

Health promotion activity in primary care: performance of models and associated factors

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ABSTRACT

Background: Lifestyle behaviours have significant health and economic consequences. Primary care providers play an important role in promoting healthy behaviours. We compared the performance of primary care models in delivering health promotion and identified practice factors associated with its delivery.

Methods: Surveys were conducted in 137 randomly selected primary care practices in 4 primary care models in Ontario, Canada: 35 community health centres, 35 fee-for-service practices, 35 family health networks and 32 health service organizations. A total of 4861 adult patients who were visiting their family practice participated in the study. Qualitative nested case studies were also conducted at 2 practices per model. A 7-item question was used to evaluate health promotion. The main outcome was whether at least 1 of the 7 health promotion items was discussed at the survey visit. Multilevel logistic regressions were used to compare the models and determine performance-related practice factors.

Results: The rate of health promotion was significantly higher in community health centres than in the other models (the unadjusted difference ranged between 8% and 13%). This finding persisted after controlling for patient and family physician profiles. Factors independently positively associated with health promotion were as follows: reason for visit (for a general checkup: adjusted odds ratio [AOR] 3.34, 95% confidence interval [CI] 2.81–3.97; for care for a chronic disease: AOR 2.03, 95% CI 1.69–2.43), patients having and seeing their own provider (for those not: AOR 0.58, 95% CI 0.43–0.78), number of nurses in the practice (AOR 1.07, 95% CI 1.02–1.12), percentage of female family physicians (AOR 1.38, 95% CI 1.15–1.66), smaller physician panel size (AOR 0.92, 95% CI 0.85–1.01) and longer booking interval (AOR 1.03, 95% CI 1.01–1.04). Providers in interdisciplinary practices viewed health promotion as an integral part of primary care, whereas other providers emphasized the role of relational continuity in effective health promotion.

Conclusion: We have identified several attributes associated with health promotion delivery. These results may assist practice managers and policy-makers in modifying practice attributes to improve health promotion in primary care.

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CIGARETTE SMOKING, EXCESSIVE USE OF ALCOHOL, poor diet and lack of physical activity contribute to most of the leading causes of death and disability in Canada.¹ Among Canadians 12 years of age and older, 23% smoke and 21% have alcohol-drinking patterns that can be described as risky.¹ Only 39% adhere to the recommendations concerning fruit and vegetable consumption and half lead a sedentary lifestyle; 59% of Canadian adults are obese or overweight.² The economic burden of lifestyle-related health disorders is substantial. In 2002, \$2.3 billion was spent in Canada on health care provision for alcohol-related problems alone.³ Nine percent of total health spending in the United States in 1998 was attributable to overweight and obesity.⁴

Health promotion is commonly defined as “the process of enabling individuals to take control over their health.”⁵ Improving the quality of health promotion and disease prevention has become a major focus of health care reform efforts internationally⁶⁻⁹ and is viewed as an important part of primary care.¹⁰ Clinical practice guidelines produced by the Canadian Task Force on Preventive Health Care recommend that primary care providers discuss healthy habits with their patients.^{11,12} However, a 1996 study reported that family physicians in Ontario, Canada, were dissatisfied with the extent to which they adhered to recommended guidelines for preventive care,¹³ and a related study performed on a subset of the same family physicians found significant deficits in the health promotion activities delivered to their patients.¹⁴

It is important that practice and organizational structures support the policy objectives of enhancing health promotion in primary care practices. In this article we compare the performance of primary care models of service delivery in Ontario in providing health promotion activities and determine what practice factors are associated with the delivery of health promotion. We evaluated 7 health promotion items derived from the recommendations of the Canadian Task Force on Preventive Health Care: healthy food, home safety, family conflict, exercise, smoking, alcohol consumption and fall prevention (for patients 65 years of age or older). The evaluation was designed to be congruent with a broad conceptual framework for primary care organizations¹⁵ and forms part of a larger study funded by the Ontario Ministry of Health and Long-Term Care’s Primary Health Care Transition Fund.

