Who delivers preventive care as recommended?

Analysis of physician and practice characteristics

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ABSTRACT

OBJECTIVE To ascertain which physician and practice characteristics are associated with self-reported provision of preventive care as recommended by the Canadian Task Force on Preventive Health Care.

DESIGN Cross-sectional analysis of data from a decennial survey.

SETTING Southwestern Ontario.

PARTICIPANTS A total of 731 family physicians in various practice settings.

MAIN OUTCOME MEASURES Number of patients to whom these physicians provided the recommended preventive services based on physicians' responses to various scenarios presented in the survey. The responses were scored, and the median score was used to dichotomize physicians into high- and low-scoring groups.

RESULTS Close to two-thirds of the physicians (61%) were in the high-scoring group. Female family physicians, graduates of Canadian medical schools, and physicians whose practices were organized into family health teams, family health groups, family health networks, community health centres, or health services organizations were more likely to be in the high-scoring group. Physicians practising solo and international medical graduates were more likely to be in the low-scoring group.

CONCLUSION Reorganizing delivery of primary care into group practice models might improve provision of preventive services. Licensing requirements for international medical graduates should ensure that these physicians are adequately trained to provide preventive services as recommended in the Canadian context. More research is needed before our results can be generalized beyond southwestern Ontario.

EDITOR'S KEY POINTS

- This study used data from a decennial survey to ascertain which family physicians in southwestern Ontario reported providing preventive services as recommended by the Canadian Task Force on Preventive Health Care.
- The data indicated that female family physicians, graduates of Canadian medical schools, and physicians whose practices were organized into various types of family health care groups reported more closely following the studied guidelines for provision of preventive care. The authors concluded that incentives provided in group practice models might improve provision of preventive care and that international medical graduates needed to be adequately trained to provide such services in a Canadian context.
- An important limitation of this study is that the provision of recommended preventive services was assessed by physicians' self-report, which might not reflect the actual provision of such services.

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Qui dispense les soins préventifs conformément aux recommandations?

Analyse des caractéristiques des médecins et des clientèles

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RÉSUMÉ

OBJECTIF Déterminer quelles caractéristiques des médecins et des clientèles sont associées à la dispensation de soins préventifs conformément aux recommandations du Groupe d'étude canadien sur les soins de santé préventifs.

TYPE D'ÉTUDE Analyse transversale d'une enquête décennale.

CONTEXTE Sud-ouest de l'Ontario.

PARTICIPANTS Un total de 731 médecins de famille pratiquant dans divers contextes.

PRINCIPAUX PARAMÈTRES À L'ÉTUDE Nombre de patients auxquels ces médecins ont dispensé des services préventifs, selon les réponses des médecins à divers scénarios présentés dans l'enquête. Des scores ont été attribués aux réponses, et le score médian a servi à répartir les médecins en 2 groupes: score élevé ou bas.

RÉSULTATS Près des deux-tiers des médecins (61%) appartenaient au groupe à score élevé. Les médecins de famille féminins, les diplômés des facultés de médecine canadiennes et les médecins dont les cliniques étaient organisées en équipe de santé familiale, en groupe de santé familiale, en réseau de santé familiale, en centre de santé communautaire ou en organisme de services de santé étaient plus susceptibles d'être du groupe à score élevé. Les médecins pratiquant en solo et les diplômés de pays étrangers étaient plus susceptibles d'appartenir au groupe à score bas.

CONCLUSION On pourrait améliorer la dispensation des services préventifs en réorganisant les soins primaires suivant un modèle de pratique de groupe. Avant d'accorder le permis de pratique aux médecins diplômés à l'étranger, on devrait s'assurer qu'ils ont la formation requise pour dispenser les services préventifs recommandés au Canada. D'autre études seront nécessaires avant de pouvoir généraliser nos résultats au-delà du sud-ouest de l'Ontario.

