

# Canadian physicians' attitudes about and preferences regarding clinical practice guidelines

Robert S.A. Hayward,\*† MD, MPH; Gordon H. Guyatt,\*† MD, MSc; Karen-Ann Moore,† MSc; K. Ann McKibbon,† MLS; Anne O. Carter, MD, MHSc‡

## Abstract

**Objective:** To assess Canadian physicians' confidence in, attitudes about and preferences regarding clinical practice guidelines.

**Design:** Cross-sectional, self-administered mailed survey.

**Participants:** Stratified random sample of 3000 Canadian physicians; 1878 (62.6%) responded.

**Setting:** Canada.

**Outcome measures:** Physicians' use of various information sources; familiarity with and confidence in guidelines; attitudes about guidelines and their effect on medical care; rating of importance of guidelines and other sources of information in clinical decision-making; rating of importance of various considerations in deciding whether to adopt a set of guidelines; and rating of usefulness of different formats for presenting guidelines.

**Main results:** In all, 52% of the respondents reported using guidelines at least monthly, substantially less frequently than traditional information sources. Most of the respondents expressed confidence in guidelines issued by various physician organizations, but 51% to 77% were not confident in guidelines issued by federal or provincial health ministries or by health insurance plans. The respondents were generally positive about guidelines (e.g., over 50% strongly agreed that they are a convenient source of advice and good educational tools); however, 22% to 26% had concerns about loss of autonomy, the rigidity of guidelines and decreased satisfaction with medical practice. Endorsement by respected colleagues or major organizations was identified as very important by 78% and 62% of the respondents respectively in deciding whether to adopt a set of guidelines in their practice. User friendliness of the guidelines format was thought to be very important by 62%; short pamphlets, manuals summarizing a number of guidelines, journal articles and pocket cards summarizing guidelines were the preferred formats (identified as most useful by 50% to 62% of the respondents).

**Conclusions:** Canadian physicians, although generally positive about guidelines and confident in those developed by clinicians, have not yet integrated the use of guidelines into their practices to a large extent. Our results suggest that respected organizations and opinion leaders should be involved in the development of guidelines and that the acceptability of any proposed format and medium for guidelines presentation should be pretested.

## Résumé

**Objectif :** Évaluer la confiance que les médecins du Canada accordent aux guides de pratique clinique, leurs attitudes et leurs préférences à ce sujet.

**Conception :** Questionnaire postal transversal à remplir soi-même.

**Participants :** Échantillon aléatoire stratifié de 3000 médecins du Canada; 1878 (62,6 %) ont répondu.

**Contexte :** Canada.

**Mesures des résultats :** Utilisation, par les médecins, de diverses sources d'information; connaissance des guides et confiance qu'ils leur accordent; attitudes au



## Evidence

## Études

From the Departments of \*Medicine and †Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ont.; and ‡the Research Directorate, Canadian Medical Association, Ottawa, Ont.

*This article has been peer reviewed.*

*Can Med Assoc J 1997;156:1715-23*

sujet des guides et de leur effet sur les soins médicaux; importance accordée aux guides et aux autres sources d'information dans la prise de décisions cliniques; évaluation de l'importance de divers facteurs qui jouent dans la décision d'adopter ou non une série de guides; évaluation de l'utilité de différents formats de présentation des guides.

**Principaux résultats :** Dans l'ensemble, 52 % des répondants ont déclaré utiliser des guides au moins une fois par mois, ce qui est beaucoup moins fréquent que les sources d'information habituelles. La plupart des répondants ont dit avoir confiance dans les guides établis par diverses organisations médicales, mais de 51 % à 77 % ne faisaient pas confiance aux guides établis par les ministères provinciaux et fédéral de la Santé ou par les régimes d'assurance-maladie. Les répondants ont en général une attitude positive au sujet des guides (p. ex., plus que 50 % affirment qu'il s'agit d'une source commode de conseils et de bons moyens d'éducation); la perte d'autonomie, la rigidité des guides et la baisse de la satisfaction à l'égard de la pratique de la médecine préoccupaient toutefois de 22 % à 26 % des répondants. L'aval de collègues respectés ou d'organisations d'envergure a été jugé très important par 78 % et 62 % des répondants respectivement lorsqu'il s'agit de décider s'il faut adopter ou non une série de guides dans leur pratique. La facilité d'utilisation du format des guides a été jugée très importante par 62 % des répondants qui privilégient, comme format, les brefs dépliants, les manuels qui résument de nombreux guides, les articles de journaux et les cartes format porte-feuille qui résument des guides (jugées plus utiles par 50 % et 62 % des répondants).