Methods

Design. This study is a component of a larger project, the Comparison of Models of Primary Care in Ontario (COMP-PC), which was approved by the Ottawa Hospital Research Ethics Board. The COMP-PC has a mixed-methods design in which several performance parameters were evaluated. Data collection took place between October 2005 and June 2006. Full details of the COMP-PC methodology can be found in a separate publication.¹⁶ Here we focus on the patient self-reported measure of health promotion. The specific methodology used for this part of the study, which involved quantitative data collection and a nested qualitative case study, will be briefly described.

Sample. A total of 155 randomly selected fee-for-service (FFS) practices that were eligible for this study and all known and eligible practices that were family health networks (FHNs; $n = 94$), community health centres (CHCs; $n = 51$) and health service organizations (HSOs; $n = 65$) were approached with an aim to recruit 35 practices for each of these 4 primary care models (see Dahrouge and colleagues¹⁶ for a complete description of these models). Practices were recruited through mail invitation with careful follow-up. A target of 50 completed patient surveys collected from each recruited practice was set. This sample size was based on that determined for the larger COMP-PC study.¹⁶ Patients from eligible practices were recruited sequentially in the practice’s waiting room by a research associate as they presented for their appointment with their primary care provider. Practice and patient eligibility criteria are described in detail in Dahrouge and colleagues.¹⁶

For the qualitative case study, we purposefully selected 2 typical practices per model. In each practice, we conducted semi-structured interviews with between 1 and 4 family physicians. In the 2 CHCs and HSOs we also interviewed nurse practitioners. Finally, 6 of the 50 selected patients who completed a patient survey at each site were also interviewed (see below).

Instruments. Practice, provider and patient surveys were developed for this study, all of which were adapted from the Primary Care Assessment Tool (PCAT)-Adult edition.^{17,18} All were self-completed. The patient survey was divided into 2 sections. The first was completed in the waiting room before the visit with the provider and captured descriptive information about the patient. The second was completed in the waiting room after the patient’s appointment and captured visit-specific information, including information about waiting time, visit

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Table 1: Patient variables in each model of primary care delivery and bivariate association of these variables with health promotion activities

Variable	Model of primary care delivery				Odds ratio (95% CI)
	CHC (n = 1219)	FFS (n = 1375)	FHN (n = 1494)	HSO (n = 1273)	
Patient profile					
Age,* yr, mean	46.7	49.9	51.2	51.2	0.998 (0.994–1.001)
Male,* %	27	33	34	39	1.28† (1.13–1.44)
Insured in Ontario, %	92	96	97	97	0.97 (0.72–1.30)
White ethnicity,* %	77	87	94	95	1.12 (0.88–1.41)
Born in Canada, %	70	74	86	83	0.99 (0.85–1.48)
Years in Canada* (immigrants only), mean	19	32	38	37	0.993 (0.996–1.000)
Household income,* \$1000s, median	25–50	50–65	50–65	50–65	
Household income more than LICO, ¹ * %	75	90	91	91	0.82 (0.69–0.98)
Education level above high school, %	61	66	65	65	0.96 (0.85–1.08)
Quality of life good to excellent, %	76	81	83	87	0.88 (0.76–1.028)
Main provider is a nurse practitioner, %	22.0	0.2	0.0	2.5	1.07 (0.81–1.39)
Visit-specific information					
No. of visits per year, mean	8.3	7.1	5.3	4.8	0.994 (0.986–1.001)
Provider for that visit, %					
Saw own provider*	75	95	94	95	Reference
Had but did not see own provider*	12	2	4	3	(0.43–0.75)
Did not have a regular provider*	8	2	1	1	(0.60–1.26)
Regular provider information missing*	6	1	1	1	1.33 (0.88–2.01)
Wait time before visit,* min	13	22	20	18	0.993 (0.990–0.996)
Duration of visit,* min	24.1	15.1	15.4	15.1	1.056† (1.050–1.063)
Reason for visit,* %					
Recent condition*	19	25	25	29	Reference
General check-up	25	24	24	22	3.44† (2.90–4.08)
Chronic condition*	21	20	20	16	2.09† (1.75–2.49)
Other*	36	32	32	33	1.07 (0.92–1.25)

CHC = community health centre, FFS = fee for service, FHN = family health network, HSO = health service organization, CI = confidence interval, LICO = low-income cut-off.

