Prenatal HIV tests

Routine testing or informed choice?

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ABSTRACT

OBJECTIVE To examine how prenatal care providers responded to a new provincial policy of offering HIV testing to all prenatal patients, and to determine factors associated with self-reported high testing rates.

DESIGN Cross-sectional mailed survey.

SETTING Outpatient practices in three Ontario health-planning regions.

PARTICIPANTS Prenatal care providers: 784 family physicians, 200 obstetricians, and 103 midwives were sent questionnaires and were eligible to participate.

MAIN OUTCOME MEASURES Self-reported testing of 80% or more prenatal patients ("high testers") and associated practice characteristics, attitudes, and counseling practices.

RESULTS Response rate was 57% (622/1087): 43% of respondents were high testers. Family physicians were most likely and midwives least likely to be high testers. High testers tended to report that they had adequate knowledge of HIV testing, that HIV risk among their patients warranted testing all of them, and that testing should be routine. Encouraging women to test and not providing written information or choice were independently associated with high testing rates.

CONCLUSION Strongest predictors of high prenatal HIV testing rates were attitudes and practices that favoured a routine approach to testing and that placed little emphasis on informed consent.

RÉSUMÉ

OBJECTIF Déterminer comment les responsables de soins prénataux ont répondu à la récente politique provinciale suggérant d'offrir le test VIH à toutes les patientes enceintes et identifier les facteurs qui caractérisent ceux qui déclarent effectuer un fort pourcentage de tests.

TYPE D'ÉTUDE Enquête transversale par correspondance.

CONTEXTE Lieux de consultation externes de trois régions de planification sanitaire d'Ontario.

PARTICIPANTS Les dispensateurs de soins prénataux: le questionnaire a été adressé aux 784 médecins de famille, 200 obstétriciens et 103 sages-femmes jugés éligibles.

PRINCIPAUX PARAMÈTRES MESURÉS Les participants qui disent prescrire le test dans 80% ou plus des cas (groupe à taux élevé) et les modes de pratique de ces intervenants, leurs attitudes et leurs tendance à prodiguer des conseils aux patientes.

RÉSULTATS Le taux de réponses était de 57% (622/1087): 43% des répondants étaient du groupe à taux élevé. Les plus susceptibles d'appartenir à ce groupe étaient les médecins de famille et les moins susceptibles, les sages-femmes. En général, ceux du groupe à taux élevé disaient avoir une connaissance adéquate du test VIH et croyaient que le risque de SIDA justifiait l'administration du test à chacune de leurs patientes et que le test devrait être systématique. Le fait d'encourager les femmes à passer le test et le fait de ne pas leur fournir d'information écrite ou de ne pas leur donner le choix ont été associés de façon indépendante à des taux élevés de tests effectués.

CONCLUSION Les principaux facteurs associés à un fort taux d'administration du test VIH prénatal étaient les attitudes et les modes de pratique favorisant le dépistage systématique et laissant peu de place au consentement éclairé.

This article has been peer reviewed.
Cet article a fait l'objet d'une évaluation externe.
Can Fam Physician 2003;49:1334-1340.

A growing body of evidence indicates that perinatal interventions can improve health outcomes of women infected with human immunodeficiency virus (HIV) and decrease vertical transmission to infants to as little as 1%,[1-3] but maternal infection must be detected before or during pregnancy. Offering HIV testing only to women with known risk factors for HIV detects fewer infections than offering testing to all women.[4-8]

In December 1998, Ontario's Ministry of Health and Long-Term Care announced a policy encouraging care providers to offer HIV testing to all pregnant women and to counsel them about the risks and benefits of the test.[9,10] Following introduction of this policy, estimates from laboratory data indicated that 51% of pregnant women in Ontario were tested for HIV during 1999 and 2000, leaving 49% untested.[11]