**Conclusions :** Même s'ils ont une attitude généralement positive au sujet des guides et font confiance à ceux qui sont établis par les cliniciens, les médecins du Canada n'ont pas encore intégré et généralisé l'utilisation des guides dans leur pratique. Nos résultats indiquent que des organisations respectées et des meneurs d'opinion devraient participer à l'élaboration de guides et que l'acceptabilité de tout format et moyen proposé pour la présentation des guides devrait faire l'objet d'essais préalables.

Canada's health care system is strained by increasing demands for expensive services and decreasing resources with which to meet those demands. The resulting scrutiny of health practices has shown that physicians faced with similar patients often make different decisions. Such practice variation is not consistently explained by differences in practice location, patient characteristics or preferences.<sup>1,2</sup> Moreover, practice variations often concern health problems for which there is good evidence about optimal management. Clinical practice guidelines are promoted as a strategy for linking evidence to practice, reducing practice variation and controlling health care costs.

The rapid proliferation of guidelines suggests optimism about their power to effect change. Although some studies suggest that guidelines may improve practice,<sup>3,4</sup> it has also been shown that clinicians are often unaware of existing guidelines or, if aware, may not change their behaviour.<sup>5-10</sup> Consequently, there is increasing emphasis on overcoming barriers to the dissemination and implementation of guidelines.<sup>11</sup> Such barriers may include physician attitudes toward guidelines, accessibility of guidelines and acceptability to physicians of different formats for presenting guidelines.

We have previously described American internists' attitudes toward clinical practice guidelines<sup>12</sup> and their preferences about the format and content of guidelines.<sup>13</sup> In this article we report results from a survey of Canadian physicians about their use of and attitudes toward guidelines and other information sources. We also explore physicians' preferences about the dissemination and presentation of guidelines.

## Methods

### Questionnaire

We adapted and enhanced the questionnaire used to survey American internists about their attitudes toward guidelines.<sup>10</sup> The Canadian instrument addressed the broader interests and needs of all physicians and referred to Canadian health organizations and guidelines developers. The questionnaire was translated into French and then translated back into English, and the 2 English versions were compared as a test of the accuracy of the French translation.

We asked physicians about (a) their use of a variety of



information sources, and the impact of those sources on their decisions; (b) their familiarity with and confidence in guidelines issued by various organizations; (c) their attitudes about guidelines and their effect on medical care; (d) the importance of guidelines and other sources of information in clinical decision-making; (e) the importance of various considerations in deciding whether to adopt a set of guidelines and (f) the usefulness of different strategies to disseminate and present guidelines.

Familiarity with, confidence in and attitudes about guidelines were assessed using 5-point ordinal scales, with anchors appropriate to the judgement requested (e.g., 1 = not familiar, 5 = very familiar; 1 = no confidence, 5 = great confidence; and 1 = least useful, 5 = most useful).

### **Sample and survey procedure**

We used the CMA Masterfile to identify all nonretired Canadian physicians who were in active practice; we excluded those in training (i.e., interns, residents and fellows). Physicians were grouped into 5 regions (Atlantic region, Quebec, Ontario, British Columbia and the Northwest region [which comprised Manitoba, Saskatchewan, Alberta, the Northwest Territories and the Yukon Territory]) and 8 specialties (primary care [without College of Family Physicians of Canada certification], family medicine [with certification], internal medicine, surgery, obstetrics and gynecology, pediatrics, psychiatry and "other"). Using a random sampling technique, stratified by region and specialty, we selected about 600 physicians from each region. The stratified sample design maximized the likelihood that our sample would represent the selected regions and specialty groups.

Each physician was assigned a number that was placed on the cover of mailed questionnaires. The same number was used to obtain demographic and medical specialty information from the CMA Masterfile. This information was not made available to the study team until data from all returned surveys had been abstracted. In this way, we were able to identify nonrespondents, compare demographic characteristics of respondents and nonrespondents, and preserve the anonymity of physicians during data abstraction and analysis. Information from 20% of the completed questionnaires was abstracted again to test the reliability of data-entry procedures.

The questionnaire was mailed to the 3000 selected physicians in 1994, accompanied by a letter from the CMA president encouraging physicians to participate. Physicians received a copy in English or French according to the language preference recorded in the Masterfile. Follow-up reminders and additional copies of the questionnaire were sent to nonrespondents 1 and 2 months after the first mailing. Data collection was stopped 6 weeks

after the third mailing. Finally, a letter was sent to all nonrespondents asking them to complete a brief checklist of possible reasons for not completing the survey.