POINTS DE REPÈRE DU RÉDACTEUR

- Dans cette étude, on s'est servi des données d'une enquête décennale pour déterminer quels médecins de famille du sud-ouest de l'Ontario déclaireraient dispenser les services préventifs recommandés par le Groupe d'étude canadien sur les soins de santé préventifs.
- Ces données indiquent que les médecins de famille féminins, les diplômés de facultés de médecine canadiennes et les médecins pratiquant dans divers groupes de santé familiale déclaraient suivre plus étroitement les directives concernant la dispensation des soins préventifs. Les auteurs concluent que la motivation que procure la pratique de groupe pourrait améliorer la dispensation des soins préventifs, et que les diplômés de pays étrangers doivent être adéquatement formés pour dispenser ces services au Canada.
- Une importante limitation de cette étude provient du fait que l'évaluation de la dispensation des services préventifs recommandés est basée sur les déclarations des médecins eux-mêmes, ce qui pourrait ne pas représenter la réalité.

*Le texte intégral est accessible en anglais à **www.cfp.ca.**

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Starting in 1979, the Canadian Task Force on Preventive Health Care (CTFPHC) periodically released reports aimed at guiding primary care physicians in providing optimal, evidence-based, preventive care to their patients. Despite widespread efforts to bring public attention to these measures and to disseminate guidelines and information, evidence suggests that there is still room for improvement in integrating the CTFPHC's recommendations into primary care practice.[1-3] Given the federal and provincial governments' push to strengthen primary care and the increasing adoption of new health care delivery models, such as family health teams, we decided to conduct an analysis of data gathered from a decennial survey of family physicians in southwestern Ontario to ascertain which physician and practice characteristics were associated with providing recommended preventive care. In addition to analyzing the known correlates of provision of preventive care, such as age, sex, residency training, practice organization, and physician reimbursement, we also analyzed the effect of physicians' involvement in undergraduate or postgraduate teaching, of being international medical graduates (IMGs), of volume of practice, and of level of interdisciplinary care. The effect of these characteristics on how well physicians are providing preventive services has not been examined in previous studies.[4-7]

METHODS

Study design and source of data

We conducted a cross-sectional analysis of data gathered from a survey of family physicians in southwestern Ontario. The data were collected as part of a decennial census of all family physicians and specialists in the 10 counties surrounding and including the city of London. The census gathered information on a range of physician, practice, and system characteristics. A mailing list of all physicians in southwestern Ontario was purchased from *Scott's Directory* and was verified and updated using the family physician mailing list of the Thames Valley Family Practice Research Unit in London. This was the fourth iteration of the decennial census conducted by the Centre for Studies in Family Medicine at the University of Western Ontario. We have reported previously on the changing practice of family medicine, perceptions of wait times, and the characteristics of international medical graduates using data from this survey.[8-10] This study was approved by the University of Western Ontario's Research Ethics Board for the Review of Health Sciences Research Involving Human Subjects.

In the fall of 2004, the survey was mailed to all 1044 family physicians in southwestern Ontario using a modified Dillman method.[11] The initial package sent by registered mail included the survey, an information letter, a $25 gift certificate, and a self-addressed stamped envelope. Reminder postcards were sent to all the physicians 2 weeks later. Two additional surveys were mailed to nonrespondents, the first approximately 4 weeks after the initial mailing and the final one about 4 weeks after that.

Variables

The dependent variable was a prevention profile score that was calculated based on physicians' responses to a question on the survey that presented various scenarios (eg, administration of flu shots to people older than 65) and asked physicians to specify to how many of their patients (all, most, some, few, or none) they provided these services. These scenarios were based on the recommendations of the CTFPHC (**Table 1**). For A and B recommendations, physicians were given a score of +1 if they responded that they provided these services to all or most of their patients; for D recommendations, physicians were given a score of –1 if they reported providing these services to all or most of their patients. The scores were added, and the median score was used to divide respondents into high-scoring and low-scoring groups.

The independent variables were grouped into 2 levels. Variables at the physician level included age, sex, completion of a family medicine residency, involvement in undergraduate or postgraduate teaching, and whether physicians were international medical graduates.