Formal targets for prenatal HIV testing coverage or reduction in vertical transmission rates have not been defined in Ontario. We are aware of six children who were infected with HIV from their undiagnosed mothers during the 24 months after the program was announced, indicating that testing rates were inadequate for detecting all HIV infections in pregnant women.[12] Previous studies have shown that, even when voluntary testing is offered, some women choose not to test,[13] and some HIV infections remain undetected.[14]

The primary objective of this study was to examine how prenatal care providers were responding to the new HIV testing policy. We examined the attitudes, HIV counseling practices, and practice characteristics of family physicians, obstetricians, and midwives providing prenatal care. This is the first study of clinicians in Canada that we are aware of to be carried out following introduction of the policy supporting universal offering of testing. We report on the attitudes and approaches to counseling and testing that are associated with self-reported high testing rates, defined as testing 80% or more of prenatal patients.

METHODS

Subjects

Three of the six health-planning regions in Ontario were selected for sampling: Northern, Central East (including Toronto), and Eastern (including Ottawa). Regions were selected to include key urban centres as well as geographically remote communities. The regions selected represented 67.5% (7 495 242/11 100 900) of the population of Ontario (based on 1996 Canadian census data).

Physicians' names were drawn from *Southam Medical Lists* (maintained by Southam Medical Group of Don Mills, Ont), a database that includes updated information from physician licensing bodies, the Royal College of Physicians and Surgeons of Canada, and the College of Family Physicians of Canada. Based on these data, the regions selected included 71.9% (6099/8478) of practising family physicians, and 74.6% (458/614) of practising obstetricians in Ontario. Sampling was stratified based on region and discipline. All 768 family physicians in the Northern region, a random selection (using a random number generator) of 1025 family physicians from each of the Eastern region and the Central East region, and all 458 obstetricians in the three study regions were selected for eligibility screening. The midwife sample included all midwives registered with the College of Midwifery from the three study regions (61%, 107/175 of practising midwives in Ontario).

Only those currently providing prenatal care were eligible to participate. Physicians' office staff were contacted by telephone to determine their eligibility to receive a questionnaire. Midwives were not contacted. All providers receiving questionnaires were asked to confirm that they were providing prenatal care.

Survey

Ethical approval was received from the Hamilton Health Sciences–McMaster University Research Ethics Board. The survey was carried out from May through July 2000. Questions were based on information from two focus groups (each including members of the three provider types), the literature, and the research team's professional experience with prenatal HIV testing. The final questionnaire was pilot-tested on 30 prenatal care providers for face and content validity. Minor changes were made based on their comments. Responses to questions on attitudes were measured on a 5-point Likert scale. Responses to questions on counseling were measured on a 4-point scale from "never" to "always." The survey was carried out using a modified Dillman method.

Analysis

Data were analyzed using SPSS software (version 8.0, SPSS Inc, Chicago, Ill). Testing rates were calculated from providers' estimates of the number of

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prenatal patients they had cared for in the preceding 6 months (denominator) and the number of patients they estimated were tested for HIV (numerator). A dichotomous outcome variable called "high testers" was defined as providers who estimated that 80% or more of their prenatal patients had been tested during the preceding 6 months. Univariate logistic regression analysis was carried out for independent variables: practice attributes, attitudes, and counseling practices. Factors associated with high testers at a *P* value of <.1 in univariate analysis were included in multivariate logistic regression analysis, using forward and backward stepwise procedures to identify the model with best fit.

RESULTS

Questionnaires were sent to 1254 providers: 933 family physicians, 214 obstetricians, and 107 midwives. All recipients were asked to indicate whether they provided prenatal care and to return the uncompleted questionnaire if not. A total of 167 respondents indicated they were not providing prenatal care (suggesting that office staff contacted earlier might have given inaccurate information), leaving 1087 eligible recipients. Final response rate was 57% (622/1087) overall: 55% (431/784) of family physicians, 59% (118/200) of obstetricians, and 71% (73/103) of midwives. Demographic characteristics are shown in **Table 1**.