### **Statistical analysis**

The proportion of respondents choosing different response options was calculated for each question, with 5-point response scales collapsed into 3 categories (1 + 2, 3, and 4 + 5). For all response frequencies and multiple regression analyses, weights were used that reflected the geographic and specialty strata of the sample and the regional differences in response rates.

We explored associations between responses to each question and the following variables: age, sex, year of graduation (before 1966, 1966–77, 1978–86 or after 1986), geographic region, language, clinical certification (primary care or specialty), academic affiliation (Yes or No), number of hours per week in practice (20 hours or more, or less than 20 hours), primary setting of clinical activity (solo, group or institutional practice), involvement with guidelines (no guidelines-related activity, involvement with quality-assurance reviews or audits, or membership on committee reviewing or formulating guidelines), self-reported impact of guidelines on practice in the last year (none or any), access to a computer with a modem (Yes or No), access to computer databases (Yes or No) and access to CD-ROM databases (Yes or No). We chose these variables on the basis of our hypotheses that they might explain variation in attitudes toward guidelines and in preferences for guidelines dissemination and presentation.

Initially we conducted simple linear regression analyses of each variable with each outcome and identified significant associations ( $p < 0.01$ ). These were entered into a multiple stepwise linear regression model that calculated the proportion of variance explained by each variable. From this we identified variables that proved to be statistically significant predictors ( $p < 0.001$ ). Our criterion for statistical significance was stringent because of the multiple comparisons made. The large sample in this study was associated with a number of statistically significant, but quantitatively trivial, differences between groups. Therefore, a criterion for practical importance (a shift in the mean ordinal response of at least 0.3 points on a 5-point scale) was applied. The criteria for statistical significance and practical importance were intuitive and arbitrary.

To facilitate interpretation of our results we report the exact parameter estimate from the univariate regression model and the proportion of variance explained in the multivariate model. For example, a parameter estimate of 0.68 associated with access to computerized databases can be interpreted as follows: physicians with such access



scored, on average, 0.68 points higher on the 5-point scale than those who did not have such access.

## Results

### Characteristics of physicians

Of the 3000 physicians in our original sample 1878 (62.6%) returned a completed questionnaire. The re-

**Table 1: Characteristics of physicians who responded to survey on attitudes and preferences regarding clinical practice guidelines (CPGs) and of nonrespondents**

Characteristic	No. (and %) of physicians	
	Respondents <i>n</i> = 1878	Nonrespondents <i>n</i> = 1122
<b>Year of graduation</b>		
Before 1966	557 (30)	328 (29)
1966–1977	655 (35)	384 (34)
1978–1986	441 (23)	296 (26)
After 1986	225 (12)	114 (10)
<b>Sex</b>		
Female	409 (22)	246 (22)
Male	1469 (78)	876 (78)
<b>Language of questionnaire</b>		
French	237 (13)	262 (23)
English	1641 (87)	860 (77)
<b>No. of hours per week in patient care</b>		
≥ 20	1566 (83)	–
< 20	312 (17)	–
<b>Self-reported certification</b>		
Primary care	594 (32)	–
Specialty	1196 (64)	–
Not specified	88 (5)	–
<b>Academic affiliation</b>		
Yes	714 (38)	–
No	1164 (62)	–

\*Percentages may not total 100 because of rounding.

sponse rate was over 60% for each region except Quebec, for which it was 48%. The response rate was over 60% for each of the specialty groups except noncertified primary care practitioners, for whom it was 54%. The demographic characteristics of the respondents and nonrespondents were similar with respect to age, sex, language and specialty (Table 1) except that there were more Quebec practice addresses among the nonrespondents. We sent all nonrespondents a follow-up letter, without another copy of the questionnaire, asking them to check off possible reasons for not completing the survey. Only 3 of these letters were returned.

### Use of information sources

Table 2 presents the frequency with which the respondents reported their use of various information sources. The 95% confidence intervals around the proportions are tight, both in this table and in subsequent tables of proportions. Even the widest confidence intervals are no more than 2 percentage points from the point estimate.

The respondents relied on discussions with colleagues far more frequently than any other information source; the next most frequently reported sources were review articles and textbooks. Clinical practice guidelines were well down the list, used on a daily or weekly basis by only 14%. Consistent with this infrequency of use, only 32% reported that their practice had changed, even once, in the past year as a result of a set of guidelines.