Bivariate associations with the principal binary outcome measure (whether the patient reported discussing at least 1 health promotion subject in the consultation) were evaluated with multilevel logistic regression.

* Variable differed significantly between the models ($p < 0.05$).

† Variable was statistically significantly associated with the principal binary outcome measure (whether the patient reported discussing at least 1 health promotion subject in the consultation). The direction of the association was consistent across all 4 models.

¹ Statistics Canada. Low income cut-offs for 2005 and low income measures for 2004. Available at <http://www.statcan.ca/english/research/75F0002MIE/75F0002MIE2006004.pdf>. Accessed 16 July 2009.

duration and health promotion. A 7-item question addressed health promotion activities; it was adapted from the PCAT and is consistent with the recommendations of the Canadian Task Force on Preventive Health Care.¹² The question asked, “In today’s visit to your clinic were any of the following subjects discussed with you?” Seven topics were listed (healthy food, home safety, family conflict, exercise, smoking, alcohol consumption and fall prevention (for patients 65 years of age and older); participants had the option of responding “yes,” “no” or “don’t know” for each topic. The survey was available in French and English, and translators were used to assist individuals not lit-

erate in either language in completing the survey. Provider and practice surveys were completed by the provider and practice manager respectively, and were retrieved from the practice by the research associate during data collection or mailed back to the research centre by the respondent. The guides provided for the in-depth interviews of family physicians, nurse practitioners and patients comprised open-ended questions about health promotion processes at the practice level, were available in French and English, and differed in content depending on the type of respondent (patient or provider). A copy of the surveys is available from the authors upon request.

Table 2: Practice and family physician variables in each model of primary care delivery and bivariate association of the variables with health promotion activities

Variable	Model of primary care delivery				Odds ratio (95% CI)
	CHC (n = 35)	FFS (n = 35)	FHN (n = 35)	HSO (n = 32)	
Practice					
Uses electronic health records, %	29	15	59	45	1.14 (0.954–1.36)
FTE nurses* per family physician, no.†	0.9	0.2	0.5	0.7	1.16 (1.00–1.34)
Panel size‡	1.3	1.8	1.4	2.0	0.84§ (0.76–0.92)
Booking interval for routine visit, min, mean	25	13	13	14	1.04§ (1.03–1.05)
Group practice,† %	100	71.4	62.9	62.5	1.25§ (1.04–1.51)
FTE family physicians, no.†	3.2	2.5	4.5	1.7	1.05 (1.01–1.10)
FTE nurse practitioners, no.†	2.5	0.1	0.3	0.2	1.12§ (1.05–1.20)
FTE nurses, no.*†	2.7	0.6	2	1.1	1.10§ (1.05–1.15)
Setting, %					
Hospital (< 10 km)	71.4	85.3	94.1	86.7	0.93 (0.75–1.06)
Rurality index	14	13	16	8	0.999 (0.994–1.004)
Family physician profile					
Years since graduation, mean	19	22	23	29	0.99 (0.98–1.00)
Female,† %	72	44	41	26	1.56§ (1.26–1.85)
Foreign trained,† %	9.3	18.2	2.5	14.3	1.03 (0.69–1.53)
Has CFPC designation, %	79	86	78	68	1.25 (0.92–1.47)
CHC = community health centre, FFS = fee for service, FHN = family health network, HSO = health service organization, CI = confidence interval, FTE = full-time equivalent, CFPC = College of Family Physicians of Canada.					
Bivariate associations with principal binary outcome measure (whether the patient reported discussing at least 1 health promotion subject in the consultation) were evaluated with multilevel logistic regression.					
* Refers to full-time equivalent registered nurses, nurses and nursing assistants.					
† Variable differed significantly between the models ($p < 0.05$).					
‡ Panel size is the number of patients per full-time equivalent family physician (x1000).					
§ Variable was statistically significantly associated with the principal binary outcome measure (whether the patient reported discussing at least 1 health promotion subject in the consultation). The direction of the association was consistent across all 4 models.					

