

## REVIEW

# Systems for the management of respiratory disease in primary care – an international series: Canada

\*Alan Kaplan<sup>a</sup>

<sup>a</sup> Chair, Family Physician Airways Group of Canada

Received 12th December 2007; revised version received 24th February 2008; accepted 11th March 2008

### Abstract

Canada has a universal health care system funded by the government. All people are supposed to have unrestricted access to all essential health care in a timely fashion. Canada has ten provinces and three territories. Health care is funded by each province/territory, with federal payments providing some of the funding.

The bulk of the provision of respiratory care in Canada is provided by primary care practitioners. Across the country we have a family physician shortage; thus, in many areas of the country there is insufficient access since patients do not actually have a family physician. This has less effect on acute medical services, which can be available in ER or walk-in settings, but certainly does affect the provision of services for chronic illnesses.

While thus far the health care system is 'free', there are some significant limitations; the commonest is waiting times for specialist care and investigations. Other significant deficiencies include the lack of coverage for medications for both acute and chronic conditions and of medical devices.

Primary care reforms by local governments have attempted to fix these issues by changing care models. Fee-for-service medicine by physicians is slowly being changed in places to capitation models and other systems such as rewards for managing chronic conditions optimally. Ontario has instituted 'reward systems' for diabetes and smoking cessation. British Columbia has rewards for multiple chronic diseases. In many areas, care in the provinces is regionalised to allow local arrangements to help decide on where and how care is organised.

Respiratory diseases (excluding lung cancer) rank fourth in Canada in the total proportion of direct health care costs (behind neuropsychiatric, injury and cardiovascular diseases). A number of studies have shown that respiratory conditions such as asthma and COPD are underdiagnosed and/or undermanaged. Other conditions need treatment by specialists or physicians with a special interest (TB, cystic fibrosis, lung cancer) and access to these physicians also is a barrier to health care provision. Health care systems are thus part, but not all, of the problem.

© 2008 General Practice Airways Group. All rights reserved.

A Kaplan. *Prim Care Resp J* 2008; 17(2): 73-78.

doi:10.3132/pcrj.2008.00033

**Keywords** Canada, respiratory disease, management, primary care, systems, funding, asthma, COPD, chronic, infection, tuberculosis, cystic fibrosis

### Contents

Introduction .....	74
Primary care service delivery in Canada .....	74
National policy and health service model for providing respiratory care in primary care settings .....	74
Epidemiology .....	75
Smoking .....	75
Asthma .....	75
COPD .....	75
Cystic fibrosis .....	76

\* Corresponding author: Family Physician Airways group of Canada, 17 Bedford Park Avenue, Richmond Hill, L4c 2N9, Canada.  
Tel: +1 (905) 883 1100 Fax: +1 (905) 884 1195 E-mail: for4kids@gmail.com

Tuberculosis .....	76
Other infections .....	76
Access to care .....	77
Facilities .....	77
Future developments .....	77
Conclusion .....	78
References .....	78

## Introduction

This paper on the current provision of primary care services for patients with respiratory disease in Canada, is the second in a planned series of international reviews. In keeping with the aims and objectives of the *Primary Care Respiratory Journal*, the editors commissioned this series of papers to enable clinicians and health service managers to compare and learn from different systems of primary care management for patients with respiratory disease around the world. Each of the papers in the series will follow a similar format, and will include information on national policy and models, epidemiology, access to care, facilities available, and future developments. By summarising and comparing how different countries provide primary care for patients with respiratory disease we hope to stimulate debate and inform the future development of policies aimed at improving the care worldwide for people with respiratory disease.

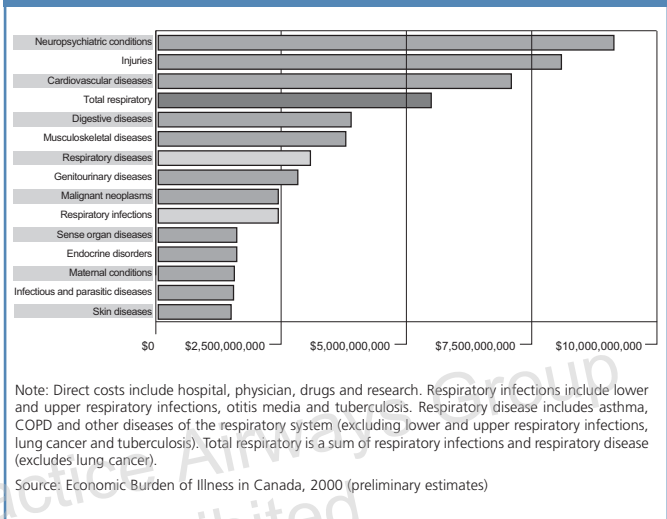
## Primary care service delivery in Canada