We found significant predictors of the use of information sources for most variables (Table 3). A number of variables were associated with relatively large parameter estimates and proportions of variance. Physicians with no academic affiliation and those for whom guidelines had made an impact on their practice in the year before the survey used pocket notes more frequently than those with an academic affiliation and those for whom guide-

**Table 2: Sources of information used by respondents, by frequency of use**

Source	Frequency of use; no. (and %*) of respondents			
	Never or yearly	Monthly	Daily or weekly	No response
Discussions with colleagues or consultants	40 (3)	1000 (16)	647 (81)	191
Review articles in journals	129 (9)	864 (51)	685 (40)	200
Medical textbooks	309 (18)	701 (42)	638 (40)	230
Pocket notes	633 (34)	480 (31)	492 (35)	273
Original research articles in journals	397 (31)	709 (41)	551 (28)	221
Brief updates (e.g., the Medical Letter)	635 (35)	717 (48)	266 (17)	260
CPGs	823 (48)	581 (38)	201 (14)	273
Continuing medical education (CME) courses	1067 (55)	450 (34)	152 (11)	209
Computer-aided literature searches (e.g., MEDLINE)	968 (68)	482 (22)	192 (10)	236
Position papers by physician organizations	922 (61)	585 (33)	92 (6)	279
Provincial or territorial insurance plan policies	1407 (86)	146 (12)	27 (2)	298

\*Percentages may not total 100 because of weighting by sample strata.



lines had not made an impact on their practice. Physicians with an academic affiliation and those with access to computer databases relied on original research articles in journals more frequently than nonacademic physicians and those without access to computer databases. Having access to computer databases explained 30% of the variance in use of computer-aided literature searches. For clinical practice guidelines, the only factor that affected frequency of their use was whether a set of guidelines had an impact on practice in the year before the survey.

**Table 3: Factors associated with respondents' use of information sources and level of impact of information sources, by source\***

Source	Factorst	Parameter estimate (and % of variance)‡
Discussions with colleagues or consultants	Academic affiliation	0.33 (4.0)
	CD-ROM access	0.35 (1.0)
Review articles in journals	French language	0.31 (2.0)
	Access to computer database	0.68 (3.0) <b>0.30 (1.9)</b>
Medical textbooks	French language	<b>0.31 (1.6)</b>
	> 20 h/wk in patient care	<b>0.38 (1.1)</b>
Pocket notes	Primary care physician	0.60 (5.0)
	Nonacademic affiliation	<b>0.49 (3.0)</b>
	CPG changed practice in year before survey	0.52 (3.0)
Original research articles in journals	Specialist	0.59 (9.0) <b>0.56 (3.0)</b>
	Academic affiliation	<b>0.61 (7.0)</b>
	Institutional practice setting	0.31 (3.0)
	Access to computer database	0.68 (5.0) <b>0.53 (2.0)</b>
Brief updates	Primary care physician	0.42 (4.5) <b>0.68 (8.0)</b>
CPGs	CPG changed practice in year before survey	0.54 (5.8) <b>0.75 (9.0)</b>
CME courses	Primary care physician	<b>0.33 (3.0)</b>
Computer-aided literature searches	Academic affiliation	0.76 (7.0) <b>0.88 (7.0)</b>
	Access to computer database	1.40 (30.0) <b>1.56 (23.0)</b>
	CD-ROM access	1.23 (3.0) <b>1.29 (2.0)</b>
Position papers by physician organizations	CPG changed practice in year before survey	0.38 (3.8) <b>0.43 (3.0)</b>

\*Variables were all significant at  $p < 0.01$  in the linear regression analysis and at  $p < 0.001$  in the multivariate regression analysis, and they resulted in a shift of the mean rating score of at least 0.3 points on the 5-point scale.

†The group listed rated the factor more useful than the group not listed (e.g., "academic affiliation" indicates that physicians with an academic affiliation rated the source of information more highly than those without an academic affiliation).

‡Parameter estimates are from univariate regression analysis; proportions of variance are from multivariate regression analysis. Values in plain type represent associations with frequency of use of information sources; those in bold type represent associations with self-reported impact of information.

## Impact of information sources on clinical decision-making

In general, the respondents reported that many of the information sources had a relatively high impact (Table 4), and in most instances the relative impact was similar to the relative frequency of their use. However, there were exceptions to this pattern. Continuing medical education courses had a much greater relative impact than their relative frequency of use, and original research articles in journals had a relatively lower impact than their relative frequency of use. The factors that predicted impact were similar to those that predicted frequency of use (Table 3).

