Contrôle de l'asthme au Canada

Aucune amélioration depuis la dernière étude, en 1999

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RÉSUMÉ

OBJECTIF Déterminer si le contrôle de l'asthme au Canada s'est amélioré depuis la dernière grande étude, en 1999, en examinant la mesure dans laquelle l'asthme des patients était contrôlé, les connaissances des patients au sujet du contrôle de l'asthme et leur façon d'utiliser les ressources des services de santé.

CONCEPTION Sondage téléphonique national auprès des patients, entre avril et août 2004.

CONTEXTE Canada.

PARTICIPANTS Quelque 893 adultes de 18 à 54 ans chez qui un diagnostic d'asthme avait été posé dans les 6 mois précédant le sondage.

PRINCIPALES MESURES DES RÉSULTATS Le contrôle de l'asthme des patients, les connaissances des patients au sujet de l'asthme, la fréquence et la durée des exacerbations de l'asthme, et l'utilisation par les patients des ressources des services de santé pour les prendre en charge.

RÉSULTATS On a communiqué au total avec 26 210 ménages inscrits dans une base de données de consommateurs. Exclusion faite des ménages inadmissibles et de ceux où il y avait une barrière linguistique, dans 13% des ménages, une personne a répondu à un sondage de 35 minutes. En se fondant sur les Principes directeurs du consensus canadien, 53% des patients souffraient d'asthme symptomatique non contrôlé. Durant l'année précédente, presque tous les patients avaient eu une aggravation des symptômes; l'exacerbation avait duré en moyenne 13,6 jours chez les patients dont l'asthme n'était pas contrôlé et 8 jours chez les patients dont l'asthme était contrôlé ($P<,02$). Un nombre bien plus considérable de patients dont l'asthme n'était pas contrôlé avaient utilisé les ressources des services de santé pour des épisodes d'asthme, en comparaison des patients dont l'asthme était contrôlé (72% contre 15% pour une consultation urgente, $P<,01$; 32% contre 3% pour une visite à l'urgence, $P<,01$; et 7% contre 0% pour une hospitalisation, $P<,01$) durant l'année précédant le sondage. Les patients comprenaient mal les différences entre les médicaments de soulagement et ceux de contrôle. Le tiers des patients ont signalé que personne ne les avait renseignés sur les médicaments contre l'asthme et le quart ont dit n'avoir reçu aucune formation sur la façon de reconnaître les signes précurseurs d'une exacerbation de l'asthme.

CONCLUSION Le contrôle et la prise en charge de l'asthme sont demeurés sous-optimaux au Canada et n'ont relativement pas changé depuis la grande étude précédente sur la question, en 1999.

POINTS DE REPÈRE DU RÉDACTEUR

- Depuis la dernière mise à jour des Principes directeurs du consensus canadien sur l'asthme, en 2001, on a déployé beaucoup d'efforts pour les diffuser, notamment leur envoi par la poste aux médecins et le maintien d'un site web. Ces efforts ont-ils porté fruit? L'étude sur la réalité du contrôle de l'asthme (Reality of Asthma Control) laisse croire le contraire.
- L'asthme n'était pas contrôlé chez plus de la moitié des patients qui ont répondu au sondage en 2004, ce qui a entraîné une hausse du nombre d'hospitalisations et de visites à l'urgence.
- Cet article fait valoir qu'une prochaine mise à jour des Principes directeurs devrait comporter des méthodes pratiques pour que la connaissance de ces principes se traduise par des changements concrets dans la pratique médicale.

Cet article a fait l'objet d'une révision par des pairs.
Le texte intégral est aussi accessible en anglais à **www.cfpc.ca/cfp.**
Can Fam Physician 2007;53:672-677

Asthma control in Canada

No improvement since we last looked in 1999

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ABSTRACT

OBJECTIVE To determine whether asthma control in Canada had improved since the last major survey in 1999 by exploring how well patients' asthma was controlled, how much they knew about asthma control, and how they used health care resources.

DESIGN National telephone survey of patients between April and August 2004.

SETTING Canada.

PARTICIPANTS Eight hundred ninety-three adults 18 to 54 years old diagnosed with asthma more than 6 months before the survey.

