The Influence of Prevalence and Policy on the Likelihood that a Physician will Offer HIV Screening in Pregnancy

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ABSTRACT

Objective: To determine the extent to which provincial recommendations, reported regional prevalence rates and perceived local prevalence rates of HIV in pregnancy influence a physician's decision to routinely offer prenatal screening for HIV.

Design and Methods: A random sample of 5,052 family physicians and obstetricians were surveyed by mail. Logistic regression was used to explore the relationships among the variables of interest.

Results: The response rate was 61%. Of these, 69.2% provided prenatal care and were included in the analysis. Physicians were more likely to routinely offer HIV testing if they practiced in provinces with recommendations that supported the universal offer of a test (O.R.=5.80), independent of living in a region with an estimated prevalence rate exceeding 5/10,000 (O.R.=1.76), or the perception that the infection rate in their practice justified universal counselling of pregnant women (O.R.=10.41).

Conclusions: Provincial recommendations supporting universal HIV testing in pregnancy are reflected in physician practice.

The translation of the Abstract appears at the end of the article.

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The results of a randomized trial by the AIDS Clinical Trials Group (ACTG 076) indicate that mother-to-child transmission can be reduced by two thirds by giving zidovudine (AZT) perinatally and neonatally.¹ Since many women are not aware of their potential for HIV infection,^{2,3} and many infected women do not know of their HIV-positive status,^{3,4} only universal screening will identify all women who should be offered this treatment. In the absence of routine screening, the offer of HIV testing, with counselling, gives women the opportunity to make informed decisions about the course of their pregnancies.

Canadian family physicians and obstetricians were surveyed during the fall and winter of 1997-98 in order to: 1) document their current practices and attitudes with respect to the offer of prenatal HIV screening, and their perceptions of barriers to the universal offer of screening, and 2) examine whether these behaviours, attitudes and perceptions vary with physician or practice characteristics. The self-reported behaviours of these physicians are published elsewhere.⁵ This paper examines the influence of provincial recommendations, reported (refers to published papers as well as unpublished reports to Health Canada) regional HIV prevalence rates and perceived local HIV prevalence rates on the probability that a physician will offer HIV screening to prenatal patients.

BACKGROUND

As early as 1987, the National Commission on AIDS in Sweden recommended that all pregnant women should be offered an HIV test.⁶ However, the primary impetus for screening recommendations came with the publication of ACTG 076 in 1994.¹ In July 1995, the US CDC recommended universal voluntary HIV screening of all pregnant women.⁷ In 1997, the Society of Obstetricians and Gynecologists of Canada (SOGC) recommended offering voluntary HIV testing to all pregnant women.⁸

The screening behaviours of physicians can be expected to reflect the recommendations of the bodies under which they practice. At the time of this study (September 1997 to January 1998), provincial recommendations varied across the country.^{9,10} Newfoundland was the

only province with the HIV test included in the list of routine prenatal tests, although it was possible for women to "opt out". British Columbia (June 1994) advised that HIV screening be recommended to all pregnant women. Recommendations in Manitoba (1994) and Quebec (May 1997) were similar to those of the SOGC, stating that all pregnant women should be offered counselling and HIV testing; similar recommendations were in place in the Yukon and the Northwest Territories. In addition to recommendations, British Columbia, Manitoba, and Quebec had instituted educational programs targeting both physicians and pregnant women. The Ontario recommendations were that HIV screening be discussed with all pregnant women, and strongly recommended to those with risk factors. Formal recommendations were not in place in Alberta, Saskatchewan, New Brunswick, Prince Edward Island and Nova Scotia.

The regional prevalence of HIV can also be expected to influence physician screening behaviours. Sage, Mahon and Hughes surveyed 700 gynecologists, family physicians, general practitioners, and midwives in California.¹¹ In high prevalence areas, 65% of providers recommended HIV screening to all or almost all prenatal patients, while 51% did so in areas of low prevalence. Similar trends were found in a survey of 672 Quebec physicians.¹² Of physicians practicing in the Montreal area, which has a high prevalence, 68% reported that they offered HIV screening to all pregnant women; elsewhere in the province, this proportion was 52% ($p < 0.01$).

METHODS

Two mail surveys were conducted, one in Ontario and one in the rest of Canada. In total, 3,893 practicing family physicians and 1,159 practicing obstetricians were surveyed. A proportionately larger sample was obtained from Ontario than from the rest of Canada.

