

Screening for HIV during pregnancy

Survey of physicians' practices

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ABSTRACT

OBJECTIVE To discover what proportion of Canadian family physicians and obstetricians discuss HIV screening with, and offer and recommend it to, the pregnant women for whom they provide prenatal care, and to describe how screening practices vary by physician and type of practice.

DESIGN Survey using a mailed questionnaire.

SETTING Canada.

PARTICIPANTS Random sample of family physicians and obstetricians (3076 responded) providing prenatal care in 1997.

MAIN OUTCOME MEASURES Sex; age; years since graduation; teaching appointments; practice characteristics; specialty; province; proportion of physicians discussing HIV screening with, and offering and recommending it to, their prenatal patients; characteristics of physicians who did and did not offer screening.

RESULTS Of 3076 responding physicians (61% response rate), 2129 (69%) provided prenatal care. About 55% of these reported they offered HIV screening to all or most of their pregnant patients; 42% reported either not offering screening or offering it only to patients they perceived at high risk. Family physicians who were female, younger, and holding teaching appointments were more likely to offer screening, as were younger obstetricians and those practising in urban settings. Family physicians and obstetricians in British Columbia were much more likely than physicians in other regions to offer screening.

CONCLUSION This study provides baseline measures of the prenatal HIV screening practices of Canadian physicians and identifies factors associated with these practices.

RÉSUMÉ

OBJECTIF Établir la proportion des médecins de famille et des obstétriciens qui discutent du dépistage du VIH, l'offrent et le recommandent aux femmes enceintes à qui ils prodiguent des soins prénatals, et décrire comment les pratiques de dépistage varient selon le médecin et le type d'exercice.

CONCEPTION Une enquête à l'aide d'un questionnaire envoyé par la poste.

CONTEXTE Le Canada.

PARTICIPANTS Un échantillon aléatoire de médecins de famille et d'obstétriciens (3 076 ont répondu) dispensant des soins prénatals en 1997.

PRINCIPALES MESURES DES RÉSULTATS Le sexe; l'âge; les années écoulées depuis le diplôme; les charges d'enseignement; les caractéristiques de la pratique; la spécialité; la province; la proportion des médecins qui discutent du dépistage du VIH avec leurs patientes en soins prénatals, l'offrent et le recommandent; les caractéristiques des médecins qui ont offert le dépistage et de ceux qui ont omis de le faire.

RÉSULTATS Des 3 076 médecins répondants (un taux de réponse de 61%), 2 129 (69%) dispensaient des soins prénatals. Environ 55% de ceux-ci ont signalé offrir le dépistage du VIH à la totalité ou la majorité de leurs patientes enceintes; 42% ont rapporté soit ne pas offrir le dépistage ou encore l'offrir seulement aux patientes qu'ils percevaient comme étant à risque. Les médecins de famille qui étaient des femmes, étaient plus jeunes ou avaient une charge d'enseignement étaient davantage enclins à offrir le dépistage, ainsi que les obstétriciens plus jeunes et ceux exerçant en milieu urbain. Il était beaucoup plus fréquent chez les médecins de famille et les obstétriciens de la Colombie-Britannique d'offrir le dépistage par rapport à ceux des autres régions.

CONCLUSION Cette étude procure un point de référence concernant les pratiques des médecins canadiens en matière de dépistage prénatal du VIH et identifie les facteurs associés à ces pratiques.

This article has been peer reviewed.

Cet article a fait l'objet d'une évaluation externe.

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Mother-to-child (vertical) transmission is the most common route of HIV infection among children, accounting for 77% of all reported cases of pediatric AIDS in Canada.¹ Risk of vertical transmission can be reduced by using zidovudine therapy perinatally and neonatally,² by avoiding breastfeeding,³ and by avoiding early amniotomy.⁴ The interaction between physician and patient during prenatal care offers a unique opportunity to discuss HIV and AIDS, to offer HIV testing,⁵ and to identify mothers and infants who can benefit from therapy.