## Confidence in guidelines

The respondents indicated moderate or high confidence in clinical practice guidelines issued by almost every official physician organization (Table 5). They expressed much less confidence in guidelines issued by the government and third-party payers. Those who completed the questionnaire in French were more confident in virtually all guidelines than the English-language respondents, including guidelines issued by physician and government bodies (parameter estimates 0.42 to 0.91, proportion of variance explained 3% to 8%). The women expressed more confidence than the men in guidelines developed by most physician organizations, including the Royal and provincial colleges of physicians and surgeons, the College of Family Physicians of Canada, national consensus development (expert) panels and the Canadian Task Force on the Periodic Health Examination (parameter estimates 0.32 to 0.53, proportion of variance explained 1.5% to 3%). In addition, the specialists had greater confidence than the primary care physicians in guidelines issued by the provincial colleges (parameter estimate 0.36, proportion of variance explained 3%), and the physicians without an academic affiliation had more confidence than academic physicians in guidelines from the College of Family Physicians of Canada (parameter estimate 0.6, proportion of variance explained 6%) and the provincial medical associations (parameter estimate 0.38, proportion of variance explained 1%).

## Attitudes about guidelines

Most of the respondents felt that the development of guidelines is motivated by a desire to improve quality of care (Table 6) and that guidelines would achieve this goal (Table 7), at least in part through their use in quality-assurance reviews and in physician disciplinary actions (Table 6). Close to half of the respondents agreed that guidelines are a good source of advice and good educa-

tional tools. A similar proportion felt that the development of guidelines is motivated by a desire to reduce costs (Table 6); however, as many felt they would increase costs as felt they would reduce them (Table 7). A sizeable minority felt that guidelines are too rigid to apply to individual patients, challenge physician autonomy and are oversimplified (Table 6). The respondents disagreed about the effects of guidelines on their satisfaction with medical practice (Table 7).

Only 2 variables predicted attitudes toward guidelines. The French-language respondents were more positive about guidelines than the English-language respondents: they were more ready to describe them as unbiased (parameter estimate 0.63, proportion of variance explained 4.5%), a convenient source of advice (0.35, 4.2%) and developed because of a desire to improve the quality of care (0.49, 4.9%). The French-language respondents less often felt that guidelines challenged physician autonomy (0.58,

4%), were too rigid to apply to individual patients (0.49, 5%), were developed because of a desire to cut costs (0.41, 2.4%) and were likely to be used for quality-assurance reviews (0.36, 2.6%) and disciplinary actions (1.0, 11.6%). Physicians whose practice had been changed by guidelines in the year before the survey were more likely to feel that guidelines were good educational tools (0.35, 3.5%) and less likely to feel that they were oversimplified (0.31, 2.0%) than the physicians who reported no impact on their practice.

### Dissemination and presentation of guidelines

The respondents' ratings of the importance of a number of factors in deciding whether to adopt a set of guidelines are presented in Table 8. The factors are presented in order, from that judged most important to that judged least important. The respondents were most concerned

**Table 4: Level of impact of information sources on clinical decision-making**

Source	Level of impact; no. (and %*) of respondents			
	No impact	Some impact	Major impact	No response
Discussions with colleagues or consultants	50 (3)	294 (14)	1322 (83)	212
CME courses	151 (8)	431 (23)	1001 (69)	295
Review articles in journals	118 (9)	486 (32)	1081 (59)	193
Medical textbooks	272 (13)	566 (30)	827 (57)	213
Pocket notes	605 (29)	424 (26)	591 (45)	258
CPGs	529 (31)	456 (25)	643 (44)	250
Brief updates	618 (33)	523 (30)	491 (37)	246
Original research articles in journals	522 (38)	539 (32)	605 (30)	212
Position papers by physician organizations	709 (46)	511 (31)	402 (23)	256
Computer-aided literature searches	780 (57)	372 (20)	465 (23)	261
Provincial or territorial insurance plan policies	1286 (86)	213 (12)	96 (2)	283

\*Percentages may not total 100 because of weighting by sample strata.

**Table 5: Level of confidence in CPGs issued or developed by various organizations**

Source of CPG	Level of confidence; no. (and %*) of respondents			
	Not confident	Somewhat confident	Very confident	No response
Physician's own specialty society	75 (7)	255 (21)	964 (72)	584
Royal College of Physicians and Surgeons of Canada	189 (11)	479 (28)	1044 (61)	166
Provincial college of physicians and surgeons	406 (20)	601 (31)	693 (49)	178
College of Family Physicians of Canada	480 (21)	515 (30)	526 (49)	357
National consensus development (expert) panel	390 (23)	546 (32)	692 (45)	250
Local group of clinicians (e.g., clinical/hospital committees)	320 (15)	731 (42)	625 (43)	202
CMA	373 (18)	747 (41)	600 (41)	158
Provincial medical association	528 (25)	714 (41)	449 (34)	187
Canadian Task Force on the Periodic Health Examination	541 (31)	557 (35)	445 (34)	335
Federal health ministry or agency	910 (51)	541 (33)	212 (16)	215
Provincial or territorial health ministry or insurance plan	1150 (64)	389 (27)	97 (9)	242
Private health insurance plan (e.g., Blue Cross)	1299 (77)	269 (20)	41 (3)	269

