

Family doctors providing home visits in Nova Scotia

Who are they and how often does it happen?

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Abstract

Objective To examine how FP and practice characteristics relate to the provision of home visits.

Design Census survey linked to administrative billing data.

Setting Nova Scotia, 2014 to 2015.

Participants Respondents to the family physician practice survey (N = 740; 84.5% response rate), the FP provider survey (N = 677; 56.7% response rate), and the nurse practitioner provider survey (N = 45; 68.9% response rate).

Main outcome measures Provision of home visits. Family physician characteristics included age, sex, and proximity to retirement; practice characteristics included patient age and practice rurality.

Results Overall, 84.4% of surveyed FPs reported that they did home visits. In both survey data and billing data, older FPs were more likely to do home visits ($P < .01$). In multivariate analyses, older FP age, older patient age, rural practice location, and male FP sex were all independently associated with provision of any home visits and with the number of home visits (all $P < .0001$). Among FPs who had billed for home visits in the study year, the median (interquartile range [IQR]) number of visits was 16 (2 to 42); the range was 1 to 1265. Male FPs billed for more home visits (median [IQR] = 21 [7 to 54] visits) than female FPs (median [IQR] = 12 [4 to 30]) did ($P < .001$). Rural FPs had performed more home visits (median [IQR] = 29 [8 to 83]) than their urban counterparts (median [IQR] = 14 [5 to 36]) had ($P < .001$).

Conclusion Most FPs in Nova Scotia who responded to our survey reported doing home visits. This is an encouraging finding for the care of vulnerable older adults and runs counter to the widely held view that home visits are a dying art. Nevertheless, given that older male FPs are more likely to do home visits, there could be work force implications as these FPs retire. As the population ages, strategies to support home visits will be an important area for further research and policy development.

Editor's key points

- ▶ Home visits are an important service for the health care of older adults, particularly those who are frail and housebound. It is commonly thought that fewer FPs are offering the service than in the past, yet data are scarce.
- ▶ This study used practice and provider surveys, linked to administrative billing data, to examine the provision of housecalls in Nova Scotia, and the authors found that nearly all FPs are providing home visits, although generally in small numbers.
- ▶ Most housecalls in Nova Scotia are provided by older male FPs. As these FPs scale back their practices and retire, and as family practice profiles change, it is possible there will be a reduction in home visit provision. As most FPs are currently doing home visits, suggesting that the low overall number of home visits is not the result of unwillingness to provide the service, efforts to increase home visit provision might have more success if they are focused on addressing barriers, such as transportation, hygiene and safety, administrative issues, and remuneration issues.

Points de repère du rédacteur

► Les visites à domicile sont un important service pour les soins de santé aux adultes plus âgés, surtout à ceux qui sont fragiles et confinés à la maison. On estime généralement que moins de MF que par le passé offrent ce service, mais les données à cet égard sont peu nombreuses.

► Cette étude a eu recours à des sondages effectués auprès de cliniques et de professionnels, et reliés aux données administratives sur la facturation, pour examiner la prestation de visites à domicile en Nouvelle-Écosse; les auteurs ont constaté que presque tous les MF font des visites à domicile, quoique ce soit généralement en nombres restreints.

► La plupart des visites à domicile en Nouvelle-Écosse sont faites par des hommes MF plus âgés. À mesure que ces MF réduiront leur pratique et prendront leur retraite, et que les profils des pratiques familiales changeront, il est possible que nous soyons témoins d'une diminution de la prestation des visites à domicile. Puisqu'à l'heure actuelle, la plupart des MF font des visites à domicile, ce qui laisse croire que le nombre généralement faible de telles visites n'est pas attribuable à un manque de volonté de fournir ce service, les efforts pour augmenter la prestation des visites à domicile seraient peut-être plus fructueux s'ils se concentraient sur l'élimination d'obstacles comme le transport, l'hygiène et la sécurité, les questions administratives et la rémunération.

Les médecins de famille qui font des visites à domicile en Nouvelle-Écosse

Qui sont-ils et à quelle fréquence les font-ils?

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Résumé

Objectif Examiner les liens qui existent entre les caractéristiques des MF et de leur pratique, et la prestation des visites à domicile.

Type d'étude Sondage de recensement relié aux données administratives sur la facturation.

Contexte Nouvelle-Écosse, de 2014 à 2015.

Participants Les répondants au sondage effectué auprès des cliniques de médecins de famille (N = 740; taux de réponse de 84,5%), au sondage auprès des MF (N = 677; taux de réponse de 56,7%) et au sondage auprès des infirmières praticiennes (N = 45; taux de réponse de 68,9%).