As early as the late 1980s, members of the medical community recognized the advantages of prenatal HIV testing and the need to offer it to all pregnant women.⁶⁻⁹ Recommendations and legislation were spurred by results of the Pediatric AIDS Clinical Trials Group protocol 076 in 1994.² Newfoundland in 1992 and British Columbia and Manitoba in 1994 were the first to implement prenatal screening programs in Canada.¹⁰ In 1996, the United States passed federal legislation requiring that, to receive funds for AIDS care, every state demonstrate a 50% reduction in the number of perinatal AIDS cases or provision of counseling and testing to 95% of pregnant women by the year 2000.¹¹

While work has been done outside Canada,^{12,13} investigation into the HIV screening practices of Canadian physicians has been limited. In a 1996 survey, Ogilvie et al¹⁴ found that surprisingly few physicians in Hamilton, Ont, always discussed HIV (8%) or always offered HIV testing (5%). In contrast, a 1997 survey by Poulin and Alary¹⁵ found that 56% of physicians in Quebec offered HIV testing to all pregnant women, 33% to those they perceived at risk, and 11% to those who requested it. Ratnapalan et al¹⁶ reported in 2000 that 42% of Toronto family physicians and 37% of

Toronto obstetricians discussed HIV screening with at least half their pregnant patients.

We conducted a large, national survey of Canadian physicians to document their practices with respect to prenatal screening for HIV. The intent was to provide baseline data on Canadian physicians' practices in a time of great flux in attitudes and practices relating to HIV. Our objectives were to describe the proportions of Canadian family physicians and obstetricians who discuss HIV screening with, and offer and recommend it to, the pregnant women for whom they provide prenatal care; and to describe how screening practices vary by the characteristics of physicians and their practices. Results of this study provide data against which changes in practice in this rapidly developing area can be compared.

METHODS

This report combines the results of two separately funded surveys: one of Ontario physicians, referred to as the "Ontario sample," and one of Canadian physicians outside Ontario, referred to as the "national sample." *Southam Medical Lists*¹⁷ were used as the sampling frame for both surveys; the lists include regular updates from all provincial licensing bodies, the Royal College of Physicians and Surgeons of Canada, the College of Family Physicians of Canada (CFPC), and the College of Physicians of Quebec.

Ontario survey

Two random samples were generated, one for family physicians and one for obstetricians and gynecologists (referred to as obstetricians). The sampling frame of family physicians included all physicians with CFPC certification. The sampling frame of obstetricians included all specialists in obstetrics and gynecology. To achieve target numbers of physicians in each group, 97.0% of obstetricians and 23.2% of family physicians were sampled; the sample of family physicians was stratified by sex. This resulted in a sample of 2040 eligible family physicians and 538 eligible obstetricians.

National survey

For the national survey, the sampling frame of family physicians included all CCFP physicians and general practitioners, while the sampling frame for obstetricians included all physicians who were specialists in obstetrics and gynecology. The sample of eligible physicians included 1853 (11.0% of all) family physicians and 621 (73.6% of all) obstetricians.

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By chance, the final sample included no physicians from the territories.

Data collection

Surveys were mailed during the fall and winter of 1997-1998, using a modified Dillman total design method.¹⁸ Questions were based on a survey used by Sage et al,¹⁹ and additional questions were designed specifically for this project. The questionnaire asked about practice with respect to HIV screening during pregnancy, practice characteristics, and demographics. It was pretested for content and face validity with a convenience sample of 10 physicians representing both family physicians and obstetricians and was then translated into French.²⁰ The questionnaire was pilot-tested in random samples of 12 family physicians and six obstetricians. Ethics approval was received from the Queen's University Research Ethics Board.

Data management and analysis

All physicians were asked to complete and return the section on demographic characteristics. Respondents and nonrespondents were compared with respect to age, sex, years since graduation, province, and specialty. Further analyses included only respondents who indicated they provided prenatal care.