Testing rates

Of the 622 respondents, 582 provided estimates of HIV testing rates in their practices. The overall testing rate for the entire sample (sum of all patients tested divided by sum of all patients seen) was 55%: 52% in the Central East region, 57% in the Eastern region, and 61% in the Northern region. Mean testing rate per provider was 61% (95% confidence interval [CI] 58% to 64%, median 67%), and 43% were high testers. Female providers tested an average of 60% of patients; male providers tested an average of 61%. Family physicians tested 65%, obstetricians 56%, and midwives 41% of prenatal patients.

Analysis

In univariate analysis, high testing was associated with being male, being in family practice, having more years in practice, receiving fee-for-service remuneration, having experience with HIV patients, and not attending births (**Table 1**). In multivariate logistic regression, practice type was the strongest predictor of testing rates: family physicians were most likely and midwives least likely to be high testers (midwives vs family physicians odds ratio [OR] 0.04, 95% CI 0.01 to 0.19; obstetricians vs family physicians OR 0.57, 95% CI 0.34 to 0.95). Other independent predictors were practice region and having cared for HIV-positive patients.

Reported testing rates varied depending on the attitudes of providers. Attitudes supporting a universal approach to testing and not supporting informed choice were associated with high testing in univariate analysis (**Table 2**). In multivariate regression analysis, providers who thought they had adequate knowledge of HIV testing, who thought their patients had HIV risk factors, and who did not agree with providing pretest counseling were more likely to report high testing rates.

The attitude most strongly predictive of high testing was agreeing that HIV testing should be routine, similar to hepatitis B testing (agree vs not agree OR 10.1, 95% CI 5.54 to 18.47). Hepatitis B testing in Canada is generally performed with routine prenatal blood tests and without informed consent. Perceptions that counseling for HIV testing takes too long and that not offering testing increases medicolegal risk were not associated with high testing rates.

Counseling

Pretest counseling practices are summarized in **Table 3**. Providers who often carried out specific procedures (responding usually or always) were compared with those who seldom carried them out (responding never or sometimes). In multivariate analysis, encouraging women to test was the counseling tactic most strongly associated with high testing (OR 12.00, 95% CI 7.30 to 19.75). Providers who did not give out written information about testing and providers who did not explain that testing is optional were more likely to be high testers in multivariate analysis.

DISCUSSION

Among the providers in our study, 43% reported testing 80% or more of their prenatal patients. Our definition of high testing was chosen arbitrarily as an indicator of almost complete testing. Our study measured self-reported estimates, which are likely to be less accurate than objective measures of actual testing rates. It is reassuring to observe, however, that reported testing rates in our study were similar to those obtained from laboratory data. About 51% of pregnant women in Ontario were tested for HIV during 1999-2000; the lowest testing rate among the

three study regions was seen in the Central East region.[11] Overall reported testing rate in our study was 55%, with the highest rate in the Eastern region and the lowest in the Central East region. Other surveys of providers in Ontario, carried out before the introduction of universal offering of testing, reported that 5% to 39% were offering testing to all prenatal patients.[15,16] Since completion of our study, prenatal HIV testing rates increased slowly to 72% by September 2002.[17]

High testing rates

We observed the highest testing rates among family physicians and the lowest among midwives. Studies in New Zealand and Britain have shown similarly lower testing rates among midwives' patients.[18,19] This might reflect a tendency among midwives and their patients to be more cautious with medical interventions, to take a less paternalistic approach to care, and to emphasize greater autonomy in decision making.[20,21] It might also be related to substantial and