Physicians were asked about their attitudes and practice with respect to offering prenatal HIV screening, their knowledge of HIV transmission rates from a pregnant woman to her fetus with and without treatment with AZT, their perceptions of barriers to offering the test, and socio-

TABLE 1

Percentage of Antenatal Care Providers Who Offered HIV Screening in Pregnancy

Provider Type	Females % (95% CI)	Males % (95% CI)
Family Physicians*	60.0 (57.1-63.0)	51.3 (47.9-54.6)
Obstetricians*	75.2 (69.9-80.5)	55.9 (51.8-59.9)
All Physicians†	60.6 (58.0-63.3)	51.5 (48.9-54.2)

* weighted for province of practice (Ontario vs. other)

† weighted for province of practice (Ontario vs. other) and specialty of physician

demographic and practice characteristics. Detailed methods are described elsewhere.⁵

The analysis was restricted to physicians who indicated that they provided prenatal care. Respondents were defined as "routinely offering screening" if they reported that they offered an HIV test to "all or almost all" of their pregnant patients. Physicians were considered not to be offering screening if they did not offer the test to "all or almost all" their patients, offered it only to women perceived to be at high risk, or arranged testing only for those requesting it.

In order to examine the effect of provincial recommendations on the likelihood of offering the test, the proportion of physicians who routinely offered screening was calculated for each province. This estimate was adjusted for physician specialty and sex to reflect the actual distribution of physicians. A 95% confidence interval was computed for each proportion.¹³ Because of the small number of respondents from Prince Edward Island, this province was combined with Nova Scotia. Despite the large sample size, by chance there were no respondents from the territories.

Estimates of the seroprevalence rates of HIV in pregnant women, women at delivery or newborns were taken from surveys that had been published or reported to Health Canada.¹⁴⁻²⁴ Rates were available for Halifax, Montreal Island, Metropolitan Montreal, Toronto, Ottawa, Winnipeg, Edmonton, Calgary, and Vancouver. Outside of these cities, rates for the province (excluding the cities) were used, except for some regions of Alberta and northern Quebec, for which rates were available. Regions were classified as low prevalence if reported estimates of HIV infection were 5.0/10,000 or less, and high prevalence if they were greater than 5.0/10,000. This cut-off level was established by the investigators because it reflected the distribu-

tion of HIV infection rates in Canada and provided an adequate distribution of respondents from high and low prevalence regions.

The first three letters (FSA or forward sortation area) of all postal codes in Canada were classified as representing regions of low or high reported prevalence by linking them to the survey results just described. Physicians had been asked to provide the FSA for their practice, which was then used to link prevalence rates to their responses. To investigate whether the likelihood that physicians routinely offered screening was influenced by the reported seroprevalence of the region in which they practiced, the proportions of physicians in high and low prevalence regions who routinely offered screening were compared. All analyses corrected for the different sampling fractions in Ontario and the rest of Canada. Estimates were also adjusted by physician specialty and sex.

Physicians were asked to what extent they agreed or disagreed with the statement, "The prevalence of HIV in my patient population is too low to justify counselling all of my pregnant patients about HIV screening." Physicians were placed in a two-by-two table according to their responses to this statement (agree/disagree) and the reported estimates of prevalence in the region in which they practiced (high/low). The proportions of physicians who routinely offered screening were then estimated for each of the four cells of the table. Again, estimates were adjusted by physician specialty, sex, and location as described above.

A logistic regression examined the influence of all three variables (provincial recommendations, reported estimates of prevalence and perceptions of whether universal counselling was justified by prevalence within the practice) on whether screening was routinely offered, while controlling for physician characteristics.

TABLE II

Percentage* of Canadian Physicians Who Offered HIV Screening in Pregnancy, by Province

Province	Sample (n)	Offered Screening (%)	Formal Policy	Content of Formal Policy or Informal Recommendations ^{9,10} (at time of study, Sept 97 - Jan 98)
Newfoundland	27	97.8 (90.8-100.0)	Yes	Routine HIV screening, with option to opt out.
British Columbia	233	88.2 (84.4, 91.9)	Yes	Recommend HIV screening to all.
Manitoba	48	77.0 (66.2, 87.9)	Yes	Offer HIV screening to all.
Quebec	243	57.6 (51.2, 63.9)	Yes	Offer HIV screening to all.
New Brunswick	40	50.9 (36.3, 65.6)	No	None
Alberta	144	45.4 (37.9, 52.9)	No	Women at risk should be offered testing.
Ontario	1289	36.7 (34.3, 39.1)	Yes	Discuss with all pregnant women and recommend to all with risk factors.
P.E.I. and Nova Scotia	58	25.8 (15.0, 36.7)	No	P.E.I.: Women at risk should be offered testing.
Saskatchewan	47	14.4 (4.0, 24.7)	No	N.S.: As clinical judgement dictates. Women at risk should be offered testing.