Analysis. Our principal binary outcome measure was whether the patient reported discussing at least 1 health promotion subject, termed here health promotion discussed (HP-discussed). We also measured the number of health promotion items discussed (0–7), termed health promotion count (HP-count).

Descriptive and bivariate analyses. Descriptive analyses detailing patient and practice profiles across models were performed. Multilevel binary logistic analyses were used to evaluate the bivariate relationships between patient profile, family physician profile and practice factors and HP-discussed. These analyses were repeated for each model individually to evaluate the transferability of the results across models.

Comparing the primary care models. The performance of the 4 models in delivering health promotion was compared using multilevel logistic (HP-discussed) and Poisson (HP-count) regressions. These regressions were carried out unadjusted and adjusted for patient charac-

teristics and contextual factors with and without family physician factors. Variables with a significance level below $p < 0.05$ in the bivariate analyses were retained. In each case, we also assessed the presence of interaction between these factors and the model variables. To avoid case-wise deletion, missing values in continuous predictors were imputed with the nearest neighbourhood technique, and missing discrete variables formed a separate category.

Evaluating practice factors independently associated with health promotion performance. We conducted multivariate binary logistic regression of variables reported in Tables 1 and 2 to evaluate factors independently associated with HP-discussed, and we assessed their value in predicting HP-count using Poisson regressions. Variables with a significance level below $p < 0.05$ in the multivariate analyses were retained.

Qualitative analysis. Interviews were tape-recorded, transcribed verbatim, then coded and analyzed with the

support of NUD*IST 6 software (QSR International, Doncaster, Victoria, Australia). We used a coding tree informed by the literature on primary care organizations. This was then refined through an iterative process using an open coding strategy.¹⁹ Subsequent analysis involved axial and selected coding to explore interconnections between existing categories and subcategories.²⁰ Finally, we used an immersion–crystallization approach²¹ to identify and articulate the themes and patterns emerging from the empirical dataset.

Results

Descriptive and bivariate analyses. Thirty-five FFS, FHN and CHC practices and 32 HSO practices were recruited. An analysis that used the Ontario Health Insurance Plan database and the Ontario Physician Manpower database to compare the physicians recruited for this study with all physicians practising in the same model showed little differences for key fea-

Table 3: Health promotion scores overall and for individual subjects

Variable	Health promotion score, %				Comparison*
	CHC	FFS	FHN	HSO	
HP-count, mean	1.19	0.83	0.93	0.84	CHC > FFS, FHN, HSO
HP-discussed, overall, %	59	47	51	46	CHC > FFS, FHN, HSO
HP-discussed, individual subjects, %					
Healthy foods and unhealthy foods	28	17	21	20	CHC > FFS, FHN, HSO
Home safety	7	4	3	3	CHC > FFS, FHN, HSO
Family conflicts	17	10	10	10	CHC > FFS, FHN, HSO
Exercise	40	33	34	32	CHC > FFS, FHN, HSO
Tobacco and smoking	18	15	18	13	CHC, FHN > HSO
Alcohol consumption	14	8	12	9	CHC, FHN > FFS, CHC > HSO
Fall prevention†	9	4	7	5	No difference

CHC = community health centre, FFS = fee for service, FHN = family health network, HSO = health service organization, HP-count = the number of health promotion items discussed with the patient in the consultation, HP-discussed = whether the patient reported discussing at least 1 health promotion subject in the consultation. HP-discussed scores for individual subjects reflect the percentage of patients reporting having discussed that subject during their consultation that day. Health promotion subjects were adapted from the Primary Care Assessment Tool on comprehensiveness of services provided. Five of the original 11 subjects were retained and an additional 2 were included.

* Compared with multilevel logistic regression. In this column, statistically different models or group of models are separated with a comma.

† Only patients 65 years of age and older were included in analyzing this factor.