Respiratory diseases (excluding lung cancer) rank fourth in Canada<sup>1</sup> in terms of the proportion of direct health care costs (Figure 1), and a number of studies have shown that respiratory conditions such as asthma and COPD are underdiagnosed and/or undermanaged.<sup>2,3,4</sup>

Primary care is performed in Canada by a number of different groups depending on age, area, and access. General practitioners (GPs), certified Family Physicians (FPs – those who are certified through an examination procedure by the College of Family Physicians of Canada after eligibility rendered by either years of work or a training program), primary care pediatricians, and nurse practitioners, may all be the first point of care for chronic disease management. Acute care services are provided in the above locales, but many people also count on the use of local emergency services such as Walk-in clinics, outpatient clinics and emergency department settings.

Overall, the primary care physician (most commonly the FP/GP) is usually the patient's first point of access to care, and is indeed often referred to as the 'gatekeeper' of the system. Consultation by specialists is arranged through a primary care doctor, as services for non-referred patients are paid at a lower rate. All Canadians are covered by their provincial plan for physician visits; ie. the government pays for health care.

Figure 1. Direct health care costs of disease by diagnostic category, Canada, 2000.



This system differs from our neighbour to the south, the United States of America, where patients often choose to go directly to a specialist for a problem. Their physician payments are a blend of government funding, but more often private insurance.

Statistics in Canada<sup>5</sup> show that in 2006 there were a total of almost 32,000 GPs with a rate of 98 GPs/FPs per 100,000 population – with the range from 32 in Nunavut to 203 in the Yukon. In terms of the population, the number of Canadian population per GP/FP in 2006 in Canada was 1095, ranging from 493 in Yukon to 3095 in Nunavut. In Ontario it was 1196.

Patients do not have to pay for part of their assessments. In most other western countries, some payment is made and reclaim procedures operate. Co-payment is often a barrier to poorer people, who often have the greatest health needs, so the lack of co-payment removes this, allowing Canadians to access a doctor more easily than in many other countries.

Patients are free to access services at any time, with any willing, available practitioner, anywhere in the country.

## National policy and health service model for providing respiratory care in primary care settings

The Canada Health Act of 1984 promoted five ideals: public

administration, comprehensiveness, portability, accessibility, and universality. These have stood the test of time and are felt to reflect the Canadian values. Funding for health care is provided by provinces with monies raised with local taxes as well as through federal transfers.

Approximately 70% of total health expenditure is financed by government (federal or provincial/territorial) taxation. Private payments (for things like medications, medical devices, some uncovered investigations, and alternative practitioners such as chiropractors and optometrists) are split between out-of-pocket payments (15%) and private health insurance (12%). The remaining 3% comes from social services, charities and worker's compensation benefits.

All hospitalisations are covered by the public health care system, as are all physician visits and home care services. Medications are covered by the public purse for seniors and those on social services, although from a finite list only. Different provinces have different rules, and as such, medical devices like valved holding chambers and peak flow meters may not be covered. Private health insurance may cover these items, but payment out-of-pocket is not unusual.

## Epidemiology

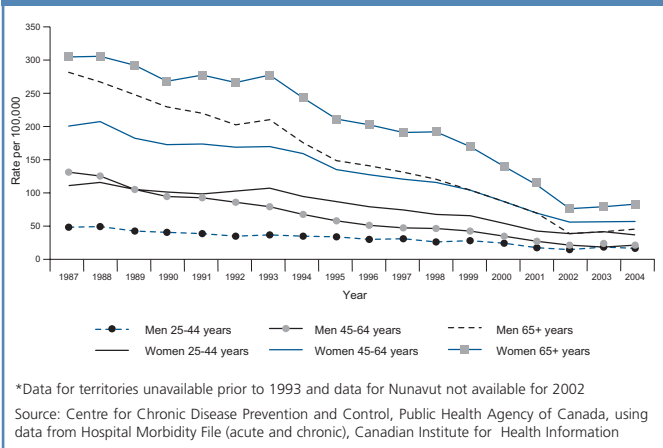
### Smoking

The good news is that the rate of smoking in Canada is decreasing, currently down to 14% of the population, and the average number of cigarettes smoked per day is down to 15.5 (from 20.6 in 1985).<sup>1</sup> Unfortunately, measured health outcomes of morbidity and mortality have not yet shown the same trends.

