	4.1
Teaching/education	2.3	3.2
Subtotal	42.6	48.7
Research	4.3	4.0
Administration	2.2	3.1
Managing practice	1.6	1.7
Health facility committees	1.3	1.3
CME/CPD	3.6	3.5
Other	1.1	1.9
Total hours/week*	56.9	64.1

*Totals may not add to 100 due to rounding. CME Continuing medical education; CPD Continuing professional development

postgraduate training, those who return from abroad to active practice and those who are actively recruited for permanent employment from overseas. Additions and deletions to supply are done on an age-, sex- and specialty-specific basis. For each projection year, the model details the demographic characteristics of the physician pool, such as the number of women and the age distribution.

Limitations of the analysis

With only 267 valid responses from cardiologists (including pediatric cardiologists), the results shown for the entire sample are 95% accurate (ie, 19 times out of 20) within ±6%, as shown in Table 1. For cardiac surgeons, the results are 95% accurate within ±12% because of the much smaller sample size. When the results are reported by age or sex, the confidence interval increases materially. Therefore, most of the results shown in the present article are for the total sample of cardiologists or cardiac surgeons.

Where results are compared with data from the 2001 CCS survey, the findings should be interpreted with caution. The sample sizes were so small, especially for cardiac surgeons, that the confidence interval was very broad. Only very large changes were statistically significant. Further, the exact wording of some questions was slightly different between the two surveys. It is difficult to determine the impact, if any, that the changes in wording have on the responses.

RESULTS

Average workload

Overall, physicians from both subspecialties reported a long average workweek (excluding on-call hours). Cardiologists reported an average workweek of 56.9 h, of which 42.6 h were dedicated to patient care (direct and indirect patient care, with or without a teaching component), as shown in Table 2. Cardiac surgeons reported a total average workweek of 64.1 h, of which 48.7 h involved patient care. This compares with an average weekly workload of 52.5 h for all specialists, as shown in Table 3. For both cardiologists and cardiac surgeons, patient

TABLE 3
Hours worked and per cent very or somewhat satisfied with the balance between personal and professional commitments

	Cardiologists	Cardiac surgeons	Cardiologists and cardiac surgeons	All specialists
Hours worked per week (excluding on call)	56.9	64.1	58.4	52.2
Very or somewhat satisfied with balance (%)	49	53	50	55

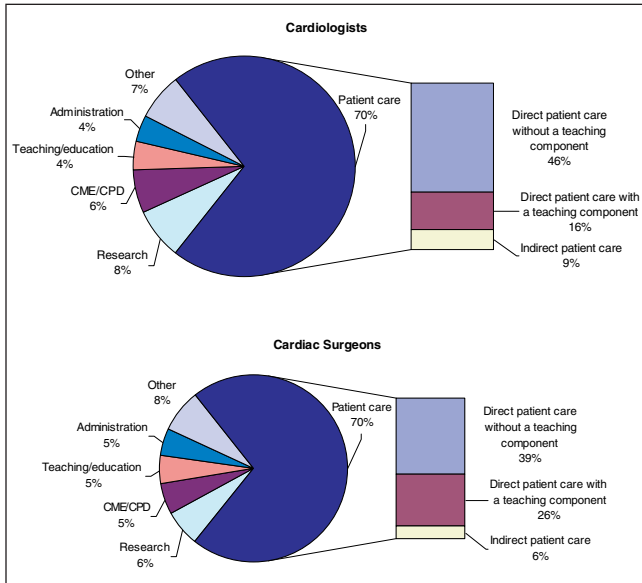


Figure 1) Total hours worked per week by category, according to the National Physician Survey 2004. CME Continuing medical education; CPD Continuing professional development

care consumes about 70% of the total hours per week, as shown in Figure 1.

In addition to the long average workweek, many of these specialists also have on-call responsibilities. Cardiologists reported an average of 106 total on-call hours per month, as shown in Table 4. They also reported that, on average, 38 h per month of the total on-call hours were spent providing direct patient care. Cardiac surgeons reported an average of 196 h on call per month, of which 45 h involved direct patient care. One in four cardiac surgeons reported being on call more than 240 h per month.

These findings are consistent with the results of the 2001 CCS survey, in which cardiologists reported a total workweek (excluding on-call hours) of 55.4 h and cardiac surgeons reported an average of 62.2 h. (Although the wording of the question was the same in 2001 and 2004, the categories for the responses were different. It is difficult to determine the impact, if any, that the different options would have on self-reporting.)