Principaux paramètres à l'étude La prestation des visites à domicile. Les caractéristiques des MF incluait l'âge, le sexe et la proximité de la retraite; les caractéristiques de la pratique incluait l'âge des patients et la ruralité.

Résultats Dans l'ensemble, 84,4% des MF qui ont répondu au sondage ont signalé qu'ils faisaient des visites à domicile. Tant dans les données du sondage que dans celles de la facturation, les MF plus âgés étaient plus enclins à faire des visites à domicile ($p < ,01$). Dans les analyses multivariées, l'âge plus avancé des MF, l'âge plus avancé des patients, l'emplacement rural de la pratique et le sexe masculin des MF étaient tous indépendamment associés à la prestation des visites à domicile et au nombre de ces visites (tous $p < ,0001$). Parmi les MF qui avaient facturé des visites à domicile durant l'année à l'étude, le nombre médian de visites à domicile (intervalle interquartile [IIQ]) s'élevait à 16 (2 à 42); l'intervalle était de 1 à 1265. Les hommes MF avaient facturé un plus grand nombre de visites à domicile (nombre médian [IIQ] = 21 [7 à 54] visites) que les femmes MF (nombre médian [IIQ] = 12 [4 à 30]) ($p < ,001$). Les médecins de famille ruraux avaient fait plus de visites à domicile (nombre médian [IIQ] = 29 [8 à 83]) que leurs homologues urbains (nombre médian [IIQ] = 14 [5 à 36]) ($p < ,001$).

Conclusion La plupart des MF en Nouvelle-Écosse qui ont répondu à notre sondage ont signalé qu'ils faisaient des visites à domicile. Il s'agit d'une constatation encourageante pour les soins aux aînés vulnérables, et elle va à l'encontre de la croyance généralisée que les visites à domicile sont un art en voie de disparition. Par ailleurs, étant donné que les hommes MF plus âgés sont plus enclins à faire des visites à domicile, il pourrait y avoir des conséquences liées aux effectifs lorsque ces MF prendront leur retraite. À mesure que la population vieillit, il sera important de faire plus de recherche et d'élaborer des politiques dans le but de soutenir les visites à domicile.

Home visits (also known as *housecalls* or *domiciliary visits*) by primary care providers are a vital service for vulnerable populations, including frail and housebound older adults.^{1,2} Dedicated programs exist in some jurisdictions but are not widely available across Canada.

Although home visit prevalence is assumed to be waning,^{3,4} little is known about how many home visits are done by primary care providers (ie, FPs and nurse practitioners [NPs]) outside of dedicated home visit services. The 2010 National Physician Survey of Canadian FPs found that 42% of respondents reported doing home visits.⁵ In addition to a low response rate (19%), the survey was limited in not collecting data on the frequency of home visits, and the overall number of visits was assumed to be low.⁶ An American study of 22 186 physicians providing primary care for Medicare beneficiaries found that only 5% provided home visits.⁷ Factors associated with home visit provision included being an FP, older physician age, male sex, and being in rural, especially solo, practice.⁷ Furthermore, patterns of primary care comprehensiveness are evolving, and the effects of these changes on home visits are not known.⁸

We therefore sought to investigate patterns of home visit provision among primary care providers in Nova Scotia (NS) using data from a census survey of FPs, NPs, and their practices linked with administrative billing data.

— Methods —

This study is an analysis of the Model and Access Atlas of Primary Care (MAAP-NS) study, which began in 2014. The detailed MAAP-NS protocol is published elsewhere.⁹ In brief, data were gathered using 2 provincewide surveys (2014 to 2015), which were linked to billing records. A telephone “practice survey” was done for all 740 primary care providers in NS, asking the receptionist or office manager about the practice, including questions about services provided by each provider in the practice and the practice’s organizational model. A second “provider survey” was sent by fax to all FPs and NPs directly.

Linkage to administrative billing data followed Health Data Nova Scotia (HDNS) protocols.

Measures

Whether providers conducted home visits as a part of their practice was drawn from a yes or no question in the provider survey. The small number of NP respondents did not allow for subgroup analyses, so all analyses were conducted for FPs only, except to separately report the proportion of NPs who indicated on the practice survey that they provided home visits.

Survey data included FP age and sex, whether the practice was rural or not, and FPs’ self-reported anticipated retirement date.

Linkage to billing data was done by HDNS for FPs (not NPs) who participated in either of the MAAP-NS surveys.

We used Medical Services Insurance billing database location codes *HOME* (patient’s home) and *HMHC* (acute home care) to count the number of home visits done by MAAP-NS FPs in the fiscal year corresponding with the survey data collection. Services provided in institutions (eg, long-term care and correctional facilities) were not included for this analysis. Patient age was extracted from the billing data.