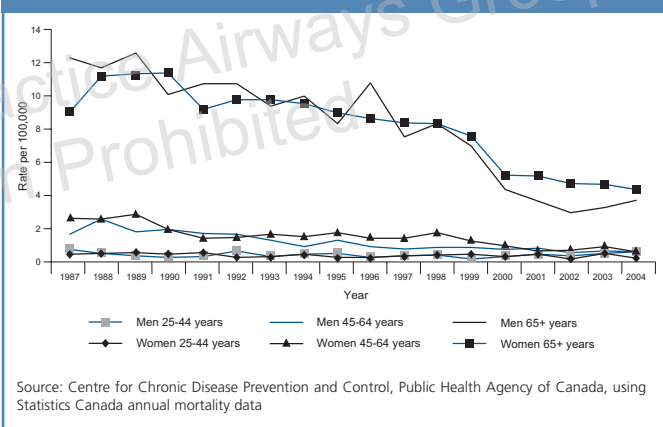
### Asthma

Asthma affects approximately three million Canadian people.<sup>6</sup> The current state of asthma control, patient and physician attitudes, and knowledge gaps, have most recently been established in the TRAC study.<sup>3</sup> It showed that almost all (97%) of the 893 patients believed that they had controlled asthma; however, only 47% had controlled disease according to symptom-based guideline criteria. Just 39% of 463 physicians based their treatment recommendations on the Canadian asthma guidelines most or all of the time, despite having a high awareness of them. Only 11% of patients had written action plans, and one-half of patients with action plans did not use them regularly. Almost three-quarters of patients expressed concerns about taking inhaled corticosteroids. Despite these clearly significant issues, the rate of hospitalisation and deaths have been steadily falling (Figure 2 and 3). Therefore, improvement has occurred, but clearly more improvement is necessary as world guidelines encourage us to tackle the issues of poor control more aggressively.<sup>7</sup>

**Figure 2. Asthma hospitalisation rates (per 100,000), adults aged 25+ years, by age group and sex, Canada\*, 1987/88-2004/05 (age-standardised to 1991 Canadian population).**



**Figure 3. Asthma mortality rates (per 100,000), adults aged 25+ years by age group and sex, Canada, 1987-2004 (age-standardised to 1991 Canadian population).**



### COPD

There are 1.5 million Canadians diagnosed with chronic obstructive pulmonary disease (COPD),<sup>8</sup> which likely misses about half the cases. The higher prevalence of COPD among younger women may well reflect their increased sensitivity to the harmful effects of cigarette smoke.<sup>9</sup> This, as well as the increase in women's smoking rates, is now also showing up in the increase in deaths in women (Figure 4).

The appropriate increased use of spirometry, which is recommended by the current Canadian guidelines,<sup>5</sup> should improve the likelihood of diagnosis of COPD. Earlier diagnosis and symptom treatment could also slow the progression of the disease and optimise functional ability.<sup>10</sup> Clearly the greatest gains in preventing COPD lie in smoking prevention and cessation – a domain to be incorporated by the primary care provider.

Figure 4. Actual and projected number of deaths for COPD by sex, Canada, 1950-2010\*

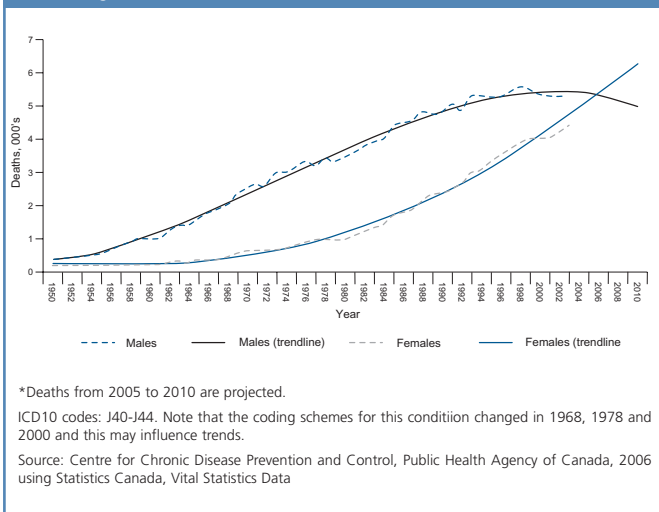
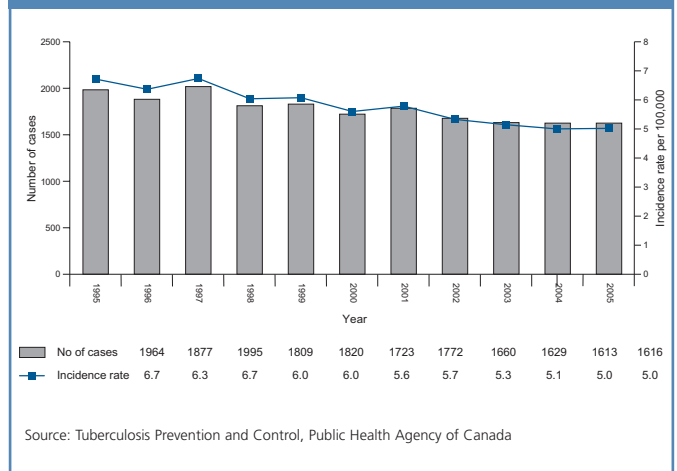