MAIN OUTCOME MEASURES Patients' control of their asthma, patients' knowledge about asthma, the frequency and duration of periods of worsening asthma, and patients' use of health care resources to manage those periods.

RESULTS In total, 26210 households listed in a consumer database were contacted. Excluding ineligible households and households with a language barrier, a member of 13% of the households completed the 35-minute survey. Based on definitions in Canadian guidelines, 53% of patients had symptomatic uncontrolled asthma. In the previous year, almost all asthma patients had experienced worsening of symptoms that lasted on average 13.6 days for patients with uncontrolled asthma and 8.0 days for patients with controlled asthma ($P<.02$). Markedly more patients with uncontrolled asthma used health care resources for episodes of asthma than patients with controlled asthma did (72% vs 15% for urgent office visits, $P<.01$; 32% vs 3% for emergency department visits, $P<.01$; and 7% vs 0% for hospitalizations, $P<.01$) in the year before the survey. Patients were confused about the differences between reliever and controller medications. One third of patients claimed that no one had taught them about asthma medications, and one quarter said they had received no training on how to recognize the early signs of asthma worsening.

CONCLUSION Asthma control and management remained suboptimal in Canada and relatively unchanged since the previous major survey in 1999.

EDITOR'S KEY POINTS

- Since the last update of the Canadian Asthma Consensus Guidelines in 2001, much effort has been put into their dissemination, including mailing them to physicians and maintaining a website. Has this made a difference? The Reality of Asthma Control study suggests not.
- More than half the patients surveyed in 2004 had uncontrolled asthma that resulted in an increased number of hospitalizations and emergency room visits.
- This article suggests that a further update of the guidelines should include practical methods for incorporating them into physicians' practices.

This article has been peer reviewed.
Full text is also available in English at **www.cfpc.ca/cfp.**
Can Fam Physician 2007;53:672-677

Studies conducted in Canada,[1,2] the United States,[3] Europe,[4] and the Asia-Pacific area[5] suggest that asthma is not well enough controlled around the world. This situation exists despite the availability of effective medications and several national, evidence-based asthma treatment guidelines,[6-8] including versions published during the past 15 years in Canada.[9-13]

To improve the situation, a Quebec group proposed a model of automatic referral to asthma education centres for patients who came to emergency departments for acute asthma.[14] This model significantly increased the number of patients who could benefit from educational intervention. In a British Columbia study,[15] a health coordinator made follow-up appointments with patients' family physicians after these patients had been to emergency departments for asthma. This strategy resulted in significantly more follow-up office visits, produced more written action plans, and improved quality of life for patients 6 months after the intervention compared with patients who received usual care. Because increased use of guidelines might improve asthma care, efforts to disseminate Canadian guidelines were stepped up with the 2001 update.[12] Dissemination strategies included mailing the guidelines to physicians and maintaining a website that had the guidelines, information for patients, and other downloads.[16]

Our survey, The Reality of Asthma Control (TRAC),[17] was designed to update 2 earlier Canadian surveys of patients[1,2] to see whether new medications and guideline-implementation strategies had had any effect. It was also designed to enrol a larger patient sample than either of the previous studies,[1,2] and unlike the survey conducted in 1999,[2] it enrolled only adults. The null hypothesis was that the degree of asthma control had not changed in the last years despite efforts to improve care. This article reports on our findings regarding asthma control, knowledge about asthma, and use of health care resources when asthma worsens.

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METHODS

Patient telephone survey

An independent consumer-research company (ICOM Information & Communications Inc, Toronto, Ont) provided the national patient sample frame. In April 2004, trained survey staff from Environics Research Group in Toronto telephoned 26210 Canadian households that contained at least 1 person with asthma. Patients eligible for inclusion were 18 to 54 years old, had been diagnosed with asthma by a physician at least 6 months previously, did not have chronic obstructive pulmonary disease, and had a smoking history of fewer than 20 pack-years. Identification of cases that met these inclusion criteria depended solely on patients' self-reports. At least 5 telephone calls were made to a household before it was classified as "no answer." When a household had more than 1 qualified person, the subject was chosen according to the most recent birthday method. Interviews were allocated according to flexible regional quotas, which were raised in the field to increase the number of completed surveys in regions with smaller populations. A companion paper provides additional details on sample-size determination and regional quotas.[17]

We developed a telephone survey questionnaire, which took about 35 minutes to complete, in conjunction with the research company. The patient survey was pretested on 14 patients and was further refined after the completion of 89 interviews. There was no further measurement of the survey's validity and reliability.