Practice-level variables included practice organization (ie, practice organized as a family health team [FHT], family health network [FHN], family health group [FHG], community health centre [CHC], or health service organization [HSO], or not), usual number of patients seen per week (≤100, 101-150, >150), and location of practice (rural or urban). We assessed physicians' level of interdisciplinary care by counting the types of health care

Table 1. Recommendations of the Canadian Task Force on Preventive Health Care used in creating the prevention profile score

A RECOMMENDATIONS (GOOD EVIDENCE TO INCLUDE)	B RECOMMENDATIONS (FAIR EVIDENCE TO INCLUDE)	D RECOMMENDATIONS (FAIR EVIDENCE TO EXCLUDE)
• Referral for mammogram for women 50–74 y • Flu shots for people >65 y • Routine childhood immunizations • Fecal occult blood testing for people >50 y	• Pap smears for premenopausal women • Pap smears for postmenopausal women • Flu shots for people <65 y with chronic conditions	• Regular chest x-ray scans for smokers • Prostate-specific antigen tests for men >50 y • Routine screening for developmental and learning delays

providers who shared patient care with the family physicians in their practices. These providers could include other family physicians, specialists, nurses, nurse practitioners, dietitians, psychologists, occupational therapists, physiotherapists, social workers, case workers, pharmacists, medical assistants, and midwives.

Data analysis

Data analysis was carried out using Stata/SE 9.[12] The unit of analysis was an individual physician. Cross tabulations with χ^2 tests and Student *t* tests were used to examine categorical and continuous variables, respectively. Because the dependent variable was binary, logistic regression models were used to estimate the parameters specified in the model. The overall fit of the model to the data was assessed with the maximum log likelihood ratio χ^2 statistic. Multicollinearity and interaction effects were evaluated for the model.

RESULTS

The response rate was 70.0% (n=731). A total of 576 respondents answered the question on preventive care; these responses were included in our analyses. Respondents and nonrespondents were found to be similar with respect to age and sex. Close to two-thirds of the family physicians who responded (356, 61%) were in the high-scoring group. **Table 2** shows the characteristics of physicians in the 2 groups. Statistically significant bivariate associations were noted with all variables except location of practice and level of interdisciplinary care. Among physician-level characteristics, female sex, younger age, involvement in undergraduate or postgraduate teaching, and graduation from a Canadian medical school were more likely to put physicians in the high-scoring group. Being in solo practice and seeing a larger number of patients per week were the practice-level characteristics likely to put physicians in the low-scoring group.

Table 3 presents results of the logistic regression model. Compared with male family physicians, female family physicians were much more likely to be in the high-scoring group. International medical graduates were less than half as likely as Canadian medical school graduates were to be in the high-scoring group.

Table 2. Characteristics of low-scoring and high-scoring family physicians (n = 576)

CHARACTERISTICS	LOW SCORING PHYSICIANS, % (N=224)	HIGH SCORING PHYSICIANS, % (N=356)	*P* VALUE
Physician characteristics			
Sex			<.001
• Male	80.6	65.3	
• Female	19.4	34.7	
Involved in undergraduate or postgraduate teaching			.009
• No	75.9	65.6	
• Yes	24.1	34.4	
Completed family medicine residency			<.001
• No	53.4	36.7	
• Yes	46.6	63.3	
International medical graduate			<.001
• No	75.8	90.3	
• Yes	24.2	9.7	
Practice characteristics			
Usual number of patients seen per wk			.036
• < 100	28.8	32.9	
• 101–150	27.8	35.6	
• > 150	43.4	32.5	
Practice organized as a family health team, group, or network; community health centre; or health service organization			.009
• No	67.4	56.5	
• Yes	32.6	43.5	
Location of practice			.837
• Rural	53.1	52.3	
• Urban	46.9	47.7	

Table 3. Determinants of high and low scores from the logistic regression model (n = 523*)