Because this report combines the results of two surveys, each of which sampled different proportions of family physicians and obstetricians, the composition of the sample did not reflect the actual proportions of physicians in the country. To provide accurate national estimates of our outcome variables, statistical adjustment of results was necessary. The sample was stratified by geographic area (Ontario or outside Ontario); specialty (obstetricians or family physicians); and, in the case of family physicians, sex. Outcomes were calculated for each stratum, and each stratum was weighted to approximate its weight among physicians in Canada. Therefore, in the tables, results are presented as weighted rather than simple proportions,²¹ and cell frequencies are not available.

Prenatal care providers were described with respect to demographic and practice characteristics and HIV screening practices. Physicians were defined as offering screening if they reported they offered it to all or almost all of their pregnant patients. Those offering screening were compared with those who did not with respect to sex, age, years since graduation, whether they had teaching appointments, practice characteristics (ie, urban or rural, full-time or part-time, fee-for-service or other), specialty (family physician or obstetrician), and province. Odds ratios

and 95% confidence intervals (CIs) were calculated for each variable. Logistic regression was used to refine estimates after simultaneous adjustment for other factors. Because of small numbers in the subgroup analyses, provinces were combined into geographic regions (ie, Atlantic Provinces, Quebec, Ontario, Prairie Provinces, British Columbia).

Sample size calculation

Sample size requirements were calculated a priori to allow estimates of screening rates to be within a CI of $\pm 5\%$ in each of the three specialty groups of interest (male and female family physicians, obstetricians). Because two studies are reported in this paper, separate samples large enough for these estimates were drawn from Ontario and from outside Ontario. In each case the sample size was inflated to allow for loss of physicians not providing prenatal care and for nonresponders.

RESULTS

Of the 5255 questionnaires sent, 147 (2.8%) were returned as undeliverable and 56 (1.1%) reached physicians no longer in practice. These factors reduced potential respondents to 5052 (3893 family physicians and 1159 obstetricians).

Response rate

A total of 3076 of the 5052 physicians (61%) responded to the survey: 2389 family physicians (61%) and 687 obstetricians (59%). Prenatal care was provided by 2129 (69%) of respondents: 1614 family physicians (68%) and 515 obstetricians (75%).

Comparison of respondents and nonrespondents

Respondents were more often female, younger than nonrespondents, and less likely to practise in Quebec. They did not differ with respect to years since graduation or specialty (Table 1).

Demographic and practice characteristics

Female physicians, particularly female obstetricians, were more likely to provide prenatal care than their male counterparts were. More obstetricians than family physicians had teaching appointments. Most practices were located in urban areas; male family physicians had the lowest proportion of practices in urban areas. Female family physicians were less frequently in full-time practice than other physicians. Almost all physicians were paid solely by fee-for-service (Table 2).

Table 1. Characteristics of respondents and nonrespondents: *Proportions are weighted to reflect actual composition of physicians in Canada.*

CHARACTERISTICS	RESPONDENTS %	NONRESPONDENTS %
Female sex*	52.0	44.0
AGE (Y)*		
• <35	22.6	18.5
• 35-45	40.0	36.9
• 46-55	26.9	29.0
• 56-65	10.1	9.6
• >65	0.3	0.4
• Unknown	0.1	5.6
YEARS SINCE GRADUATION		
• <10	30.0	27.3
• 11-20	35.7	36.0
• 21-30	24.9	25.7
• >30	8.1	8.3
• Unknown	1.4	2.8
PROVINCE*		
• British Columbia	10.8	10.7
• Alberta	6.0	6.0
• Saskatchewan	2.3	2.2
• Manitoba	2.3	3.1
• Ontario	58.0	43.7
• Quebec	15.4	28.0
• New Brunswick	1.7	1.8
• Prince Edward Island	0.2	0.5
• Nova Scotia	2.3	2.7
• Newfoundland	1.2	1.8
SPECIALTY		
• Family physician	76.1	76.5
• Obstetrician	23.9	23.5

* Distributions were different at $P < .001$.