\*Percentages may not total 100 because of weighting by sample strata.



about who endorses the set of guidelines. They attached value to the authority of the agencies sponsoring a set of guidelines, and even more value to a respected colleague.

For most of the variables in Table 8, none of the physician characteristics was associated with significant and important differences in the multivariate model. Physicians without an academic affiliation felt that consistency with predominant local practice was more important than did academic physicians (parameter estimate 0.31, proportion of variance explained 1.7%). With respect to time required to explain the guidelines to patients, the French-

language respondents felt it was a more important factor than did the English-language respondents (0.39, 2%), and those who did not have access to CD-ROM databases also thought it was more important than did those who had such access (0.35, 1%). The French-language respondents felt that cost to society was a more important factor than did the English-language respondents (0.37, 1.8%).

Table 9 presents the respondents' ratings of the usefulness of various formats for presenting guidelines. Brief, self-contained packages, such as pamphlets, manuals, pocket cards and flow charts, were reported to be the

**Table 6: Opinions of respondents about CPGs**

Statement about CPGs	Response; no. (and %*) of respondents			
	Strongly disagree/disagree	Neutral	Agree/strongly agree	No response
Likely to be used for quality-assurance review	101 (7)	427 (26)	1197 (67)	153
Development motivated by desire to improve quality of care	184 (10)	464 (27)	1083 (63)	147
Likely to be used in physician disciplinary action	249 (17)	418 (23)	1062 (60)	149
Development motivated by desire to cut costs	274 (15)	485 (30)	965 (55)	154
Convenient source of advice	217 (12)	660 (35)	857 (53)	144
Good education tool	251 (11)	692 (38)	773 (51)	162
Unbiased synthesis of expert opinion	409 (23)	820 (45)	572 (32)	77
Too rigid to apply to individual patients	635 (39)	650 (35)	436 (26)	157
Challenge to physician autonomy	843 (48)	509 (29)	364 (23)	162
Oversimplified or "cookbook" medicine	649 (43)	607 (38)	453 (22)	169

\*Percentages may not total 100 because of weighting by sample strata.

**Table 7: Respondents' opinions on effect of CPGs on various aspects of clinical practice**

Aspect of clinical practice	Opinion; no. (and %*) of respondents			
	Likely to decrease	No effect	Likely to increase	No response
Quality of patient care	99 (7)	507 (28)	1142 (65)	130
Defensive medical practice	296 (19)	480 (25)	961 (56)	141
No. of malpractice suits	418 (25)	675 (37)	647 (38)	138
Physician satisfaction	489 (27)	720 (40)	532 (33)	137
Total cost of health care	528 (33)	651 (34)	551 (33)	148
Physician reimbursement	438 (23)	1241 (74)	40 (3)	159

\*Percentages may not total 100 because of weighting by sample strata.

**Table 8: Respondents' rating of importance of various factors in deciding whether to adopt a set of guidelines**

Factor	Level of importance; no. (and %*) of respondents			
	Least important	Somewhat important	Most important	No response
Endorsement by respected colleague	117 (7)	285 (15)	1330 (78)	146
User friendliness of CPG format	190 (10)	496 (28)	1021 (62)	171
Endorsement by organization to which physician belongs	150 (10)	451 (28)	1135 (62)	142
Implications for legal liability	213 (12)	506 (27)	1009 (61)	150
Endorsement by more than 1 major organization	201 (11)	511 (33)	1014 (56)	152
Consistency with predominant local practice	273 (12)	590 (33)	861 (55)	154
Cost to society	375 (22)	649 (37)	688 (41)	166
Cost to the patient	497 (31)	661 (35)	559 (34)	161
Time required to explain CPGs to patients	644 (33)	615 (35)	454 (32)	165
Reimbursement for recommended service	838 (46)	577 (33)	296 (21)	167

\*Percentages may not total 100 because of weighting by sample strata.



most useful. Computer databases and workshops were the least useful. Table 10 presents the factors that predicted the respondents' preferences for format.