* weighted for sex and specialty of physician

TABLE III

Percentage of Canadian Physicians Who Offered HIV Screening in Pregnancy, by Specialty and Reported HIV Prevalence Rate in the Region of Practice

Specialty	Reported Rates of HIV Prevalence in Pregnancy	
	< 5/10,000 % (95% CI)	> 5/10,000 % (95% CI)
Female Family Physicians*	56.1 (52.9-59.3)	81.5 (72.9-88.3)
Male Family Physicians*	48.3 (44.9-51.8)	84.2 (68.8-93.8)
Obstetricians/Gynecologists†	55.9 (51.9-59.9)	81.7 (75.1-88.2)
All Physicians‡	51.1 (49.1-53.2)	83.2 (80.1-86.3)

* weighted for province of practice (Ontario vs. other)

† weighted for province of practice (Ontario vs. other) and sex of physician

‡ weighted for province of practice (Ontario vs. other), sex and specialty of physician

TABLE IV

Percentage of Canadian Physicians who Offered Screening, by Reported and Perceived HIV Prevalence Rate in the Region of Practice

Reported Regional HIV Prevalence Rates	Perceived Prevalence in Physician's Practice*	Sample (n)	Offer Screening % (95% CI)
≤ 5/10,000	High enough to justify counselling	1032	70.5 (67.8-73.2)
	Too low to justify counselling	804	22.3 (19.8-24.7)
> 5/10,000	High enough to justify counselling	203	88.2 (86.2-90.2)
	Too low to justify counselling	56	66.4 (57.5-75.2)

* 34 physicians did not respond to question

RESULTS

A total of 3,076 physicians responded to the survey, giving an overall response rate of 61%. Of the respondents, 69.2% (2129/3076) provided prenatal care within the scope of their practice. Their socio-demographic characteristics have been described.⁵

At the time of the survey, slightly more than half of prenatal care providers offered HIV screening to "all or almost all" of their pregnant patients, and were considered to be routinely offering screening. Obstetricians were more likely to offer screening routinely than family physicians, and female physicians were more likely to

offer screening routinely than male physicians (Table I). Three quarters of female obstetricians offered HIV screening to all or almost all pregnant patients.

Table II presents the percentage of physicians who routinely offered screening, by province. The results were strongly related to the content of provincial recommendations. The highest percentage of physicians offering screening for HIV was found in Newfoundland, which had a policy of routine screening. A high percentage of physicians routinely offered screening in British Columbia, a province in which physicians were advised to *recommend* HIV screening to all pregnant women. These were followed by two provinces, Manitoba

and Quebec, in which physicians were advised to *offer* HIV screening to all pregnant women. Physicians least likely to routinely offer screening were seen in the provinces without a formal recommendation, except in Ontario; here one third of physicians routinely offered screening, in the presence of a formal recommendation to *discuss* HIV screening with all pregnant women and recommend screening to those at high risk.

The likelihood that physicians routinely offered screening was also affected by the reported prevalence rates of HIV infection (Table III). Four out of five physicians who practiced in regions with reported HIV rates of more than 5.0/10,000 indicated that they routinely offered screening for HIV in pregnancy, while just over half of physicians who practiced in regions with reported rates of 5.0/10,000 or less did so.

Almost sixty percent of physicians practicing in regions with reported estimates of 5.0/10,000 or less felt that the prevalence of HIV in their practices was high enough to justify universal counselling; 70.5% of these physicians routinely offered screening (Table IV). Of physicians who lived in the same regions but felt that the prevalence of HIV in their practice was too low to justify universal counselling, only one in five offered screening routinely.

If the reported prevalence was higher than 5.0/10,000, physicians were significantly more likely to agree that universal counselling was justified (78.4%). The latter were most likely to routinely offer screening (88.2%), although two thirds of those who did not feel that the prevalence was high enough to justify universal counselling reported that they routinely offered screening.

The logistic regression (Table V) considers all of these variables when predicting whether a physician will routinely offer screening. This analysis shows that younger physicians, obstetricians and those who practice intrapartum care were more likely to offer screening routinely.