Whether an FP provided home visits and the number of home visits were analyzed in relation to FP demographic variables using descriptive analyses. Central tendency was reported as medians with interquartile ranges (IQRs). Statistical significance of between-group comparisons was tested using Wilcoxon rank sum tests for continuous variables and χ^2 tests for categorical variables. Logistic regression was used for analyses examining home visit provision as a binary dependent variable (yes or no home visits). Linear regression was used to examine the number of home visits in the 12-month study period. Regression models were adjusted for potential predictors with a priori relevance, including FP age, FP sex, patient age, and practice location (urban or rural). Data were analyzed using SPSS, version 24,¹⁰ and SAS, version 9.4.¹¹

The MAAP-NS study was approved by the Capital District Health Authority Research Ethics Board (now the Nova Scotia Health Authority Research Ethics Board) and the HDNS Data Access Committee.

— Results —

Among FPs, the practice telephone survey had an 84.5% (n=587) response rate, and the provider fax survey had a 56.7% (n=384) response rate. Linked data were available for 632 FPs and their practices.

At the time of this study, NP integration into community-based primary care was in early stages in NS; a small number of NPs (N=31) responded to our provider survey, representing a 68.9% response rate, which restricted our ability to do subgroup analyses. Among the NPs who responded to the survey, 90.5% reported doing home visits.

Among FP survey respondents, 84.4% reported doing home visits. The median (IQR) age of responding FPs was 53 (44 to 60; range 29 to 87); 49.6% were women.

Home visit provision varied in relation to FP characteristics. Older FPs, male FPs, and those practising in rural areas were more likely to do home visits and to provide a greater number of home visits (**Table 1** and **Figure 1**). Based on linked billing data, among FPs who billed for home visits in the study year, the median (IQR) number of visits was 16 (2 to 42; range 1 to 1265). The number of visits was associated with male sex, rural practice, and older FP age, with FPs aged 60 or older doing more than those in other age groups (**Figure 1**).

Provider characteristics with statistically significant associations with home visit provision at the bivariate level were included in regression models, and all remained statistically significant independent predictors (**Table 2**).

Table 1. Provider characteristics in relation to the provision and number of home visits

PROVIDER CHARACTERISTIC	ANY HOME VISITS, N (%) (N = 384)*	P VALUE	MEDIAN (IQR) NO. OF HOME VISITS IN MOST RECENT YEAR (N = 632)†	P VALUE	MEDIAN (IQR) HOME VISITS AS A PROPORTION OF TOTAL PATIENT ENCOUNTERS IN MOST RECENT YEAR (N = 632)†	P VALUE
Sex						
• Male	157 (82.2)	.26	21 (7-54)	<.001	1.33 (0.41-3.32)	.03
• Female	167 (86.5)		12 (4-30)		0.89 (0.30-2.67)	
Practice location						
• Rural	83 (91.2)	.04	29 (8-83)	<.001	1.83 (0.57-4.80)	<.001
• Urban	241 (82.3)		14 (5-36)		0.97 (0.31-0.97)	
Age, y						
• ≤ 39	46 (79.3)	.008	11 (5-29)	.004	0.72 (0.28-2.19)	.008
• 40-49	75 (75.8)		14 (4-36)		0.99 (0.26-2.67)	
• 50-59	117 (91.4)		17 (5-38)		1.02 (0.36-2.93)	
• ≥ 60	85 (86.7)		24 (7-67)		1.57 (0.57-4.79)	
Retirement plans (N = 368)*						
• In > 5 y	224 (83.0)	.33	16 (6-38)	.37	1.07 (0.39-3.11)	.22
• In ≤ 5 y	86 (87.8)		23 (6-50)		1.41 (0.36-3.38)	

IQR—interquartile range.

*Data from the provider surveys. The provider surveys had a lower number of responders, as reported.

†Billing data.

— Discussion —

By far most (>80%) FPs in NS reported doing home visits, although the number of visits was low overall (median of 16 visits per year among those who did them). Home visit provision was associated with older patient age and provider factors including older age, male sex, and practising in a rural area. This suggests that despite widely held views that home visits are a dying art, FPs in NS are open to doing home visits as part of their practices. This raises hope that, with increased supports and decreased barriers, provision of this important service could be sustained and even increased. It also raises concern that once the older male providers retire, home visits might become rarer. It is heartening that almost all NPs report doing home visits, although we do not know how many they do in a year.