Physician survey

In May 2004, the research company sent letters of invitation to a random sample of family physicians and general practitioners. The sample was taken from a list of 4363 physicians who had previously identified themselves as physicians treating adults with asthma. Physicians were excluded from the sample if they had reported that more than 90% of their patients were younger than 18 years. The letter invited physicians to complete the survey by telephone but, due to the low response rate, questionnaires were mailed out in 3 waves during July, and completed questionnaires were accepted until August 31. This survey took about 25 minutes to complete and did not undergo pilot testing or measurement of its validity and reliability.

Definitions

Patients were classified as having controlled or uncontrolled asthma according to their answers to specific questions about the 6 symptom-based criteria of control outlined in the Canadian Asthma Consensus Guidelines.[11-13] The guidelines specify good control as daytime symptoms fewer than 4 times a week, nighttime symptoms less than 1 night a week, no limitations on physical activity, mild

and infrequent exacerbations, no absences from work or school, and fewer than 4 doses a week of short-acting ß$_2$-agonists. Patients were asked about control during the past year. Patients who had failed to meet 2 or more of the criteria at any time during the past year were classified as having uncontrolled asthma.

The survey defined asthma "worsening" as a time when asthma was at its worst (most out of control) or when symptoms worsened substantially. Asthma "exacerbation" was defined as an episode that required acute care (unscheduled physician visit, emergency department visit, or overnight hospitalization).

Analysis and ethics approval

The research company analyzed the data using SPSS and simple descriptive statistics. Student's *t* test was used for comparisons between groups. The 95% confidence limits were ±3.35%. The final patient sample was weighted by sex to reflect the breakdown among asthma patients in the Canadian population: 58% women and 42% men.[18] An independent company, Institutional Review Board Services of Toronto, gave ethics approval through its Ethics Review Board.

RESULTS

Table 1 lists the number of patients at each stage of the recruitment and interview process. The effective completion rate for the telephone interviews was 7%, and the actual completion rate was 13% (**Table 1**). **Table 2** presents demographic information.

Asthma control

According to the objective criteria of the Canadian Asthma Consensus Guidelines,[11-13] 474 of the 893 patients (53%) had uncontrolled asthma, and 418 (47%) had controlled asthma. (The number of patients adds to 1 less than the total of 893 patients; 1 patient could not be classified because of "don't know" responses or no answers to questions on asthma control.) Only 3% of patients thought they had uncontrolled asthma (**Table 3**).

Among patients who claimed their asthma was well controlled, few could describe aspects of good control. According to 45% of patients, making 1 or 2 visits to an emergency department was an expected part of having asthma.

Worsenings and exacerbations

Almost all patients with asthma (82%) had times when their symptoms became worse during the previous year. For patients with uncontrolled asthma, these periods lasted longer and exacerbations required substantially more health care resources than for patients with controlled asthma (**Table 3**).

Table 1. Number of subjects at each stage of the recruitment and interview process

RESULTS	N (%*)
Total no. of households telephoned	26 210 (100)
Households not eligible	9885 (38)
Nonresidential numbers, numbers not in service	2484 (10)
Households with a language barrier	137 (1)
Subtotal of households not eligible	12 506 (48)
No. of households now eligible (26 210 minus 12 506)	13 704 (100)
No answer, line busy, respondent not available	6539 (48)
Refusal to participate	6128 (45)
Mid-interview refusal to continue	29 (<1)
No. of interviews excluded (to meet regional quotas)	115 (1)
Subtotal of incomplete interviews	12 811 (93)
Net complete interviews (13 704 minus 12 811)	893
Net completion rate (893/[26 210 minus 12 506])	893 (7)
Completion rate (893/[13 704 minus 6539])	893 (12)

*Percentages might not add to 100 due to rounding.