Figure 5. Number of cases and incidence rate (per 100,000) of reported new active and relapsed tuberculosis cases, Canada, 1995-2005



**Cystic fibrosis**

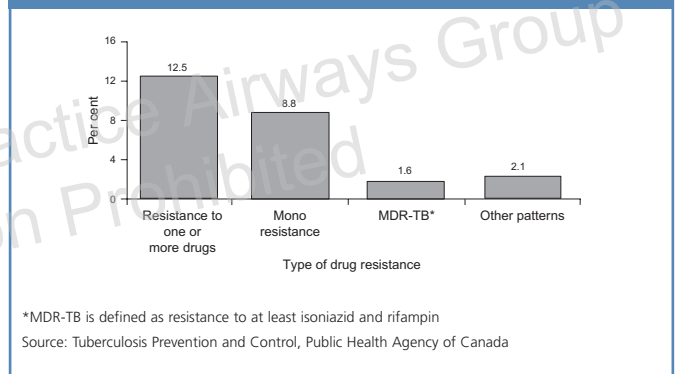
Cystic fibrosis (CF) is a chronic autosomal recessive fatal respiratory disease with a carrier rate of 1 in 25.<sup>11</sup> The current rate of CF in Canada has decreased to 2.8 per 10,000 births compared with approximately 3.7/10,000 births in 1987, partially as a result of the availability of genetic testing.<sup>12</sup> 60% of people with CF are diagnosed in the first year of life, 90% by age 10. Survival into adulthood has changed their health care needs. There are 38 CF clinics across Canada, but only 12 specialising in the care of adults – who have other health care needs such as infertility, liver disease and diabetes. Medication costs for these patients are quite high, and unfortunately financial support for drugs varies considerably by province.

Lung transplants are an option for end stage disease and 66% of patients are alive five years after their transplant for CF.<sup>13</sup> This is obviously a very resource-intensive therapy and is provided in only a few specialised centres. Also, many individuals develop graft failure and require re-transplant to remain alive.<sup>1</sup>

**Tuberculosis**

There were 1,616 cases of new and relapsed active cases of tuberculosis reported in Canada in 2005 (incidence 5.0 per 100,000). The cases reported have been falling, although this decline has slowed recently (Figure 5).<sup>1</sup> Risk factors for infection include being born and living in countries with a higher rate of TB, being Aboriginal, living in a correctional facility, living in an inner city and being impoverished. Up to 10% of Canadians are felt to have latent TB, which could be activated by HIV infection and other immune-compromising conditions such as diabetes, cancer, renal failure, malnutrition, alcohol abuse, long term corticosteroid use, or radiotherapy. HIV patients are more than thirty times more

Figure 6. Overall pattern of reported TB drug resistance in Canada, 2005



likely to get TB than HIV negative ones. We have also seen the advent of anti-TNF alpha treatments for inflammatory conditions. This treatment does unfortunately also carry the risk of unmasking latent TB to an active form.

The prevalence of drug resistant TB is a global problem. It is happening in Canada also<sup>1</sup> and has clear implications for treatment strategies (Figure 6). Appropriate monitoring and comprehensive treatment strategies need to be provided, and the 2007 Canadian guideline is available online.<sup>14</sup>

**Other infections**

Influenza and pneumonia are the leading cause of death from infectious disease in Canada<sup>14</sup> and the sixth highest cause of death overall. Community acquired pneumonia accounts for one million patient doctor visits and 60,000 hospital visits, costing 1 million dollars annually.