Wait times

The 2004 results show that 64% of cardiologists and 76% of cardiac surgeons would see an urgent patient within one week of being referred, as shown in Table 5.

However, patients with nonurgent conditions wait much longer for the first consultation with a specialist. Thirty-nine per cent of cardiologists reported that a patient with a nonurgent condition would wait between one and three months for a first consultation, and 21% reported a wait of longer than three months.

These results were similar to the responses reported in the CCS 2001 survey.

TABLE 4
On-call hours per month according to the Canadian Cardiovascular Society Cardiovascular Specialist Physician Workforce Survey 2001 and the National Physician Survey 2004

	Cardiologists (n=226), %	Cardiac surgeons (n=57), %
Average number of on-call hours/month		
<120	70	37
121 to 180	16	21
181 to 240	6	12
>240	5	25
Not stated/zero value	3	5
Total*	100	100
Average hours/month	106	196

*Totals may not add to 100 due to rounding

TABLE 5
Typical wait times for a first consultation with a patient after the physician's office is contacted with a referral according to the National Physician Survey 2004

	Cardiologists (n=267), %	Cardiac surgeons (n=68), %
Urgent		
1 day or less	17	35
>1 day, up to 1 week	47	41
>1 week, up to 2 weeks	15	7
More than 2 weeks	7	4
Unsure	3	1
Do not accept referrals	2	0
Not applicable	1	6
No response	6	4
Total*	100	100
Nonurgent		
Up to 1 month	27	69
>1 month, up to 3 months	39	15
>3 months, up to 6 months	14	0
>6 months	8	4
Unsure	3	0
Do not accept referrals	2	0
Not applicable	1	6
No response	5	6
Total*	100	100

*Totals may not add to 100 due to rounding

Procedural volumes

In the face of continued high workloads, it is useful to look at trends in the volume of services and procedures during this same period. As expected, growth in the number of procedures has grown rapidly in the three years from 1999/2000 to 2002/2003, especially for catheterizations (18% over three years) and percutaneous coronary interventions (51%), as shown in Figure 2.

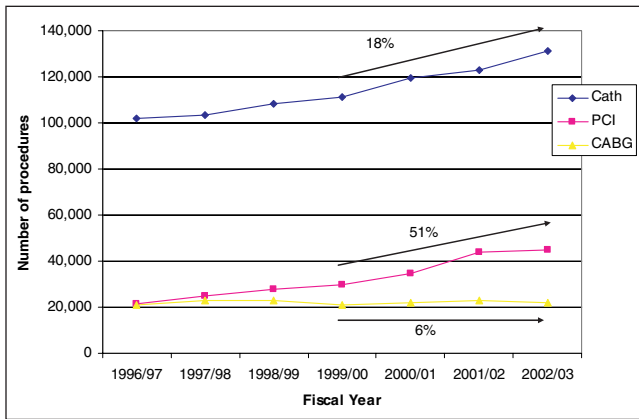


Figure 2) Historical catheterization (Cath), percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) volumes in Canada, 1996/97 to 2002/03. Data from the Canadian Institute for Health Information National Grouping System Reports (3)

TABLE 6
Satisfaction indicators according to the National Physician Survey 2004

	All cardiologists (n=267), %	All cardiac surgeons (n=68), %
Satisfaction with current professional life		
Very satisfied	29	26
Somewhat satisfied	42	47
Neutral	10	12
Somewhat dissatisfied	10	9
Very dissatisfied	3	4
Not applicable	0	0
Not answered	4	1
Satisfaction with balance between personal and professional commitments		
Very satisfied	15	21
Somewhat satisfied	34	32
Neutral	15	13
Somewhat dissatisfied	18	19
Very dissatisfied	13	10
Not applicable	0	0
Not answered	4	4

Totals may not add to 100 due to rounding

The growth in the number of cardiac surgeries has been modest at 6% over the same period.

Professional satisfaction

Overall, respondents in both subspecialties reported that they are reasonably satisfied with their current professional life, as shown in Table 6. In 2004, 71% of cardiologists and 73% of cardiac surgeons reported that they were somewhat satisfied or very satisfied with their current professional life. Only 3% of cardiologists and 4% of cardiac surgeons reported that they were very dissatisfied.