Table 2. Characteristics of the 893 respondents: *Mean age of respondents was 39.2 years.*

CHARACTERISTICS	%
Smokers	
• Current smoker	12
• Former smoker	30
• Never smoked	58
Highest level of education completed	
• Some elementary school	<1
• Elementary school	<1
• Some high school	5
• High school	22
• Community college, vocational or trade school	37
• Some university	10
• University	18
• Postgraduate or professional school	7

Asthma education

One third of patients thought they had not been taught to recognize the early signs of asthma worsening, and one quarter claimed they had received no instruction on what to do when asthma symptoms became worse (**Figure 1**). Up to one third of patients had never heard of the distinction between reliever and controller medications, were

confused about the differences between the 2, or did not know whether to use them regularly or as needed.

DISCUSSION

Hospitalization rates and asthma mortality rates among adults with asthma declined substantially in Canada between 1987 and 2000.[19] Nevertheless, TRAC demonstrates that asthma control remained suboptimal in Canada 5 years after the last large national survey. The 53% of patients who reported they had uncontrolled asthma in TRAC is consistent with results of earlier Canadian studies. In 1999, 57% were uncontrolled (measured by the same criteria as in TRAC),[2] and in 1996, 55% of patients reported daily symptoms.[1]

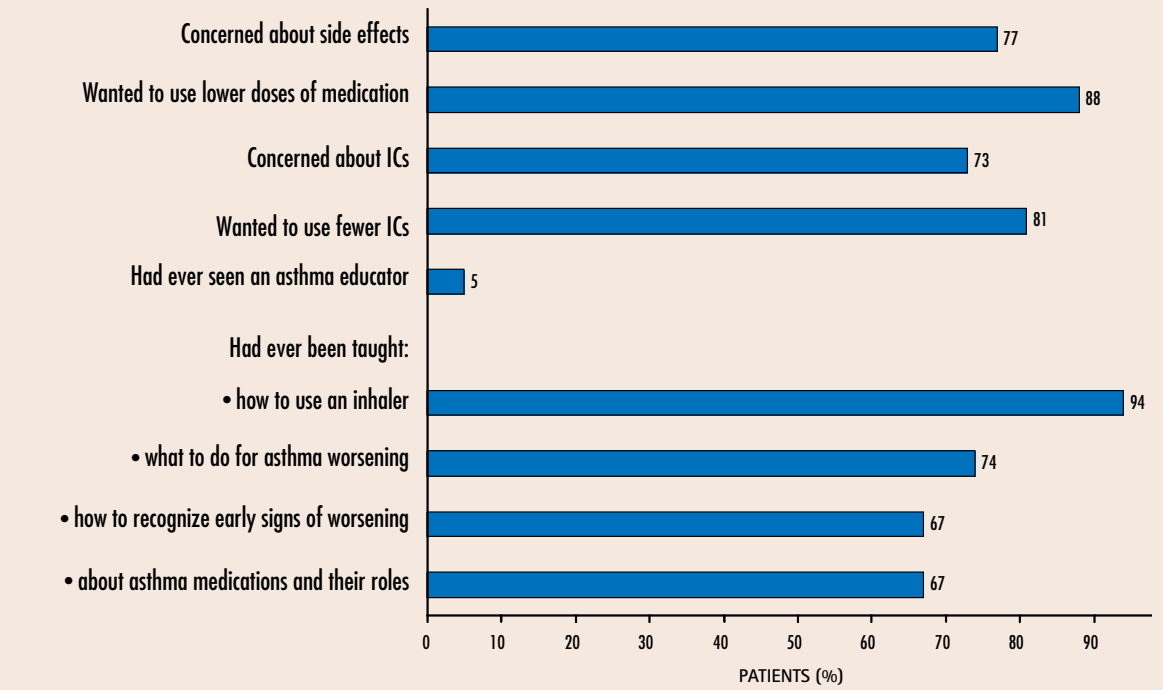
The TRAC results suggest that patients, physicians, or both fail to recognize the potential seriousness of

Table 3. Asthma worsening and exacerbation during the past year by asthma control status