HIV screening

Table 3 shows physicians' practices with respect to HIV screening during pregnancy. Just over half the physicians reported both discussing HIV screening with (52.5%) and offering it to (54.5%) all or most of their prenatal patients. A relatively large percentage of physicians (31.5%) reported they offered HIV screening only to patients they perceived to be at high risk,

Table 2. Demographic and practice characteristics of prenatal care providers by provider type and sex: *Proportions are weighted to reflect actual composition of physicians in Canada.*

CHARACTERISTICS	FEMALE FAMILY PHYSICIANS %	MALE FAMILY PHYSICIANS %	FEMALE OBSTETRICIANS %	MALE OBSTETRICIANS %
Age (y)				
• <35	39.3	20.5	31.8	8.5
• 35-45	46.1	42.7	49.0	28.6
• 46-55	12.4	29.8	14.5	38.1
• 56-65	1.1	6.4	1.3	22.3
• Unknown	1.0	0.6	3.4	2.6
Years since graduation				
• <10	46.9	29.6	31.2	9.0
• 11-20	40.7	36.9	54.0	31.0
• 21-30	10.3	28.3	10.7	36.7
• >30	1.3	4.3	1.8	21.8
• Unknown	0.9	0.8	2.2	1.5
Teaching appointment	21.8	24.8	53.1	58.8
Urban practice	71.0	53.8	79.4	86.1
Full-time practice	70.7	92.0	96.7	94.4
Fee-for-service payment	79.0	85.7	86.7	88.4

although this was true for only 16.9% of female obstetricians. About 60% of female obstetricians recommended HIV screening to all women; less than half of the other groups did.

Factors associated with HIV screening

Table 4 compares, for each variable independently, the demographic and practice characteristics of those who offered and did not offer screening to all or most pregnant women. **Table 5** examines the association of demographic and practice characteristics using multivariate analyses. Separate regression models were generated for family physicians and obstetricians.

Among family physicians, female physicians, younger physicians, and those with teaching appointments were more likely to offer universal screening. Family physicians from British Columbia were more likely, while physicians in Ontario were less likely, to offer screening than those in the Atlantic Provinces. Obstetricians in urban centres and younger physicians were more

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Table 3. Screening practices for HIV in pregnant women by provider type and sex: *Proportions are weighted to reflect actual composition of physicians in Canada.*

SCREENING PRACTICE	FEMALE FAMILY PHYSICIANS (%)	MALE FAMILY PHYSICIANS (%)	FEMALE OBSTETRICIANS (%)	MALE OBSTETRICIANS (%)	OVERALL (%)
HIV SCREENING OFFERED TO:					
• All or almost all	60.0	51.3	75.3	55.9	54.5
• High-risk patients	28.4	33.4	16.9	30.0	31.5
• Do not usually offer	6.5	12.0	3.7	8.5	10.0
• Other	1.2	1.7	1.9	2.8	1.6
• Missing	3.8	1.7	2.2	2.8	2.4
HIV SCREENING RECOMMENDED TO:					
• All or almost all	42.6	39.1	60.3	43.5	40.7
• High-risk patients	44.7	48.2	31.8	41.7	46.6
• Do not usually offer	6.4	9.1	4.5	8.8	8.2
• Other	2.7	1.7	1.2	3.0	2.1
• Missing	3.6	1.9	2.2	3.0	2.4

likely to offer screening. Obstetricians from British Columbia and Quebec were more likely to offer screening than those in the Atlantic Provinces were.

DISCUSSION

Overall, 55% of Canadian physicians reported that they offered HIV screening to all or most of their pregnant patients. This was similar to the proportion found in a study of Quebec physicians,¹⁵ but much higher than the 5% reported in a study conducted in Hamilton.¹⁴ These differences could reflect regional variations in practice, changes in practices over time, different definitions of screening, or nonresponse bias. We emphasize that these are self-reported, rather than actual, behaviours, and estimates might, therefore, be inflated.