Table 1. Association between practice characteristics and high rates of testing

CHARACTERISTICS	NO. OF RESPONDENTS N = 582 N*	HIGH TESTERS N = 252 N (%)	CRUDE ODDS RATIO (95% CI)	ADJUSTED ODDS RATIO (95% CI)†
Sex‡				
• Male	292	140 (47.9)	1 (reference)	
• Female	287	109 (38.0)	0.66 (0.48-0.93)	
Type of practice‡				
• Family	418	213 (51.0)	1 (reference)	
• Obstetric	95	36 (37.9)	0.59 (0.37-0.93)	0.57 (0.34-0.95)
• Midwifery	69	3 (4.3)	0.04 (0.01-0.14)	0.04 (0.01-0.19)
Years in practice‡				
• 0-10	241	91 (37.8)	1 (reference)	
• 11-20	209	94 (45.0)	1.35 (0.92-1.96)	
• ≥21	127	64 (50.4)	1.67 (1.08-2.59)	
Practice region‡				
• Central East	207	64 (30.9)	1 (reference)	
• Eastern	214	117 (54.7)	2.69 (1.81-4.02)	2.16 (1.40-3.34)
• Northern	161	71 (44.1)	1.76 (1.15-2.71)	1.35 (0.84-2.17)
Practice location				
• Large city or suburb	245	96 (39.2)	1 (reference)	
• Medium-sized town or suburb	133	58 (43.6)	1.20 (0.78-1.84)	
• Small town or rural	201	97 (48.3)	1.45 (0.99-2.11)	
Income source‡				
• Fee-for-service	439	207 (47.2)	1 (reference)	
• Other	141	44 (31.2)	0.51 (0.34-0.76)	
Ever cared for HIV patients‡				
• No	259	86 (33.2)	1 (reference)	
• Yes	313	161 (51.4)	2.13 (1.52-3.00)	1.48 (1.02-2.13)
Attend births‡				
• No	267	144 (53.9)	1 (reference)	
• Yes	313	1.7 (34.2)	0.44 (0.32-0.62)	

CI—confidence interval.
**Sum of groups might not equal total sample size because of missing data.*
†P <.1 in univariate analysis and variable included in multiple logistic regression model.
‡Variable independently associated with high testing in multiple logistic regression model at P <.05.

Table 2. Attitudes of high testers compared with those of the whole sample

ATTITUDE	DISAGREE OR AGREE*	TOTAL SAMPLE (N = 582) N†	HIGH TESTERS (N = 252) N (%)	CRUDE ODDS RATIO (95% CI)	ADJUSTED ODDS RATIO (95% CI)‡
My knowledge about HIV prenatal testing is adequate‡§	Disagree	207	72 (34.8)	1 (reference)	2.02 (1.34-3.06)
	Agree	370	179 (48.4)	1.78 (1.24-4.50)	
It is best to offer HIV testing to ALL pregnant women‡	Disagree	78	11 (14.1)	1 (reference)	
	Agree	499	238 (47.7)	5.55 (2.87-10.75)	
My prenatal patients are too low risk to warrant testing all of them for HIV§	Disagree	452	225 (49.8)	1 (reference)	0.41
	Agree	124	24 (19.4)	0.24 (0.15-0.39)	(0.24-0.72)
Women in my practice are offended if I suggest HIV testing‡§	Disagree	547	244 (44.6)	1 (reference)	0.31 (0.11-0.86)
	Agree	30	6 (20.0)	0.31 (0.12-0.77)	
I am at increased medicolegal risk if I do not offer prenatal HIV testing	Disagree	261	104 (39.8)	1 (reference)	
	Agree	312	142 (45.5)	1.26 (0.90-1.76)	
Health care dollars are better spent elsewhere than on prenatal HIV testing for all women‡	Disagree	496	228 (46.0)	1 (reference)	
	Agree	79	22 (27.8)	0.45 (0.27-0.77)	
HIV testing should be part of routine prenatal bloodwork, like hepatitis B‡§	Disagree	159	14 (8.8)	1 (reference)	10.1 (5.54-18.47)
	Agree	420	236 (56.2)	13.28 (7.43-23.76)	
HIV testing should include counseling about the test‡§	Disagree	136	78 (57.4)	1 (reference)	0.49 (0.31-0.78)
	Agree	437	170 (38.9)	0.47 (0.32-0.70)	
Counseling for prenatal HIV testing takes too long	Disagree	411	181 (44.0)	1 (reference)	
	Agree	167	69 (41.3)	0.89 (0.62-1.29)	
Pregnant women should have a choice about whether to be tested for HIV‡	Disagree	198	109 (55.1)	1 (reference)	
	Agree	381	141 (37.0)	0.48 (0.34-0.68)	