ASTHMA WORSENING AND EXACERBATION	PATIENTS WITH UNCONTROLLED ASTHMA	PATIENTS WITH CONTROLLED ASTHMA	*P* VALUE
No. of patients with worsening asthma and exacerbations	474 (53%)	418 (47%)	
Asthma worsening			
• Patients who experienced at least 1	95%	82%	<.01
• Mean duration (days)	13.6	8.0	<.02
Asthma exacerbation			
• Patients who had at least 1 urgent office visit	72%	15%	<.01
• Patients who had at least 1 emergency-room visit	32%	3%	<.01
• Patients who had at least 1 hospitalization	7%	0	<.01

*Number of patients adds to 1 less than the total of 893 patients; 1 patient could not be classified because of "don't know" responses or "no" answers to questions on asthma control.

Figure 1. Patients' concerns about asthma medications and education issues: *N = 893.*



ICs—inhaled corticosteroids.

exacerbations and emergency department visits for acute asthma. These episodes increase the risk of severe asthma events (including death) for patients who have had repeated or recent periods of worsening asthma,[20] decrease quality of life,[21] and increase the burden on the health care system.[22]

Limitations

The key limitation of the TRAC study is that data were collected retrospectively, so could be subject to recall bias. In addition, the survey's definition of "asthma exacerbation" was somewhat arbitrary, because patients might have treated exacerbations according to their asthma action plan instructions and not gone to see physicians. The high prevalence of emergency department visits suggests that these episodes of worsening asthma were in fact real, serious events, so our study limitations would be more likely to lead to underreporting of worsening asthma than overreporting.

Another potential bias stems from the low response rate to the survey, which took about half an hour to complete. We speculate that the length of the survey largely accounted for this. Because respondents who did make the time to answer the survey might have been more knowledgeable or interested than most patients about asthma, the results might not accurately reflect the state of asthma control in Canada.

Conclusion

Little has changed in control of asthma over the last decade in Canada according to results of community surveys and to public health experts. As part of its ongoing effort to change the situation, the Canadian Thoracic Society's Asthma Committee is planning to update the Canadian asthma guidelines. We suggest that TRAC results are as important for review and reflection as is efficacy data from clinical trials.

In partnership with community-based family physicians and urgent care providers, the committee hopes to develop such things as asthma care maps and standing orders to foster changes in community practice based on evidence. These initiatives, researching best practices in continuing medical education, and encouraging patients to adhere to their prescribed treatment regimens (pharmacotherapy and routine follow up) might help improve asthma control. By fostering partnerships and improving control, we believe we can reduce urgent care visits and improve asthma control in Canada.

Acknowledgment

Environics Research Group developed the survey instruments in conjunction with the authors, conducted the surveys, and analyzed the results. IntraMed provided editorial assistance for this manuscript. A grant from AstraZeneca Canada funded the survey.

Contributors

Dr McIvor, Dr Boulet, Dr FitzGerald, Ms Zimmerman, *and* **Dr Chapman** *contributed to study concept and design, analysis and interpretation of data, and preparing the article for submission.*

Competing interests

Dr Boulet *has received honoraria, lecture fees, research sponsorship, funding for participating in asthma treatment studies, or support for producing educational materials from 3M, Altana, Asthmatx, AstraZeneca, Boehringer-Ingelheim, Dynavax, Genentech, GlaxoSmithKline, IVAX, Merck Frosst, Novartis, Roche, Schering, and Topigen.* **Dr FitzGerald** *has received funding from AstraZeneca for research, for participating on advisory boards, and for presenting continuing health education seminars.*