While it is encouraging to find that most physicians across Canada say they offer universal HIV screening, it is disconcerting to find that 42% of physicians either do not offer screening or offer it only to patients they perceive to be at high risk. This finding has been noted elsewhere.^{14,15,22} Extensive literature supports the view that targeting high-risk groups is not an effective way of identifying people who are HIV-positive.^{10,23-27}

As in other studies,^{7,14,15,19,22,28,29} we found that sex, specialty, age, and teaching appointment affected the

likelihood of offering screening. In addition, screening practices varied considerably by geographic region and by location of practice in relation to population centres. These differences might reflect the perceived prevalence of HIV in physicians' area of practice¹⁹ or might be related to local or provincial public health recommendations regarding HIV screening of pregnant women.³⁰ In addition, other factors that we did not assess in this survey might have influenced screening.

This was the first Canadian study to examine screening practices in every province simultaneously. This study was carried out while many provinces were examining HIV screening policies; there was considerable variation among provinces as to what was recommended. For example, in January 1999, Ontario introduced voluntary HIV testing of all pregnant women after informed consent. This change should have led to more women now being screened. This study provides baseline measures against which the influence on screening practices of factors (such as policy changes, education, changes in rates of HIV infection, and new treatment options) can be assessed.

Interpretation of results must take into account potential bias due to nonresponse. Our sample size was large, and our response rate compares favourably with other physician surveys, but there were

Table 4. Comparison of demographic and practice characteristics of physicians who offer and do not offer screening to all or almost all their pregnant patients: Proportions are weighted to reflect actual composition of physicians in Canada.

CHARACTERISTIC	OFFER SCREENING	DO NOT OFFER SCREENING	ODDS RATIO (95% CONFIDENCE INTERVAL)
Female sex*	58.2	48.8	1.5 (1.3 - 1.7)
Age (y)			
• <35	27.5	25.4	1.00 Referent
• 35-45	47.3	40.9	0.94 (0.75 - 1.18)
• 46-55	25.9	24.7	0.72 (0.55 - 0.94)
• 56-65	4.1	7.3	0.36 (0.24 - 0.55)
• Unknown	0.4	1.8	
Years since graduation†			
• <10	34.9	33.3	1.00 Referent
• 11-20	38.7	37.1	0.92 (0.74 - 1.14)
• 21-30	23.4	22.3	0.77 (0.59 - 1.00)
• > 30	2.7	5.3	0.41 (0.27 - 0.64)
• Unknown	0.3	1.9	
Teaching appointment‡	29.0	21.5	1.23 (1.01 - 1.50)
Urban practice‡	64.2	55.1	1.34 (1.08 - 1.66)
Full-time practice‡	85.1	87.1	0.78 (0.60 - 1.01)
Fee-for-service payment‡	84.3	83.6	0.94 (0.74 - 1.20)
Specialty‡			
• Family physician	69.4	74.6	1.00 Referent
• Obstetrician	30.6	25.4	1.60 (1.28 - 1.98)
Province§			
• British Columbia	22.1	2.4	12.96 (8.92 - 19.95)
• Alberta	5.6	5.7	1.36 (0.96 - 1.93)
• Saskatchewan	0.6	4.0	0.52 (0.27 - 1.02)
• Manitoba	3.9	1.0	6.63 (3.17 - 13.87)
• Ontario	52.0	76.7	1.00 Referent
• Quebec	9.8	5.8	3.12 (2.30 - 4.23)
• New Brunswick	2.2	1.7	1.34 (0.71 - 2.53)
• Prince Edward Island	0.3	0.1	0.64 (0.12 - 3.55)
• Nova Scotia	1.0	2.6	0.65 (0.36 - 1.17)
• Newfoundland	2.9	0.06	40.61 (5.48 - 300.9)

*Controlled for provider type (obstetrician, female family physician or male family physician) and location (Ontario or other).

†Controlled for sex and location (Ontario or other).

‡Controlled for provider type (obstetrician, female family physician or male family physician).

no responses from the territories. We also detected differences between respondents and nonrespondents. Younger physicians and female physicians were more likely to respond and to offer screening, which suggests that true rates of screening might be lower than those reported here. We did not have

data allowing us to determine whether physicians who did not provide prenatal care were less likely to respond. The differences between respondents and nonrespondents might have been mitigated if a comparison of prenatal care providers had been possible.