Table 4: Adjusted odds ratios for primary care delivery model variables associated with discussion of health promotion

Adjustment level	CHC	Adjusted odds ratio for HP-discussed (95% CI)		
		FFS	FHN	HSO
None	1	0.61 (0.48–0.76)	0.69 (0.56–0.87)	0.59 (0.47–0.74)
Patient characteristics and contextual factors*	1	0.60 (0.47–0.75)	0.68 (0.54–0.86)	0.57 (0.45–0.72)
Patient and provider characteristics and contextual factors†	1	0.63 (0.50–0.78)	0.74 (0.59–0.92)	0.66 (0.52–0.83)

CHC = community health centre, FFS = fee for service, FHN = family health network, HSO = health service organization, HP-discussed = whether the patient reported discussing at least 1 health promotion subject in the consultation, CI = confidence interval.

* Patient characteristics included in the analysis were those listed under “Patient profile” in Table 1; contextual factors were the 2 variables listed under “Setting” in Table 2. For adjusted analyses on patient and contextual characteristics, the significant variables are patient sex and rurality (rurality square).

† Provider characteristics were those listed under “Family physician profile” in Table 2. The interaction between these variables and the model variables was also considered. For adjusted analyses on patient, contextual and provider characteristics, the significant variables are patient sex, family physician sex and rurality (rurality square).

tures.¹⁶ The overall patient response rate was 82% (range 77%–94%), and 4861 patients (91%) responded to the health promotion question. In-depth interviews were conducted with 40 family physicians, 6 nurse practitioners and 24 patients.

There was considerable variability in patient, provider and practice profiles across models (Tables 1 and 2). Several factors had a significant association with the HP-discussed measure that were consistent across models.

Comparison of primary care delivery models. The likelihood of a health promotion subject being discussed and the number of subjects discussed in the reference visit were significantly higher in CHC practices than in practices in the other models. Several health promotion subjects were more likely to have been discussed in a CHC visit (Table 3). CHC performance remained superior in the regressions adjusted for patient factors and provider profile for HP-discussed (Table 4) and HP-count (results not shown) in the multivariate multilevel logistic regression. The adjusted odds ratio (AOR) of HP-discussed in practices in the other primary care delivery models compared with CHCs ranged between 0.63 (95% confidence interval [CI] 0.50–0.78) and 0.74 (95% CI 0.59–0.92). CHC patients also reported more frequent visits to their practice during the year (8.3 v. 4.8–7.1 visits) than patients of practices in other models, which increased the overall likelihood that they would have a discussion about a health promotion subject with their health care provider.

Predicting health promotion performance. Several factors were independently associated with HP-discussed (Table 5). In this equation, the addition of the primary care model variable did not add significant explanatory power, indicating that much of the reason for model variation has been captured in the equation. Health promotion activity was reported more frequently by patients enrolled with practices with larger proportions of female family physicians (AOR 1.38, 95% CI 1.15–1.66) and practices employing more nurses (AOR 1.07, 95% CI 1.02–1.12). The booking interval for a regular visit was positively associated with health promotion (AOR 1.03, 95% CI 1.01–1.04); each 10-minute increment was associated with a 30% increase in HP-discussed. Smaller family physician panel sizes (number of patients in the care of a full-time equivalent family physician) were positively associated with HP-discussed in a linear fashion (AOR 0.92, 95% CI 0.85–1.01); patients of practices in which each family physician managed a caseload averaging 1500 patients were 8% more likely to discuss a health promotion subject than those enrolled in practices serving 2500 patients per family physician. The size of the physician panel was inversely related to the booking interval. When booking interval

Table 5: Adjusted odds ratios of factors independently associated with health promotion