## Discussion

The strengths of our survey include its comprehensive and accurate sampling frame, the large sample, the relatively high response rate, the similarity between respondents and nonrespondents, and the comprehensive exploration of the data. Its weaknesses include the different response rates across regions, which suggest possible bias associated with differential response. In particular, the low response rate in Quebec may decrease our ability to represent physician opinions in that region. The physicians in that region who did respond may have been more positively, or negatively, disposed toward guidelines.

A primary finding of our survey is the relatively low number of physicians who use clinical practice guidelines and the fact that less than 40% have changed their practice as a result of referring to a set of guidelines in the year be-

fore the survey. Canadian physicians consult guidelines far less often than traditional sources of information, such as colleagues and consultants, review articles, textbooks, pocket notes and original research articles in journals. Given that the explicit purpose of guidelines is to change behaviour, disinclination to use them as a source of information for decision-making could compromise their impact. It is also possible that physicians are not exposed to guidelines as often as other information sources and that ways of disseminating guidelines are relatively underdeveloped.

In examining possible predictors of the use and impact of guidelines, we identified only 1 statistically and clinically significant factor: self-reported change in practice in the year before the survey that resulted from using a set of guidelines. This is less an explanation than a validation that the survey questions were gauging physicians' inclination to use guidelines. No particular group is more or less inclined to use them. Thus, we cannot identify a subgroup of physicians that can be studied as an example of successful guidelines dissemination, nor any subgroups that are of particular concern.

**Table 9: Respondents' rating of usefulness of various formats in which to present CPGs in order to make them more accessible**

Format	Level of usefulness; no. (and %*) of respondents			
	Least useful	Somewhat useful	Most useful	No response
Short pamphlet summarizing guidelines	280 (16)	404 (22)	1026 (62)	168
Official manual containing several recent CPGs	296 (17)	502 (27)	924 (56)	156
Journal article describing new guidelines	293 (18)	545 (32)	893 (50)	147
Pocket card summarizing guidelines	504 (26)	426 (24)	788 (50)	160
Flow chart or clinical algorithm	547 (27)	504 (29)	669 (44)	158
Table comparing various CPGs on similar topic	459 (24)	613 (35)	633 (41)	173
Systematic review	418 (25)	608 (33)	679 (42)	173
National directory	513 (28)	580 (32)	617 (40)	168
Workshop	525 (29)	565 (33)	634 (38)	154
Computer database of major CPGs	665 (41)	489 (27)	562 (32)	162

\*Percentages may not total 100 because of weighting by sample strata.

**Table 10: Factors associated with respondents' rating of relative usefulness of formats in which to present CPGs in order to make them more accessible**

Format	Factors	Parameter estimate (and % of variance)
Short pamphlet	CD-ROM access	0.39 (2.0)
Official manual	CPG changed practice in year before survey	0.33 (1.9)
Pocket card	French language	0.56 (3.0)
Table comparing CPGs	French language	0.37 (1.9)
Systematic review	Access to computer and modem	0.31 (3.0)
	Access to computer database	0.31 (1.0)
Workshop	Specialist	0.41 (3.2)
	CPG did not change practice in year before survey	0.41 (2.9)
Computer database	Access to computer and modem	0.78 (10.0)
	Access to computer database	0.67 (2.0)





The lack of guidelines use cannot readily be explained by strong negative attitudes toward them. Most of the physicians surveyed were moderately or strongly confident about guidelines developed by credible physician groups. Most felt that guidelines are a convenient source of advice and good educational tools and are likely to succeed in their goal of improving quality of care. Less than one-quarter agreed with the strongly negative statements that guidelines are too rigid to apply to individual patients, challenge physician autonomy or are oversimplified, although just over half felt that guidelines would increase the practice of defensive medicine. Overall, it seems that the challenge is not so much to overcome negative attitudes about guidelines but more to develop strategies that will influence physicians to read, remember and use them.

Our results provide 2 suggestions for people developing guidelines in Canada. First, for physicians to adopt guidelines, they may require an authoritative endorsement. This could come from a respected physician organization or, even better, from a number of respected organizations. However, the most influential endorsement is likely to be from physicians' respected colleagues. This suggests that implementation of guidelines can be facilitated if leading community physicians endorse and use the guidelines and are recruited to aid in their dissemination.

Second, for physicians to adopt a set of guidelines, developers should give considerable thought to how guidelines are presented. The physicians in our survey preferred short pamphlets summarizing recent guidelines, official manuals including a number of guidelines, journal articles summarizing new guidelines, and pocket cards. Guidelines developers may want to publish the complete set of guidelines and at the same time provide the target audience with one or more brief, readily accessible summaries.