CI—confidence interval.
**Disagree includes all who responded "strongly disagree," "disagree," or "not sure." Agree includes all who responded "agree" and "strongly agree."*
†Sum of groups might not equal total sample size due to missing data.
‡P <.1 in univariate analysis and variable included in multiple logistic regression model.
§Variable independently associated with high testing in multiple logistic regression model at P <.05.

unmeasured differences between doctor-patient and midwife-patient relationships.

We found that, when adjusted for other attitude variables, self-reported testing was higher among providers who thought their knowledge of HIV testing was adequate, their patients were at risk, their patients were not offended by being offered HIV testing, HIV testing should be routine, and pretest counseling was unnecessary. Practices associated with high testing included strongly encouraging women to test, not giving written information about the test, and not explaining that testing is optional. These findings suggest that feeling knowledgeable about the test is important for attaining high testing rates and that more directive, routine approaches are more likely to result in women being tested.

"Opt out" approach

An alternative approach to prenatal HIV testing with informed consent has been to inform women that HIV testing is routine and give them the option to decline. In a series of studies among women attending an antenatal clinic in Edinburgh, Scotland, carrying out HIV testing only at patients' request led to 5% being tested; offering all women testing with extensive informed consent resulted in 35% being tested; and using an opt out approach resulted in 88% being tested[13,22] (87% of women thought HIV testing should be routine). A study among obstetricians in the United States also showed that those who used an opt out approach had the highest testing rates.[23] In Alberta, where the Ministry of Health adopted an opt out policy in 1998, estimated testing rates were 97% in 1999-2000, higher than in any other Canadian province.[17] Providers in our study who had high testing rates appear to be testing with an opt out or "routine voluntary" approach.

Limitations

Data from our study have several limitations. First, we used a cross-sectional design and self-reported measures, both of which limit our ability to draw conclusions about causal relationships between provider characteristics and testing rates. Also, we do not have information about providers who

Table 3. Counseling practices of high testers compared with the whole sample

STATEMENT	RESPONSE	TOTAL SAMPLE (N = 582) N*	HIGH TESTERS (N = 252) N (%)	CRUDE ODDS RATIO (95% CI)	ADJUSTED ODDS RATIO (95% CI)†
I have strongly encouraged women to have HIV testing†‡	Never or sometimes	191	26 (13.6)	1 (reference)	12.0 (7.30-19.75)
	Usually or always	345	218 (63.2)	10.89 (6.82-13.38)	
I have provided education about HIV transmission†	Never or sometimes	227	113 (49.8)	1 (reference)	
	Usually or always	311	132 (42.4)	0.74 (0.53-1.05)	
I have counseled about the reasons for, risks of, and benefits of HIV testing	Never or sometimes	63	28 (44.4)	1 (reference)	
	Usually or always	473	216 (45.7)	1.05 (0.62-1.78)	
I have given written information about the HIV test†‡	Never or sometimes	422	210 (49.8)	1 (reference)	0.55 (0.33-0.90)
	Usually or always	112	37 (33.0)	0.50 (0.32-0.77)	
I have explained that the HIV test is optional†‡	Never or sometimes	44	27 (61.4)	1 (reference)	0.32 (0.15-0.72)
	Usually or always	492	218 (44.3)	0.50 (0.27-0.94)	
I have obtained verbal consent for HIV testing	Never or sometimes	21	11 (52.4)	1 (reference)	
	Usually or always	512	235 (45.9)	1.30 (0.54-3.11)	

CI—confidence interval.
**Sum of groups might not equal total sample size due to missing data.*
†P <.1 in univariate analysis and variable included in multiple logistic regression model.
‡Variable independently associated with high testing in multiple logistic regression model at P <.05.

did not return questionnaires, making it difficult to generalize results beyond study participants. Nonetheless, testing estimates were consistent with estimates calculated from laboratory data. Our discovery of an association between less informed choice and higher testing rates is consistent with previous literature.