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Table 5. Comparison of physicians who offer and do not offer screening to all or almost all their pregnant patients: *Multiple logistic regression by specialty.*

CHARACTERISTIC	OFFER SCREENING %*	DO NOT OFFER SCREENING %*	ADJUSTED ODDS RATIO (95% CONFIDENCE INTERVAL)
FAMILY PHYSICIANS			
Female sex	59.5	50.5	1.34 (1.08 - 1.68)
Teaching appointment	27.4	19.5	1.41 (1.11 - 1.80)
Age (y)			
• < 35	26.8	26.3	1.00 Referent
• 35-45	45.4	41.6	0.93 (0.72 - 1.19)
• 46-55	24.4	24.0	0.84 (0.61 - 1.15)
• 56-65	3.6	6.5	0.31 (0.16 - 0.61)
• Unknown	0.3	1.6	
Region			
• Atlantic†	6.1	4.2	1.00 Referent
• Quebec	8.6	5.4	1.24 (0.70 - 2.21)
• Ontario	53.0	77.9	0.50 (0.32 - 0.79)
• Prairies‡	10.0	10.2	0.82 (0.48 - 1.40)
• British Columbia	22.5	2.4	9.47 (4.81 - 18.65)
OBSTETRICIANS			
Urban practice	87.5	78.4	2.36 (1.26 - 4.39)
Age (y)			
• < 35	19.8	7.6	1.00 Referent
• 35-45	39.5	28.1	0.63 (0.32 - 1.26)
• 46-55	27.8	37.6	0.31 (0.16 - 0.62)
• 56-65	11.6	21.8	0.19 (0.09 - 0.39)
• Unknown	1.3	4.8	
REGION			
• Atlantic†	6.1	10.8	1.00 Referent
• Quebec	31.7	11.8	5.90 (2.60,13.38)
• Ontario	36.9	58.1	1.25 (0.61,2.58)
• Prairies‡	12.2	15.8	1.37 (0.60,3.13)
• British Columbia	13.1	3.4	8.21 (2.82,23.91)

*Proportions are weighted to reflect actual composition of physicians in Canada.

†Newfoundland, Nova Scotia, New Brunswick, Prince Edward Island.

‡Alberta, Saskatchewan, Manitoba.

Physicians from Quebec were less likely to respond than physicians from the rest of the country, perhaps because a similar survey had been conducted a short time before ours. We cannot assess this potential bias to our results.

CONCLUSION

While more than 50% of Canadian physicians reported they offered HIV screening in 1997-1998 to all or almost all their pregnant patients, a large number either did not offer screening or targeted only women with risk factors. Since our survey, practice standards have been

and continue to be reviewed in light of research on effective treatments to reduce vertical transmission of HIV,^{2,31} the advantages of early identification of HIV-positive women and infants,^{5,23,27} and emerging legal considerations.^{11,32} When it comes time to look at what effect these changes have had, this study will provide baseline data against which to measure changes. ❁

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Author contributions

All the authors were involved in study design, interpretation of data, and preparing the article. Dr MacDonald, Dr O'Connor, Ms Hartling, and Ms Seguin were also involved in executing the study and analyzing the data.

Competing interests

None declared

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Editor's key points

- This is the first national study describing the proportions of family physicians and obstetricians who offered HIV screening to prenatal patients in 1997.
- About 55% of physicians providing prenatal care offered HIV testing to most or all of their pregnant patients.
- Younger family physicians, female family physicians, family physicians holding teaching appointments, younger obstetricians, and obstetricians in urban practices were more likely to offer screening.

Points de repère du rédacteur

- Il s'agit de la première étude nationale décrivant les proportions de médecins de famille et d'obstétriciens qui offraient en 1997 le dépistage du VIH à leurs patientes en soins prénatals.
- Environ 55% des médecins qui dispensaient des soins prénatals offraient le dépistage du VIH à la majorité ou à la totalité de leurs patientes enceintes.
- Les médecins de famille plus jeunes, les femmes médecins de famille, les médecins de famille qui avaient une charge d'enseignement, les obstétriciens plus jeunes et ceux en pratique urbaine étaient davantage susceptibles d'offrir le dépistage.

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