Influenza affects 10-20% of the population, which has encouraged a number of provinces to provide public funding for influenza vaccination for all of the population. The Canadian College of Family Physicians has taken the lead in

"FluWatch", an active surveillance program of influenza and influenza-like illnesses, to assist in the creation of early intervention strategies for our communities.<sup>15,16</sup>

## Access to care

A typical patient with respiratory disease is primarily cared for by a primary care practitioner. Appointments are made on a routine or urgent basis and the costs of the visit are completely covered by the provincial health plan. If the care is of an urgent nature, such as an acute asthma attack or an acute exacerbation of COPD, presentation may be directly to an urgent care centre, often hospital-based. If specialist care is needed, referral to a respirologist/pulmonologist, allergist or pediatric respirologist is made. Canada is the first country to have certified asthma educators (CAEs) and we now have a program for certified respiratory educators (CREs) whose remit also includes COPD with the education based on the Canadian COPD and Asthma guidelines.<sup>4,17</sup> Asthma education programs can be found via the Canadian Network for Asthma Care ([www.cnac.net](http://www.cnac.net)) or the patient care group, the Asthma Society ([www.asthma.ca](http://www.asthma.ca)). Direct patient care phone advice can be received from certified asthma educators by the Canadian Lung Association ([www.lung.ca](http://www.lung.ca)). A comprehensive COPD patient resource is provided by the Breathworks program available across Canada at (1 866 717 COPD (2673)). In northern/remote communities, there may not be any FP/GP and the care is provided by nurse practitioners who do special training to allow a greater scope of practice.

Pharmacists are a group of CAEs whose number is growing quickly. This happens at a time that the government is investigating the prescription of medications by pharmacists. This would also potentially change the access of medications by patients.

## Facilities

Primary care practitioners mostly do not do many respiratory diagnostic investigations on their own. About 20% of FP/GPs have office spirometers, and fewer than that do skin-prick allergy testing. Specific IgE (sIgE, Immunocap, RAST blood tests) are available for allergy testing, but in almost all provinces are not covered by the provincial health plan and must be paid for out of pocket by the patient (as opposed to skin testing which is covered by the government). With training, primary care doctors can certainly do allergy testing.<sup>18</sup>

Referral can be made to specialists for these services, and there are more private pulmonary function clinics (with the tests covered by the provincial health plans) springing up all the time. Most of the referrals for pulmonary function testing are sent to local hospital, however. Allergists do the bulk of the allergy skin testing.

## Future developments

A number of Canadian surveys and reports have provided information related to provision of primary care. The Wait Time Alliance was formed in 2004 as a result of physician concerns about Canadians' access to health care. This group included physicians, patients, federal and provincial governments and even a national public opinion survey. In its 2005 report,<sup>19</sup> the Wait Time Alliance recognised that access to care for patients with any medical problem begins with their seeing a family doctor. More than 80% of Canadians say they prefer access to health care through family physicians,<sup>20</sup> and two thirds declare that their family doctors are their most important caregivers.<sup>21</sup> Starfield's research<sup>22</sup> shows that access to primary care and to family physicians is vital for better patient and population health outcomes. Yet, in 2003, more than 2.5 million Canadians told Statistics Canada<sup>23</sup> and in 2004 five million reported to our Decima survey that they did not have a family physician.<sup>20</sup> An estimated 3000 more family doctors are required to meet Canadians' needs.

Of those patients that have an FP, 25% who were referred to a consulting specialist described the time they spent waiting in primary care as 'unreasonably long'. Also, 50% of family doctors who referred their patients to consultants described their patients' wait times in primary care as 'unreasonably long'. The higher percentage for family doctors who feel this way may relate to the burden of responsibility family doctors assume in trying to access specialty care on behalf of their patients. Some specific examples of the Wait time strategy recommendations include consultation for routine hip and knee joint replacement within three months, with the surgery to occur within six months of the consultation, CT scans and MRIs to be done urgently within one week and routinely within 30 days. These standards are still not being met.

Many strategies are unfolding across Canada today with the recognition of the family physician shortage in our country. Emerging plans offer greater resources to family physicians, including access to information technology and team care, as well as remuneration incentives to support comprehensive, continuing care. If these resources are maintained and increased further, they will help attract more medical school graduates to careers in family practice; they could also motivate experienced family doctors to remain in practices that offer ongoing broad-based care for patients.

Primary care reform, population-based care and teams for health care provision may help some of these issues. Governments are increasingly recognising that aggressive management of chronic disease in a chronic disease model will actually decrease morbidity, mortality and health care costs. Primary care health teams are clearly the model by



which this can be done effectively, but this does require some restructuring of our system in Canada.