In contrast, only about one-half of the respondents reported that they were somewhat or very satisfied with the balance between personal and professional commitments. Thirty-one per cent of cardiologists and 29% of cardiac surgeons reported that they were somewhat or very dissatisfied with that balance. The proportion who were somewhat or very dissatisfied with their work-life balance rose to 44% among female cardiologists,

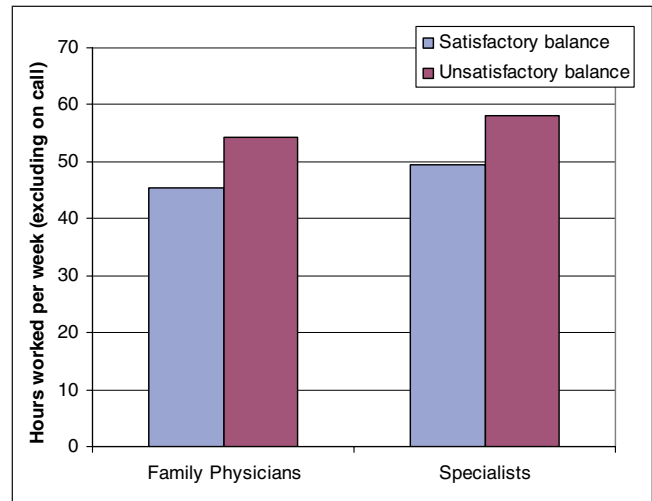


Figure 3) Hours worked and satisfaction with balance between personal and professional commitments

37% among cardiologists under 45 years of age, and 35% among cardiologists between 45 and 54 years of age. In contrast, the proportion of all specialists who reported that they were very or somewhat satisfied with the balance was 55%, compared with only 50% for cardiovascular specialists, as shown in Table 3.

The total survey results show a statistically significant relationship between the number of hours worked per week (excluding on-call hours), and satisfaction or dissatisfaction with the balance between personal and professional commitments. On average, those specialists who reported that they were dissatisfied with the balance between personal and professional commitments worked, on average, 58.0 h per week, compared with 49.4 h for those who reported that they were satisfied with the balance, as shown in Figure 3.

Forty-nine per cent of female specialists indicated that workload flexibility and/or predictability was a factor in choosing their current career selection, compared with 37% of male specialists. Similarly, 12±2% of female specialists indicated that this was the most important fact that led to their current career choice, compared with 8±1% for men.

Workload intentions

The NPS asked specialists about what changes the respondents had made over the past two years and what changes they planned to make over the next two years. Both cardiologists (15%) and cardiac surgeons (18%) reported an intention to reduce their scope of practice over the next two years, as shown in Table 7. The proportion of cardiologists and cardiac surgeons who planned to reduce weekly hours, on-call hours and their scope of practice in the next two years is greater than the proportion who reported having made these changes in the past two years.

Where the cardiovascular specialists indicated they had increased or planned to increase their workload, the most common area was in teaching, research and/or administrative responsibilities. This result is consistent with the finding in the NPS that the most important factor for selecting cardiology (58%) or cardiac surgery (56%) as a specialty was intellectual stimulation or challenge.

Retirement intentions

Four per cent of cardiologists reported an intention to retire within the next two years. This response is consistent with the

TABLE 7
Actual and planned changes to workload according to the National Physician Survey 2004

Actual or planned change	Cardiologists (n=267), %		Cardiac surgeons (n=68), %	
	Actual in past two years	Planned in next two years	Actual in past two years	Planned in next two years
Reduce(d) weekly work hours (excluding on-call hours)	12	32	9	26
Reduce(d) on-call hours	12	24	6	24
Reduce(d) scope of practice	12	15	12	18
Increase(d) teaching, research and/or administrative responsibilities	11	15	13	18
Reduce(d) teaching, research and/or administrative responsibilities	10	15	4	7
Increase(d) weekly work hours (excluding on-call hours)	9	2	4	9
Increase(d) on-call hours	6	1	6	3

