# An Evaluation of Introduction of Rapid HIV Testing in a Perinatal Program

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## Abstract

**Objective:** This study was conducted to evaluate the roll-out of rapid HIV testing as part of an emergency Prevention of Perinatal HIV Transmission Program. Specifically, HIV prevalence in this population, the reason(s) for performing the rapid HIV test, and compliance with recommendations for antiretroviral prophylaxis were assessed.

**Methods:** Since November 2011, all women presenting to a tertiary labour and delivery unit with unknown HIV status or with ongoing risk of HIV infection since their last HIV test were offered rapid HIV testing. Through retrospective chart review, demographic data, HIV risk and prior testing history, and antiretroviral prophylaxis, data were collected and descriptive statistics were performed.

**Results:** One hundred fourteen rapid HIV tests were conducted and there were two preliminary reactive rapid results (one true positive, one false positive). None of the infants was HIV infected. Sixty-three percent of women had multiple risk factors for HIV acquisition, most commonly intravenous drug use (54%). Forty-four percent of women were within the 4-week seroconversion window at the time of delivery; 25% of these women and 52% of their infants received prophylactic drug therapy.

**Conclusion:** Rapid HIV testing identified a high-risk cohort and enabled aggressive management of a newly diagnosed HIV-positive pregnancy, successfully preventing perinatal HIV transmission. Risk factors for HIV acquisition were ongoing within the seroconversion window for over half of the women, impacting the utility of the test in eliminating unnecessary antiretroviral prophylaxis in this population because prophylaxis is recommended despite a negative rapid HIV test in these cases.

## Résumé

**Objectif :** Cette étude avait pour but d'évaluer la mise en œuvre du dépistage rapide du VIH dans le cadre d'un programme de prévention d'urgence de la transmission périnatale du VIH. Elle portait plus particulièrement sur la prévalence du VIH au sein de cette population, les raisons motivant la tenue du test de dépistage rapide et l'observance des recommandations liées à la prophylaxie antirétrovirale.

**Méthodologie :** En novembre 2011, nous avons commencé à offrir le dépistage rapide du VIH aux femmes se présentant dans une unité de maternité de soins tertiaires avec un état sérologique vis-à-vis du VIH inconnu ou étant à risque d'avoir contracté le VIH depuis leur dernier dépistage. Nous avons recueilli des données et effectué des analyses statistiques descriptives au moyen d'un examen rétrospectif des dossiers médicaux ainsi que de l'étude des données démographiques, des risques d'infection au VIH et des antécédents de dépistage et de prophylaxie antirétrovirale.

**Résultats :** Au total, 114 tests de dépistage rapide du VIH ont été réalisés; deux des résultats préliminaires étaient positifs (un vrai et un faux positif). Aucun des bébés n'a été infecté par le virus. Soixante-trois pour cent des femmes de l'étude présentaient plusieurs facteurs de risque de contraction du VIH, le plus répandu étant la consommation de drogues injectables (54 %). Au moment de leur accouchement, 44 % des femmes se trouvaient dans la période de séroconversion de quatre semaines; 25 % de ces femmes et 52 % de leurs bébés ont reçu un traitement pharmacologique prophylactique.

**Conclusion :** Le dépistage rapide du VIH a permis de repérer une cohorte à risque élevé et de prendre vigoureusement en charge la grossesse d'une femme venant de recevoir un diagnostic de séropositivité, prévenant ainsi la transmission périnatale de l'infection. Chez plus de la moitié des femmes, les facteurs de risque de contraction du VIH étaient toujours présents pendant la période de séroconversion, ce qui diminue l'utilité du test de dépistage. Le test ne permettait donc pas d'éviter un traitement inutile à ces patientes, car un traitement antirétroviral prophylactique est recommandé en présence de facteurs de risque, même si le résultat du test est négatif.