Limitations and strengths

Our practice and provider surveys had response rates of 84.5% and 57.3%, respectively. Although these are high relative to other physician surveys, nonresponse introduces the possibility of systemic bias if nonresponders differ from responders. Nonresponders included a higher proportion of those working in walk-in clinics, whom we would not expect to offer home visits. Our question about home visits was embedded in a long survey about practice characteristics, so it is unlikely that FPs responded based on their interest specific to home visits. Provider survey answers were based on self-report,

although billing data linkage allowed us to quantify the survey results. Although billing data are a powerful tool, use of administrative data always presents challenges. Here, we were able to identify all visits in which the location code was “home.” It is possible that some FPs use alternative billing codes for services provided in homes if another, more favourable billing code exists. Some FPs who are not remunerated by fee-for-service might be less likely to submit billing data even if they do home visits. However, in both instances, we would expect that under-reporting of home visits that were performed would bias our estimates conservatively. Additionally, our findings are specific to NS, and home visit provision in other jurisdictions within and outside of Canada might differ. Lower rates of home visit provision have been reported in the Canadian literature (eg, home visits were reported by 42% of respondents to the 2010 National Physician Survey of Canadian FPs, but this survey was limited by a very low response rate of only 19%, and further iterations of the survey have subsequently been canceled).⁵ Other differences in home visit programs exist between jurisdictions. For example, outside of outreach services such as home-based palliative care, NS does not have dedicated home visit services such as those in other jurisdictions like the House Calls program (www.seniorshousecalls.ca) in Toronto, Ont, and the Home Team Medical program (www.hometeammedical.ca) in Victoria, BC.^{6,12}

However, our study has strengths. The MAAP-NS study aimed to include all FPs in the province rather

Figure 1. Number of home visits provided in 1 y, by provider characteristics: A) Age, B) proximity to retirement, C) sex, and D) rural versus urban practice location. Box plots present medians with interquartile ranges. For each comparison group, the number of outlier providers with a high number of visits is presented to illustrate the extremes of the range.

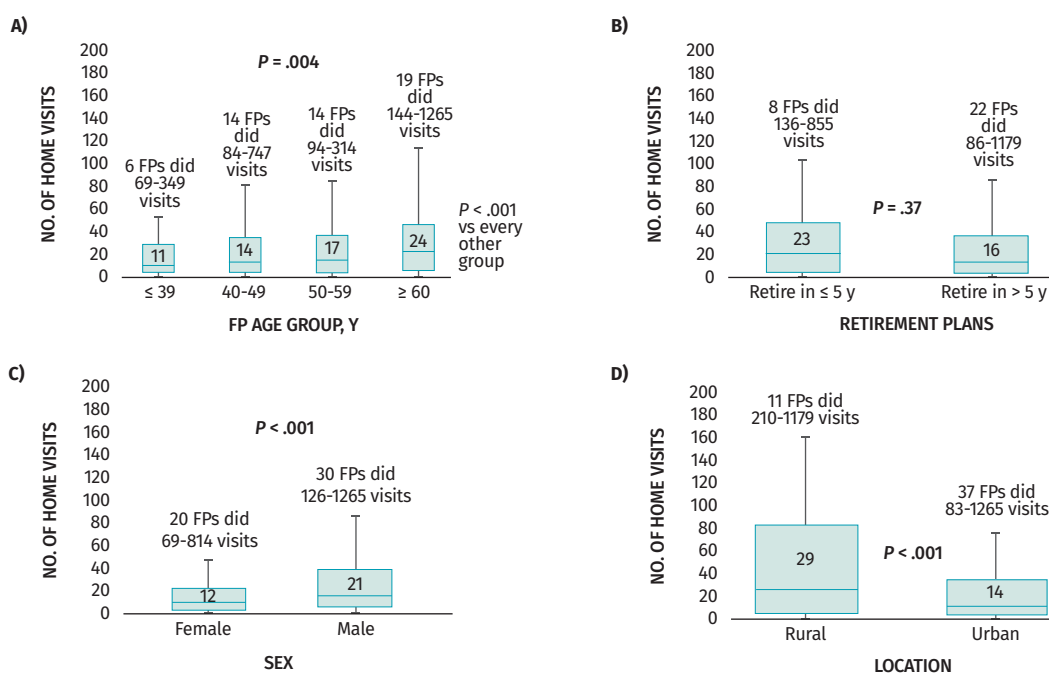


Table 2. Independent predictors of home visit provision from adjusted regression models