CHARACTERISTICS	ODDS RATIO	*P* VALUE
Physician characteristics		
Sex		.038
• Male	1.00	
• Female	1.67	
Age	0.99	.682
Involved in undergraduate or postgraduate teaching		.211
• No	1.00	
• Yes	1.31	
Completed family medicine residency		.247
• No	1.00	
• Yes	1.31	
International medical graduate		.001
• No	1.00	
• Yes	0.41	
Practice characteristics		
Usual number of patients seen per week		.819
• < 100	1.00	
• 101–150	1.05	
• > 150	0.68	
Level of interdisciplinary care	0.95	.123
Practice organized as family health team, group, or network; community health centre; or health service organization		.032
• No	1.00	
• Yes	1.58	
Location of practice		.592
• Rural	1.00	
• Urban	1.12	

*Of the 576 physicians who answered the question on preventive care, data were complete on all variables for 523 responses.

Physicians whose practices were organized as FHTs, FHGs, FHNs, CHCs, or HSOs were more likely to be in the high-scoring group.

DISCUSSION

While close to two-thirds of the family physicians in our sample (61%) were in the high-scoring group, more than a third (39%) were in the low-scoring group. These physicians could be doing better in terms of providing recommended preventive care to their patients. Our findings are in agreement with many of the findings in the literature.[1,2,5,13] For example, Hutchison et al found that family physicians performed or offered 65% of applicable grade A maneuvers and only 31% of grade B maneuvers to their patients. Barriers to optimal provision of preventive services reported by physicians can be classified into 3 types: patient barriers (refusal to comply, no need, no visit), physician barriers (no reimbursement, lack of time, inadequate knowledge), and system barriers (lack of patient reminders).[1,14]

Among physician-level characteristics, our regression model indicated that, compared with male physicians, female family physicians were much more likely to be in the high-scoring group, a finding similar to findings in other studies.[2,7,15,16] Canadian medical school graduates were significantly more likely than IMGs were to be in the high-scoring group. This is in contrast to the findings of Ko et al, whose data showed no differences in the quality of care provided by Canadian medical graduates and IMGs to their patients with acute myocardial infarctions.[17] If our finding on IMGs is consistently replicated in other studies, it could indicate the need for a policy change to help increase the provision of recommended preventive services in Ontario. Most IMGs undertake residency training in Canada before being licensed to practise. It is during this period that we need to ensure that these international physicians are adequately trained in provision of recommended preventive services in a Canadian context.

Among practice-level characteristics, family physicians whose practices were organized as FHGs, FHTs, FHNs, CHCs, or HSOs were more likely to be in the high-scoring group. Research has shown that physicians in CHCs in Quebec provide more recommended preventive services than physicians in fee-for-service settings do.[4] One of the goals of the Ontario Ministry of Health and Long-Term Care is to introduce new practice models into the province, with an emphasis on organizing family physicians into multidisciplinary teams. Our data indicate that family physicians practising in such teams are more likely than family physicians who are not in such practice arrangements to report providing recommended preventive care. A possible explanation could be the different reimbursement mechanisms used in group practices, especially the incentives for providing preventive care.

Limitations

An important limitation of our study is that the dependent variable (provision of recommended preventive services) was self-reported by physicians and is thus subject to recall and other bias. Another limitation is that there is evidence to suggest that physicians tend to overestimate the number of preventive services they provide.[18] Also, although we had information at physician and practice levels, we did not have information at the patient level in our data set. Previous research has documented the importance of having a regular source of care and of patient sociodemographics in determining whether patients receive preventive services.[19-22] Future research should include links with medical records to check the accuracy of physicians' self-reported information; this could be done, for example, by linking electronic or paper-based medical record data to patient, physician, and practice characteristics.

Conclusion

Our research demonstrates that, in southwestern Ontario, female family physicians, Canadian medical school graduates, and those whose practices are organized as FHTs, FHGs, FHNs, CHCs, or HSOs are more likely to report providing recommended preventive services. Further research is needed before we can comment on the applicability of our findings to areas beyond southwestern Ontario.

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Contributors

Drs Thind, Feightner, and **Stewart, Ms Thorpe,** and **Ms Burt** contributed to concept and design of the study; data gathering, analysis, and interpretation; and preparing the article for submission.

Competing interests

None declared

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