Factor	Adjusted odds ratio (95% CI)
Patient profile	
Age, yr	0.996 (0.9924–0.9998)
Male	1.31 (1.15–1.49)
Visit-specific information	
Reason for visit	
Recent condition	Reference
General checkup	3.34 (2.81–3.97)
Chronic condition	2.03 (1.69–2.43)
Other	1.05 (0.9–1.23)
Provider for that visit	
Saw own provider	Reference
Had but did not see own provider	0.58 (0.43–0.78)
Did not have a regular provider	0.66 (0.45–0.98)
Had and saw regular provider: nurse practitioner	0.79 (0.58–1.08)
Family physician profile	
Female provider, %	1.38 (1.15–1.66)
Practice characteristics	
Nurses (FTE)*	1.07 (1.02–1.12)
Panel size†	0.92 (0.85–1.01)
Booking interval for routine visit, min	1.03 (1.01–1.04)
CI = confidence interval, FTE = full-time equivalent.	
* Refers to full-time equivalent registered nurses, nurses and nursing assistants.	
† Panel size is the number of patients per full-time equivalent family physician (x 1000).	

is removed from the equation, the effect of panel size becomes statistically significant (AOR 0.89, 95% CI 0.81–0.97).

Finally, health promotion was lower among patients not visiting with their own provider (AOR 0.58, 95% CI 0.43–0.78) and higher among those receiving a general checkup (AOR 3.34, 95% CI 2.81–3.97) or care for a chronic condition (AOR 2.03, 95% CI 1.69–2.43). The association between each of the predictive variables and HP-discussed in this multivariate equation was consistent across all models. All factors except not having a regular provider were also positively independently associated with HP-count.

Qualitative evaluation. Results of the qualitative evaluation illuminated the quantitative findings. Compared with the physicians interviewed in CHCs, those in FFS practices, FHNs and HSOs tended to view health promotion as having a lower priority than other issues to be addressed in patient visits. Constrained by time and preoccupied by the tyranny of the urgent, a number of these physicians doubted their ability to meaningfully influence issues that many saw as a patient's own re-

sponsibility. Time constraints were mentioned repeatedly. One family physician from an FFS practice commented, “So I try to do the preventive stuff of you know women’s health ... education of lifestyle, we try to do all of that. Time is a limiting factor. Would I like to do more? Yes. Can I afford to do more economically or realistically with the number of patients that I have? No.” Physicians in FFS practices, FHNs and HSOs valued relational continuity; they felt that health promotion can be effective even at a “low dose” if it is done in the context of a long, exclusive and trusting patient–physician relationship. Indeed, a number of physicians expressed anxiety about the implications of the loss of relational continuity that may follow a move to team-based care.

In contrast, physicians working in collaborative models of care (CHCs and 1 interdisciplinary HSO) were more likely to view health promotion as an integral part of primary patient care. They valued the varied contributions of members of an inter-professional team in encouraging patient-centred behavioural change. As one family physician at a CHC suggested, “And very often, other professionals are much better at doing the health education and health promotion. For me to take somebody and have a chat about cholesterol versus a dietitian, if the dietitian is available, which is much cheaper than me, it makes sense to me.”

Discussion

The aim of this study was to compare the performance of primary care models in delivering health promotion and to identify practice factors associated with the delivery of health promotion. CHCs performed better than the other models in the delivery of health promotion. These results mirror those of an earlier study that relied on provider-reported measures of health promotion within CHCs, FFS practices and HSOs in Ontario,²² but they are inconsistent with the results of Hutchison and colleagues, who found that delivery of preventive and health promotion activities was superior in a salary-based model and a capitation-based model (HSOs) to that in the traditional FFS model.¹⁴ As suggested by our interviews, CHCs place more importance on health promotion than other models. It seems likely that their pattern of service delivery has evolved in concert with their mandate: CHCs emphasize wellness and prevention and incorporate clinic-based interventions to address the non-medical determinants of health.²³

Practice influences on prevention. The model of primary care delivery did not independently predict health promotion activity in the multivariate model containing patient, family physician and organizational

factors. The relationship between the predictive factors and health promotion remained true for each model, indicating not that the effect of these factors is due to an association with better performing models but rather that their impact would hold true across models.

These results help explain the observed differences between the models. CHCs work with smaller panel sizes, more nurses, longer booking intervals and a much higher proportion of female family physicians (nearly 3 times higher than in the FFS practices): all of these factors increase the likelihood that health promotion activities will be conducted. These factors outweighed any negative influence of lower relational continuity observed in CHCs.