VARIABLE	OR (LOGISTIC REGRESSION, HOME VISITS YES OR NO)	95% CI	P VALUE	B (SE) NO. OF HOME VISITS (LINEAR REGRESSION)	P VALUE	B (SE) HOME VISITS AS PROPORTION OF TOTAL PATIENT ENCOUNTERS	P VALUE
Physician age, y	1.027	1.026-1.028	<.0001	2.11 (0.02)	<.0001	0.0015 (0.0001)	<.0001
Female physician	0.57	0.56-0.58	<.0001	-21.79 (0.41)	<.0001	-0.0030 (0.0003)	<.0001
Rural practice	1.23	1.21-1.25	<.0001	44.27 (0.44)	<.0001	0.0253 (0.0003)	<.0001
Patient age, y	1.006	1.005-1.006	<.0001	0.17 (0.008)	<.0001	0.0001 (0.0000)	<.0001

OR—odds ratio, SE—standard error.

than a random sample. Triangulation among the practice survey, provider surveys, and billing data afforded an opportunity to explore predictors of home visit provision, including demographic and FP resource-planning variables not found in administrative billing data.

When viewed through policy and primary care resource-planning lenses, our findings raise several important issues. As part of the overall MAAP-NS study, investigation is under way on how practice profiles of newer FPs might differ from those of their more established colleagues. Here, we found that FP age was associated with home visit provision. As more senior FPs retire, we might see reduced home visits. Interestingly, despite finding that older FPs were providing more home visits, we did not identify an association with proximity to retirement. This might suggest that some older physicians whose practices include many home visits have

no plans to retire. Anecdotally, we do see some FPs in NS practising into their 80s either by choice or because they feel that they cannot leave their patients in the absence of being able to find a replacement. It is also possible that the practice profiles of FPs might evolve as they age along with their patient population; this could mean that today's younger FPs might increase their provision of home visits as their patient population ages. Given its implications for work force planning, this will be an important topic for future study.

We found female FPs did fewer home visits, even when accounting for all other factors including provider age, rural or urban practice, patient age, and proximity to retirement. A similar sex difference has been previously reported regarding provider workload and hours per week in patient care.¹³ It seems unlikely that female FPs are less interested in seeing patients at home,

although this should be explored further. It could be, for example, that there are safety issues in solo home visits that are more concerning for women than men.¹⁴ The sex difference might also be related to female FPs balancing more direct family responsibilities (eg, child care) that might hinder their ability to do home visits after hours or “on the way home” from the office. This issue calls for further qualitative research to better understand FPs’ feelings about home visits and barriers they encounter in providing them.

Our study focused on FPs, who represent most primary care providers in NS. At the time of our survey, NPs represented a small proportion of primary care providers, although their numbers are increasing as part of efforts to improve access to primary care in NS. The small number of NP respondents (31) did not allow for subgroup analysis, but it is encouraging that 90% reported doing home visits. In NS, NPs generally work on contract rather than fee-for-service. For this reason, billing data linkage would be unlikely to identify all home visits, making it difficult to compare home visits provided by FPs with those provided by NPs. Supporting NP capacity to provide home visits is a potential means of supporting housebound patients; this has been successful in some jurisdictions.^{2,6} Existing literature highlights the importance of interprofessional teamwork, along with careful consideration of target populations, integration into the continuum of care, and after-hours coverage.^{2,6} Many proponents of home visits cite their benefits to both patients and providers as essential and rewarding parts of practice.^{15,16}

Conclusion

From a policy standpoint, 2 main findings stand out. First, the low overall number of home visits does not seem to be the result of unwillingness to provide the service, as most FPs are doing them, if only in small numbers. Rather than focusing solely on convincing providers that home visits are important (education, exposure to home visits, and role models in training are predictors of interest and confidence in providing the service),¹⁴ efforts to increase home visit provision might have more success if they are focused on addressing barriers.^{6,17,18} These include transportation, hygiene and safety, administrative issues, and remuneration issues, because home visits take longer and thus should be associated with commensurate increases in billings or service credits.¹⁵ Strategies to address some of these barriers could include providing transportation options and doing home visits in pairs for safety. As the technological complexity of practice increases in the age of electronic medical records, access to patient records and test results while in patients’ homes and having needed equipment on hand outside of the office setting might also be barriers. Second, as older FPs scale back their practices and retire, and as family practice profiles

change, we risk experiencing a reduction in home visit provision. Given that dedicated home visit services have been successful in increasing access to home visits for housebound populations where they have been implemented, their more widespread implementation could be considered, with the caveat that they do come with potential cost-benefit trade-offs, which would need to be monitored.¹⁹ All of this should be considered in the context of physician resource planning and attempts to optimize care for vulnerable housebound patients. 🌿

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Contributors

All authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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