Totals may not add to 100 due to rounding

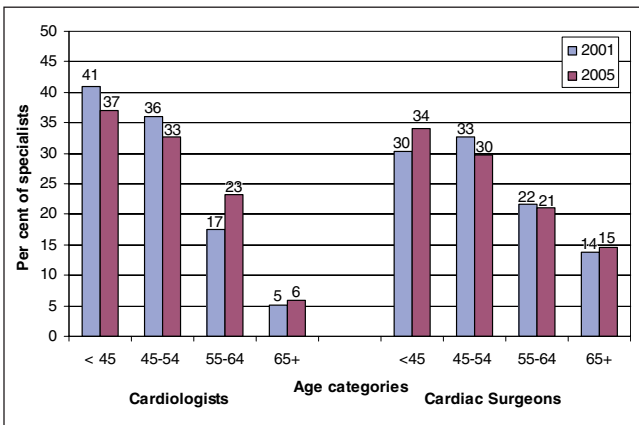


Figure 4) Age distribution (in years) for 2001 and 2005. Data from reference 2

overall demographics of the cardiologist population, where 29% are aged 55 years or older, compared with only 22% in 2001 (2), as shown in Figure 4. For cardiac surgeons, the retirement intentions were greater, with 9% of respondents intending to retire within two years. More than one in three cardiac surgeons (36%) are 55 years of age or older.

Physician supply projections

The CMA Physician Resource Evaluation Template was used to develop supply projections for cardiologists and cardiac surgeons to the year 2021. To provide a context for these projections, the future supply of physicians is expressed as the number of specialists per 100,000 population. Because the majority of cardiac patients are elderly, the population 65 years of age and older tends to be a better predictor of the burden of disease than the population overall. Therefore, we have expressed the ratio as the number of specialists per 100,000 population over 65 years of age.

As shown in Figure 5, when adjusted for the growth in the elderly population, the number of cardiologists is projected to increase slightly from 23.6 per 100,000 elderly population in 2004 to 24.3 per 100,000 in 2011, and then begin to decline to 22.5 per 100,000 by 2021. The proportion of cardiac surgeons to the elderly population is projected to decrease from 5.7 surgeons per 100,000 in 2004 to 4.9 per 100,000 in 2021.

These projections highlight changes in the supply of these physicians, but they do not provide any indication of the adequacy of this number of specialists over time. They also do not reflect any change in the productivity of the workforce due to changing demographics (eg, an aging workforce and a greater proportion of female specialists). They are also not intended to

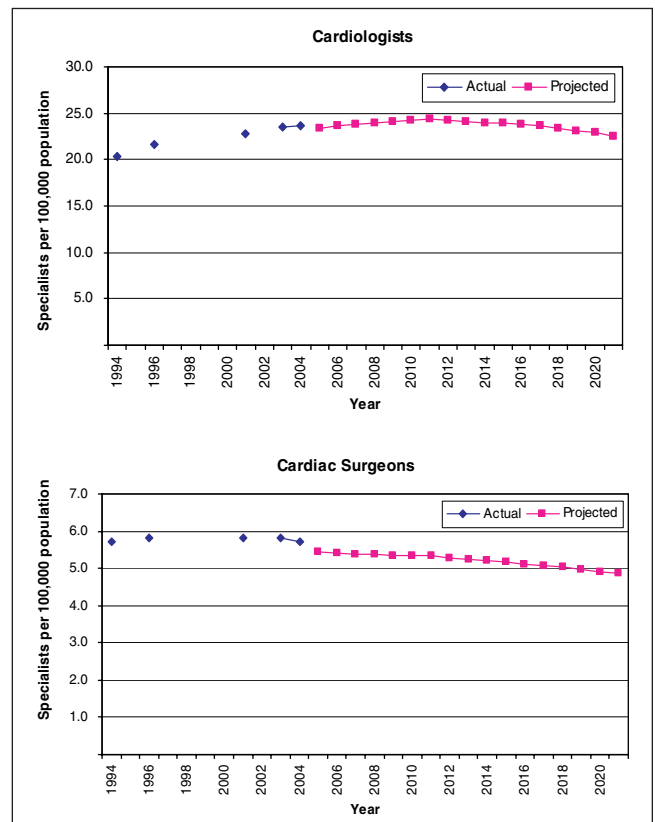


Figure 5) Cardiologists and cardiac surgeons per 100,000 population over 65 years of age, 2005 to 2021

suggest that only the elderly population requires the services of these specialists.

DISCUSSION

There are indications in the 2004 survey data that the average workload continues to be very heavy, with an average workweek of between 55 h (cardiologists) and 64 h (cardiac surgeons), with an additional on-call responsibility of between 106 h (cardiologists) and 196 h (cardiac surgeons) per month, of which 38 h (cardiologists) to 45 h (cardiac surgeons) are spent with patients.

Despite the heavy workloads, patients appear to be waiting longer for nonurgent consultations. These patients are waiting a significant period of time before they can even get into the queue for diagnostic or therapeutic procedures.