The factors associated with preference for different formats provide limited additional insights. French-language physicians may have stronger preferences for pocket cards and tables. If workshops are contemplated, they may be most appropriately directed to specialists. Computer dissemination of guidelines is likely to be effective among physicians with computer and modem access.

In a number of ways, our findings are consistent with results from our survey of American internists,<sup>12</sup> despite the fact that the American survey targeted only 1 specialty group and it was conducted 2 years before the Canadian survey. The US respondents also had high levels of confidence in guidelines, particularly those issued by their own specialty groups. They expressed the same positive and negative views about guidelines, in almost exactly the same proportions. Despite the similarities in their attitudes, fewer of the American physicians than of the Canadian physicians reported a change in practice in the year

before the survey as a result of a set of guidelines (18% v. 32% respectively).

The Canadian physicians were somewhat less enthusiastic about the popular formats for dissemination listed in Table 9 and more enthusiastic about the unpopular options than the US internists. This may simply reflect the greater diversity of the Canadian sample. However, relative rankings of factors influencing adoption of guidelines, and of preferred presentation formats, were virtually identical. The consistency of findings across the 2 groups suggest that the results of the 2 surveys are widely generalizable.

In summary, we have found that although most Canadian physicians have positive attitudes toward clinical practice guidelines, guidelines have had limited impact on practice. If guidelines are to change practice, they must be accompanied by strategies to encourage adherence.<sup>14</sup>

This study was supported by the Physicians' Services Incorporated Foundation.

## References

1. Iscoe NA, Goel V, Wu K, Fehringer G, Holowaty EJ, Naylor CD. Variation in breast cancer surgery in Ontario. *Can Med Assoc J* 1994;150:345-52.
2. Health Services Research Group. Small-area variations: What are they and what do they mean? *Can Med Assoc J* 1992;146:467-70.
3. Grimshaw JM, Russell IT. Achieving health gain through clinical guidelines II: ensuring guidelines change medical practice. *Qual Health Care* 1994;3:24-52.
4. Weingarten SR, Riedinger MS, Conner L, Lee TH, Hoffman I, Johnson B, et al. Practice guidelines and reminders to reduce duration of hospital stay for patients with chest pain. An interventional trial. *Ann Intern Med* 1994;120:257-63.
5. Lomas J, Haynes RB. A taxonomy and critical review of tested strategies for the application of clinical practice recommendations: from "official" to "individual" clinical policy. *Am J Prev Med* 1988;4:77-94.
6. Koscoff J, Kanouse DE, Rogers WH, McCloskey L, Winslow CM, Brook RH. Effects of the National Institutes of Health consensus development program on physician practice. *JAMA* 1987;258:2708-13.
7. Lomas J, Anderson GM, Donnick-Pierre K, Vayda E, Enkin MW, Hannah WJ. Do practice guidelines guide practice? The effect of a consensus statement on the practice of physicians. *N Engl J Med* 1989;321:1306-11.
8. Romm FJ, Fletcher SW, Hulka BS. The periodic health examination: comparison of recommendations and internists' performance. *South Med J* 1981;74:265-71.
9. Cohen SJ, Weinberger M, Hui SL, Tierney WM, McDonald CJ. The impact of reading on physicians' nonadherence to recommended standards of medical care. *Soc Sci Med* 1985;21:909.
10. Maiman LA, Greenland P, Hildreth NG, Cox C. Patterns of physicians' treatments for referral patients from public cholesterol screening. *Am J Prev Med* 1991;7:273-9.
11. Oxman AD. Coordination of guidelines development. *Can Med Assoc J* 1993;148:1285-8.
12. Tunis SR, Hayward RSA, Wilson MC, Rubin HR, Bass EB, Johnston M, et al. Internists' attitudes about clinical practice guidelines. *Ann Intern Med* 1994;120:956-63.
13. Hayward RS, Wilson MC, Tunis SR, Guyatt GH, Moore KA, Bass EB. Practice guidelines: What are internists looking for? *J Gen Intern Med* 1996;11(3):185-6.
14. Davis DA, Thomson MA, Oxman AD, Haynes RB. Evidence for the effectiveness of CME. A review of 50 randomized controlled trials. *JAMA* 1992;268:1111-7.

**Reprint requests to:** Dr. Robert S.A. Hayward, Department of Clinical Epidemiology and Biostatistics, McMaster University Faculty of Health Sciences, Rm. 3H7, 1200 Main St. W, Hamilton ON L8N 3Z5; fax 905 546-0401; haywardr@fhs.csu.mcmaster.ca