Physician concerns about loss of continuity were reflected in another Canadian study as a barrier to integrating prevention into daily practice.²⁴ In our study, patients were significantly more likely to report discussing a health promotion subject during a visit with their regular provider, independent of the reason for the visit, than were patients visiting a provider who is not their regular provider. These results are consistent with those of other studies documenting a positive association between relational continuity and preventive care.²⁵⁻³⁰ Our findings that female family physicians are more likely to provide preventive services are consistent with those of other studies.³¹⁻³³ Longer booking intervals and smaller caseloads were also found to be positively associated with health promotion in 1 other study³⁴ and this finding is in keeping with recent work highlighting the time burden of delivery of preventive services in primary care.^{35,36} If one assumes that the amount of time to be worked by health professionals remains constant, smaller patient caseloads and longer booking intervals have clear implications for the provision of quality care.

One assumption that has been made in connection with efforts to reform the delivery of primary care is that routine tasks could be better managed by non-physician health professionals. Our finding that the number of nurses in a practice was an independent predictor of patient-reported health promotion supports this assumption. The most likely explanation for our finding is that nurses perform health promotion activities in some practices. An English study found that patients were receptive to receiving lifestyle advice from nurses.³⁷ The findings are of particular importance in light of the current interest in primary care reform. Most Canadian provinces are engaging in an active process of primary health care renewal,³⁸ much of it focused on organizational and economic changes designed to increase the comprehensiveness, integration and accessibility of primary care services. New delivery models frequently incorporate interdisciplinary teams, patient enrolment and active promotion of prevention and chronic disease management.⁷ In Ontario, family health teams were recently developed to deliver

primary care, and the contribution of allied health professionals is a key component of this new model.³⁹ Family health teams are practices that have received provincial financial support for allied health professionals to assist in the care of the population they serve. Nurses will form a significant part of that workforce and may be influential in promoting healthy lifestyles. Surprisingly, although a significant component of nurse practitioners' training concerns the delivery of health promotion and wellness care, the presence of nurse practitioners in a practice was not associated with better health promotion in our study.

Limitations. This study has a number of strengths and limitations. It provided rich information about practice parameters, providers and patients that allowed an in-depth evaluation of many of the factors associated with health promotion activities. Data were collected from a large, random sample of practices. The study used qualitative methods to illuminate many of its findings.

Participation by practices was low, particularly in the case of the FFS practices. However, a comparison of family physician profiles in the practices that participated in this study and in all practices of the same model in Ontario suggested that the study sample was representative (results not shown).¹⁶

Because many health promotion activities performed by providers are not routinely recorded in the patient's chart, we relied on patient reports of health promotion activities. We limited recall bias by administering this component of the questionnaire immediately after the patient's encounter with their provider. The question capturing health promotion activities was broadly worded so that we could capture any discussion of 1 of the 7 measured items. We were not able to evaluate the quality of these discussions. We also did not capture information about the patients' lifestyle (e.g., smoker, physically active) and could not correct for its impact on health promotion discussions. We chose to administer the patient survey to those patients visiting the practice on a given day. This face-to-face approach likely enhanced participation but admittedly resulted in an overrepresentation of the patients more likely to frequent the practice. Other provider factors found to be associated with health promotion in other studies, such as their awareness of and agreement with clinical practice guidelines,^{25,40} their self-perceived ability to affect behaviour^{24,41} and their personal health behaviours,³⁵ were not evaluated in the present study. These factors could have had an impact on our conclusions if they had varied by model.

In conclusion, there was a significant difference between models of primary care delivery in terms of health promotion activities, as measured by patient reports of the delivery of such activities within their consultation with their provider. The effects of factors

associated with the organization of the practice and visit-specific information outweighed the effects of any additional factors associated with the model of the practice.

Several of the factors associated with health promotion delivery during a patient encounter are potentially modifiable by either the practice or regulatory authorities. Notwithstanding this, any potential benefits from modifications to practice structure stemming from the findings of this study should be weighed against their potential impact on other attributes of primary care delivery. For example, limiting the caseload of family physicians may improve health promotion but would also limit accessibility.

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