These continuing heavy workloads may be contributing to the number of physicians who reported an intention to reduce

weekly workload and on-call hours in the next two years. Although physicians may intend to reduce their hours, they may not necessarily follow through or be successful in their attempts. However, these stated intentions do indicate that many cardiologists and cardiac surgeons are unhappy with their current workload.

In addition to the toll this high workload exacts from the current workforce, it may also compromise the profession's ability to attract physicians into cardiovascular care. Medical graduates, particularly female graduates, tend to consider workload flexibility and predictability when choosing a specialty area. Over 50% of medical graduates are female. Therefore, if cardiology and cardiac surgery are perceived as unattractive areas of specialization because of the heavy workload, the profession may not be able to recruit new entrants from over one-half of the potential candidates.

In 2001, the CCS reported a pending shortage of cardiac surgeons, based on an analysis of workload, increasing demand for services and an aging workforce, with a high proportion of surgeons approaching retirement. By 2005, we have not seen the wave of retirements that was expected. Some recently graduated cardiac surgeons have reported difficulty in finding employment, suggesting to some that there is a surplus of surgeons rather than a shortage. Based on the results of the NPS and an assessment of the current demographics of cardiac surgeons, it is possible that the expected retirements have simply been deferred, resulting in a temporary imbalance between supply of and demand for cardiac surgeons. At the same time, the increasing use of percutaneous coronary intervention as an alternative to cardiac surgery for some patients may have had a greater impact on the demand for cardiac surgery than was expected. However, assuming no change in the underlying nature of the supply curve for cardiovascular specialists in Canada, the proportions of cardiologists and cardiac surgeons relative to the elderly population are expected to decrease by 2021, at the same time as the demand for some services is expected to expand rapidly.

The challenge for planning physician human resources, particularly when the base specialist population is so small, is to understand what factors are driving short-term changes in supply and to ensure that appropriate actions are taken to maintain the balance in the longer term. This is particularly true for cardiac surgeons, with whom we have seen a rapid and unexpected (albeit potentially temporary) shift in the balance between supply and demand in recent years.

RECOMMENDATIONS

Both the 2001 CCS survey and the NPS provided important insights into the cardiovascular specialist physician workforce in Canada. It is important to continue to monitor and analyze these key workload indicators over time to better understand the dynamics of physician human resource planning and the underlying behaviour of this population.

At the 2003 CMA General Council meeting, a resolution was made stating "that the CMA call on the federal government to establish an independent institute for health human resources that would include representatives of the national health professional associations on its governing board in order to foster and conduct research on the supply, mix, distribution and sustainability of Canada's health workforce".

Key indicators must be monitored frequently to ensure timely and appropriate responses to any observed changes in the relationship between the demand for and supply of cardiovascular specialist physicians. As we saw with cardiac surgeons, the

supply dynamics shifted significantly between 2001 and 2004. We need to better understand the relationships among all of the various factors affecting the population-based need for and supply of these specialist resources.

The Workforce Project Team endorses and supports the CMA's recommendations as follows:

Recommendation 1

The CCS continues to advocate for the establishment and ongoing maintenance of an appropriate forum to foster and conduct research on health human resources in Canada. The CCS supports the concept of an independent institute for health human resources as proposed by the CMA.

The availability of sufficient cardiovascular specialist physicians is one critical element in the overall strategy to address access to care issues in Canada. Many concurrent initiatives, including the federal and provincial initiatives to reduce wait times for key services and procedures, and the development of standards for access to care, are equally important in ensuring timely access to care for all Canadians.

Recommendation 2

The CCS continues to invest in activities to improve access to cardiovascular care. These activities include continued monitoring of key indicators of workload and wait times, as well as the development of national benchmarks for access to key cardiovascular services and procedures.

Concerns over quality of work life and ability to balance professional and personal commitments may be a serious obstacle to attracting high-calibre candidates into cardiovascular specialties. This may be particularly true for female medical graduates, who now represent over 50% of the incoming medical workforce.

Recommendation 3

The CCS works to raise the awareness among faculty in cardiac sciences, chiefs of cardiovascular departments and other practising cardiovascular specialists of the potential impact of quality of work life issues on the ability to recruit medical graduates into cardiovascular specialties. The CCS should also encourage the development of initiatives designed to attract top male and female candidates into cardiac sciences (eg, mentorship programs) and the development of programs to address quality of work life issues (eg, networking or support programs, and innovative practice opportunities).

The recommended initiatives are needed to ensure that all Canadians have timely access to cardiovascular services when they are needed and that our standards for access to care are sustainable over time.

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