## Conclusion

Geographically, Canada is the second largest country in the world. The Canada Health Act ensures that medical care is accessible for all Canadians. Funding occurs mostly from taxation, both federally and provincially. Respiratory care is provided by primary care providers, or by secondary care specialists upon referral. Medications are covered for many by government or private health plans. Primary care physicians provide most of the provision of respiratory care in Canada. However, care may be compromised by the significant shortage of Canadian family physicians. Health care reform to create new services for chronic disease management should improve the situation and the overall health of Canadians.

## Conflict of interest declaration

The author is on Canadian government committees for the national surveillance for respiratory disease (Public Health Agency), and with Health Canada, the CFC transition committee, and the section which reviews respiratory and allergy therapeutics.

## References

1. Life and Breath: Respiratory Disease in Canada 2007 Public Health Agency of Canada. <http://www.phac-aspc.gc.ca>
2. FitzGerald JM, Boulet LP, McIvor RA, Zimmerman S, Chapman KR. Asthma control in Canada remains suboptimal: the Reality of Asthma Control (TRAC) study. *Can Respir J* 2006;**13**(5):253-9.
3. Chapman KR, Ernst P, Grenville A, et al. Asthma in Canada, a Landmark Study. *Can Respir J* 2001;**8**(Suppl A):35A-46A.
4. D. O'Donnell, S Aaron, J Bourbeau, et al. Canadian thoracic society recommendations for management of chronic obstructive pulmonary disease-2007 update. *Can Resp J* 2007;**14**(suppl B):5B-32B.
5. Supply, Distribution and Migration of Canadian physicians, 1966-2004, Southam Medical database. Canadian Institute for Health Information ([www.cihi.ca](http://www.cihi.ca))
6. Statistics from the Asthma Society of Canada website: ([www.asthma.ca](http://www.asthma.ca))
7. GINA guidelines 2007. [www.gina.org](http://www.gina.org)
8. Leger report on COPD in Canada, 2007
9. Chen Y, Horne SL, Dosman JA. Increased susceptibility to lung dysfunction in female smokers. *Am Rev Resp Dis* 1991;**143**:1224-30.
10. Petty TL, ed. Strategies in preserving lung health and preventing COPD and associated diseases; the National Lung Health Education Program (NLHELP). *Chest* 1998 Suppl;**113**:2:136S-152S.
11. Fitzsimmons SC. The Changing epidemiology of cystic fibrosis. *Pediatrics* 1993;**122**:1-9.
12. Dupuis A, Hamilton D, Cole DEC. Cystic fibrosis birth rates in Canada; a decreasing trend since the onset of genetic testing. *J Pediatr* 2005;**147**:312-15.
13. Canadian Institute for Health Information, Treatment of end stage organ failure in Canada, 1995 to 2004 (2006 annual report) Ottawa:the Institute; 2006
14. [www.publichealth.gc.ca/tuberculosis](http://www.publichealth.gc.ca/tuberculosis) referenced December 8, 2007
15. <http://www.phac-aspc.gc.ca/fluwatch/index.html> referenced December 8, 2007
16. Helwig D, Major cost reductions reported in Canadian pneumonia study. *eCMAJ Today* Feb 9, 2000. [http://www.cma.ca/cmaj/cmaj\\_today/2000/02\\_09.htm](http://www.cma.ca/cmaj/cmaj_today/2000/02_09.htm)
17. Summary of Canadian Adult and Pediatric Asthma guidelines *CMAJ* 2005;**173** (6 suppl)S1-S56.
18. Ahlstedt S, Murray C. In vitro diagnosis of allergy: How to interpret IgE antibody results in clinical practice. *Prim Care Resp J* 2006;**15**(4):228-36. doi:10.1016/j.pcrj.2006.05.004
19. Wait Time Alliance for Timely Access to Health Care. It's about time! Achieving benchmarks and best practices in wait time management. Final report. Ottawa, Ont: Canadian Medical Association; 2005.
20. College of Family Physicians of Canada. Decima poll. Mississauga, Ont: College of Family Physicians of Canada; 2004.
21. College of Family Physicians of Canada. Decima poll. Mississauga, Ont: College of Family Physicians of Canada; 2003.
22. Starfield B. Is primary care essential? *Lancet* 1994;**344**:1129-33.
23. Statistics Canada. Canadian community health survey. Ottawa, Ont: Statistics Canada; 2003.

Available online at <http://www.theprj.org>