Provincial recommendations were a strong predictor of the routine offer of screening, even after controlling for reported prevalence and a physician's perception of whether the prevalence of HIV in her/his own practice justified universal counselling. Physicians in provinces with routine screening or with a formal policy to offer or recommend screening to all pregnant women were nearly six times as likely to routinely offer screening as physicians in provinces without formal policies or with policies that recommended screening of women perceived to be at high risk.

Physicians who felt that the local prevalence of HIV justified universal counselling were 10 times as likely to offer screening routinely as those who felt that counselling was not justified by prevalence, after controlling for provincial policy or the reported prevalence of HIV in their region. It would be anticipated that these three variables would be highly correlated. The fact that all three remain significant in the multivariate model indicates that each makes an independent significant contribution.

DISCUSSION

A physician's decision to offer screening for HIV in pregnancy is affected by many personal characteristics, including specialty, age, practice characteristics and knowledge about the risk and prevention of mother-to-child transmission.²⁵ The previous finding that the prevalence of HIV infection also influences the likelihood that a physician will offer the test^{11,12} is supported by our results.

This is the first paper to link the screening behaviours of Canadian physicians to the reported prevalence of HIV as well as provincial recommendations for screening. Both factors were found to strongly influence screening behaviour. This study suggests that there is a response among physicians to provincial recommendations, and that national screening rates could be increased by consistent and supportive recommendations.

TABLE V

Predictors of the Offer of HIV Screening in Pregnancy Among Canadian Physicians, Using Logistic Regression

Predictor	Unadjusted* Odds Ratio	Adjusted** Odds Ratio	P-value
Provincial Policy			
No formal policy, or policy to support screening of high-risk groups only†	1.00	1.00	
Formal policy supporting universal screening‡	6.00 (4.35-8.26)	5.80 (3.92-8.59)	<0.0001
Prevalence in Region			
≤5/10,000	1.00	1.00	
>5/10,000	2.90 (2.02-4.17)	1.76 (1.11-2.82)	0.0173
Perceived Prevalence			
Too low to justify universal counselling	1.00	1.00	
High enough to justify universal counselling	9.65 (7.77-11.99)	10.41 (8.23-13.16)	<0.0001
Intrapartum Care			
Does not provide intrapartum care	1.00	1.00	
Provides intrapartum care	1.49 (1.24-1.81)	1.56 (1.21-2.03)	0.0008
Specialty			
Family practice	1.00	1.00	
Obstetrics	1.67 (1.32-2.10)	1.74 (1.25-2.42)	0.0003
Age			
<35 years	1.00	1.00	
Each 10-year increase above 34	0.85 (0.76-0.95)	0.78 (0.68-0.90)	0.0005

* Controlling for sex, province (Ontario or other), and certification (72% of female and 69% of male family physicians held CCFP certification, and 99% of obstetricians reported FRCSC certification)

** Simultaneously controlling for all predictors, as well as sex, province (Ontario or other), and certification

† New Brunswick, Alberta, Prince Edward Island, Nova Scotia, Saskatchewan and Ontario

‡ Newfoundland, British Columbia, Manitoba and Quebec

CONCLUSIONS

Physicians were more likely to routinely offer HIV screening in pregnancy if routine screening, or a formal policy to recommend or offer universal screening, existed in their geographic region of practice, even after other influencing variables were controlled. Provincial policies should be reviewed in light of these findings in order to increase prenatal HIV screening rates.

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RÉSUMÉ

Objectif : Nous avons voulu déterminer dans quelle mesure les recommandations provinciales, les taux de prévalence régionaux déclarés et les taux de prévalence locaux perçus du VIH durant la grossesse incitent les médecins à proposer systématiquement un dépistage prénatal du VIH.

Conception et méthode : Nous avons posté un questionnaire à un échantillon aléatoire de 5 052 médecins de famille et obstétriciens et analysé par régression logistique les liens entre les diverses variables.

Résultats : Le taux de réponse a été de 61 %. Nous avons inclus dans l'analyse les 69,2 % de répondants qui dispensaient des soins prénatals. Les médecins avaient plus tendance à proposer systématiquement le test de sérodiagnostic du VIH s'ils exerçaient dans les provinces qui recommandent un dépistage universel (rapport de cotes [RC] = 5,80), qu'ils vivent ou non dans une région dont les taux de prévalence estimatifs sont supérieurs à 5 p. 10 000 (RC = 1,76), et qu'ils jugent ou non que le taux d'infection dans leur clientèle justifie de proposer du counselling à toutes les femmes enceintes (RC = 10,41).

Conclusions : Les recommandations provinciales à l'appui du dépistage universel du VIH durant la grossesse se traduisent donc dans les décisions des médecins.

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