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References

1. Joyce DP, McIvor RA. Use of inhaled medications and urgent care services. Study of Canadian asthma patients. *Can Fam Physician* 1999;45:1707-13.
2. Chapman KR, Ernst P, Grenville A, Dewland P, Zimmerman S. Control of asthma in Canada: failure to achieve guideline targets. *Can Respir J* 2001;8(Suppl A):35-40A.
3. GlaxoSmithKline. *Asthma in America™: a landmark survey*. Update date not given; cited 2005 Apr 7. Research Triangle Park, NC: GlaxoSmithKline; 2005. Available at: **http://www.asthmainamerica.com**. Accessed 2006 December 12.
4. Rabe KR, Vermeire PA, Soriano JB, Maier WC. Clinical management of asthma in 1999: the Asthma Insights and Reality in Europe (AIRE) study. *Eur Respir J* 2000;16:802-7.
5. Lai CK, De Guia TS, Kim YY, Kuo SH, Mukhopadhyay A, Soriano JB, et al; Asthma Insights and Reality in Asia-Pacific Steering Committee. Asthma control in the Asia-Pacific region: the Asthma Insights and Reality in Asia-Pacific Study. *J Allergy Clin Immunol* 2003;111(2):263-8.
6. National Asthma Education and Prevention Program; National Heart, Lung, and Blood Institute; National Institutes of Health. *Expert panel report: guidelines for the diagnosis and management of asthma. Update on selected topics 2002*. NIH publication no. 02-5074. Ottawa, Ont: National Institutes of Health; 2003.
7. British Thoracic Society, Scottish Intercollegiate Guidelines Network. *British guideline on the management of asthma. A national clinical guideline*. Revised. London, Engl: British Thoracic Society, Scottish Intercollegiate Guidelines Network; 2004.
8. Ministry of Health and Welfare, Japan. Asthma prevention and management guidelines. *Int Arch Allergy Immunol* 2000;121(Suppl 1):i-viii,1-77.
9. Hargreave FE, Dolovich J, Newhouse MT. The assessment and treatment of asthma: a conference report. *J Allergy Clin Immunol* 1990;85(6):1098-111.
10. Ernst P, FitzGerald J, Spier S. Canadian Asthma Consensus Conference: summary of recommendations. *Can Respir J* 1996;3:89-100.
11. Canadian Asthma Consensus Group. Canadian asthma consensus report, 1999. *CMAJ* 1999;161(11 Suppl):S1-62.
12. Boulet L-P, Bai TR, Becker A, Bérubé D, Beveridge R, Bowie DM, et al. What is new since the last (1999) Canadian asthma consensus guidelines? *Can Respir J* 2001;8(Suppl A):3-27A.
13. Lemière C, Bai T, Balter M, Bayliff C, Becker A, Boulet L-P, et al on behalf of the Canadian Adult Consensus Group of the Canadian Thoracic Society. Adult asthma consensus guidelines update 2003. *Can Resp J* 2003;11(Suppl A):9-18A.
14. Robichaud P, Laberge A, Allen MF, Boutin H, Rossi C, Lajoie P, et al. Evaluation of a program aimed at increasing referrals for asthma education of patients consulting at the emergency department for acute asthma. *Chest* 2004;126:1495-501.
15. Sin DD, Bell NR, Man SF. Effects of increased primary care access on process of care and health outcomes among patients with asthma who frequent emergency departments. *Am J Med* 2004;117(7):479-83.
16. Canadian Asthma Consensus Guidelines Secretariat. *Asthma*. [©2000-2003, updated 2003 Jul 28; cited 2006 Jan 31]. Toronto, Ont: Canadian Asthma Consensus Guidelines Secretariat; 2003. Available at: **http://www.asthmaguidelines.com**. Accessed 2006 December 12.
17. FitzGerald JM, Boulet L-P, 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.
18. Statistics Canada. *Canadian community health survey, 2003*. Survey no. 3226. Ottawa, Ont: Statistics Canada; 2003.
19. Centre for Chronic Disease Prevention and Control, Chronic Respiratory Diseases, Public Health Agency of Canada. *Facts and figures—asthma*. Updated 2004 June 16; cited 2005 Jul 12. Ottawa, Ont: Public Health Agency of Canada; 2004. Available at: **http://www.phac-aspc.gc.ca/ ccdpc-cpcmc/crd-mrc/facts_asthma_e.html**. Accessed 2006 December 12.
20. Magadle R, Berar-Yanay N, Weiner P. The risk of hospitalization and near-fatal and fatal asthma in relation to the perception of dyspnea. *Chest* 2002;121:329-33.
21. Juniper EF, Svensson K, Mörk A-C, Ståhl E. Measuring health-related quality of life in adults during an acute asthma exacerbation. *Chest* 2004;125:93-7.
22. Rodrigo GJ, Rodrigo C, Hall JB. Acute asthma in adults. A review. *Chest* 2004;125:1081-102.