Optimizing ethics and outcomes

Canadian guidelines recommend comprehensive counseling about the risks and benefits of testing and verbal consent before testing.[24] This counseling is complex, including information about HIV risk behaviours, test result interpretation, and the risks and benefits of the test itself. Risks of testing are difficult to estimate and convey because they are primarily psychosocial risks determined by the specific social and political context in which each patient lives. Women offered testing sometimes feel they are admitting to stigmatized high-risk behaviours by accepting the test.[13,22] Information about HIV risk behaviours could also lead women to identify themselves as low risk and to decline the test. Providing information about the risks of testing (such as discrimination in relationships or prejudice in obtaining life insurance) might also lead women to decline testing.

Achieving high prenatal HIV testing rates might compromise informed consent, while achieving highly informed consent might compromise maternal HIV detection. This highlights an ethical dilemma between respect for maternal autonomy and preservation of fetal life. Recently revised recommendations for prenatal HIV screening from the United States Centers for Disease Control and Prevention promote strongly recommending testing during counseling, simplifying pretest counseling so it does not become a barrier to testing, and allowing more flexibility in the consent process.[25] We recommend that providers in Ontario continue to learn about the importance of routinely offering prenatal HIV testing and about its risks and benefits, that public awareness be increased in order to improve the quality of information available to patients and their families, and that the process of informed consent be reevaluated to ensure that confusion and stigma do not prove to be barriers to testing.[26-28]

Conclusion

At the time of this study, prenatal HIV testing rates were about 50%, inadequate for detecting all HIV-positive pregnant women or preventing all vertical HIV transmission. Physicians have higher testing rates than midwives. Providers who think their knowledge of HIV testing is adequate and those who have adopted a more routine and directive approach to testing appear to have higher testing rates than those who feel strongly that women should give informed consent to testing.

Acknowledgment

We thank Lydia Agnew for her commitment to seeing this project to completion, Dr Andy Gotowiec for assistance with statistical analysis and manuscript review, Ms Kiara Smith for data entry, the Ontario Ministry of Health and Long-Term Care's AIDS Bureau for funding the study, and the Department of Family Medicine at McMaster University for its support.

Contributors

All the authors were involved in conception and design of the study. **Drs Guenter, Kaczorowski,** *and* **Carroll** *were also involved in data acquisition, analysis, and interpretation.* **Dr Guenter** *wrote the manuscript;* **Drs Kaczorowski, Carroll,** *and* **Sellors** *reviewed it.*

Competing interests

None declared

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Editor's key points

- This survey compared HIV testing rates of family physicians, obstetricians, and midwives in 2000, a year and a half after guidelines for testing were introduced in Ontario.
- Mean testing rate was 61%: family physicians tested more frequently than obstetricians, who in turn tested more often than midwives. By 2002, the mean testing rate had improved to 76%.
- High testers were more likely to believe HIV testing should be routine and pretest counseling was unnecessary. There appeared to be an inverse relationship between counseling and HIV testing.

Points de repère du rédacteur

- Cette enquête effectuée auprès de médecins de famille, d'obstétriciens et de sages-femmes comparait leurs taux de prescription du test VIH au cours de l'an 2000, un an et demi après l'émission de directives à ce sujet par l'Ontario.
- Le taux moyen d'examen était de sages de 61%: les médecins de famille avaient le taux le plus élevé, suivis des obstétriciens et des sages-femmes. En 2002, le taux moyen d'examen avait augmenté à 76%.
- Ceux qui prescrivaient le plus de tests avaient tendance à considérer que le dépistage devrait être systématique et que les explications pré-test étaient inutiles. Il pourrait y avoir une relation inverse entre la tendance à prodiguer des conseils et le taux de prescription de l'examen.

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