**Key Words:** HIV infections, vertical infectious disease transmission, pregnancy, rapid HIV testing, maternal health, child health

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## INTRODUCTION

Perinatal HIV transmission can be reduced from 25%[1] to less than 1% with the administration of combination antiretroviral therapy in pregnancy, during labour, and in the neonatal period and with abstaining from

breastfeeding.[2] This, however, requires identifying HIV-positive women prior to, or early in pregnancy, and engaging them in care. In Canada, 25% of new HIV diagnoses are in women,[3] and 25% of HIV-positive individuals are unaware of their HIV status.[4] Following the national recommendations to offer prenatal HIV testing to all women,[5,6] 96% of women in British Columbia were screened in 2011.[7] However, there continues to be women who present in labour with unknown HIV status, either because they were not screened in pregnancy or they had a negative early HIV test but continued to engage in high-risk behaviours without repeated testing. In Canada, 93 infants have been perinatally infected with HIV between 2000 and 2010, born to women who did not know their HIV status or did not access care.[8]

BC has a layered approach to preventing perinatal HIV transmission. All women who are known to be HIV positive or who screen positive in pregnancy are referred to the Oak Tree Clinic, a tertiary referral centre for HIV-positive women and their children located at the BC Women's Hospital and Health Centre. Between 2005 and 2014, there were no reported cases of perinatal HIV transmission in 253 women who accessed care and used antenatal cART; however, there were two perinatal transmissions in cases in which the women did not receive antenatal cART prior to delivery.[9] Women who present in labour with unknown HIV status are managed through an Emergency Prevention of Perinatal HIV Transmission Program, which provides short-course prophylactic antiretroviral kits to 32 obstetric facilities across the province for administration to these mother-infant pairs until their HIV testing is complete. Outcomes from the first 7 years (2000-2007) of this program have been reported.[10] In brief, a total of 350 emergency kits were used across 27 labour and delivery room units in women with unknown HIV status. Among these high-risk women, five women were subsequently found to be HIV positive. The emergency prevention program was considered effective at identifying pregnant women at high risk of HIV infection, with an HIV prevalence of approximately 20 times the background rate (16.2 vs. 0.68 per 1000 cases) among live born pregnancies in BC. However, only 35.4% of women (95.7% of infants) received the recommended prophylactic antiretroviral regimen and there was one confirmed case of perinatal transmission.

The emergency prophylaxis program historically identified at-risk women through clinical history and risk-based screening. To further assist in the identification of high-risk women, the program was updated in 2011 to incorporate public health recommendations for offering voluntary rapid HIV antibody testing to women presenting to the LDR unit with unknown HIV status, either for lack of antenatal testing or ongoing risk factors for HIV infection despite a negative antenatal test.[11] This is seen as an important last opportunity to identify HIV positive women before delivery. It was anticipated that implementation of the rapid HIV test would facilitate the timely identification of HIV infection to allow for prevention of perinatal transmission and lead to fewer mother-infant pairs unnecessarily receiving antiretroviral prophylaxis if screened negative without ongoing risk factors.

The goal of this study was to determine the impact that the implementation of rapid HIV antibody testing in a single LDR unit had on the rates of identification of HIV infection among high-risk women compared with prior risk-based screening methods and the rate of antiretroviral drug use among non-HIV positive women and their infants.

## METHODS

Since November 25, 2011, all women who present to the LDR unit at BCWH in Vancouver, BC, with undocumented HIV status or with ongoing risk of HIV infection since their last HIV test are offered HIV testing, with pre-test and post-test counselling, using the rapid HIV antibody test. We conducted a retrospective review of all rapid HIV tests done between November 25, 2011, and December 31, 2015.

The rapid HIV test used was the INSTI HIV-1/2 Antibody Test (bioLytical Laboratories, Richmond, BC). This test is a manual, visually read flow-through immunoassay for the detection of antibodies to HIV types 1 and 2 in human blood, serum, or plasma. The immunoassay utilizes a combination of recombinant membrane proteins (gp41, gp36), which, if present in the sample, react with HIV antibodies to produce a visual signal in under 1 minute. The test is designed for near-care or point-of-care testing, and the reported sensitivity and specificity for early antibody detection is 99.8% (95% CI 99.3% - 99.9%) and

## ABBREVIATIONS

| | |
|---|---|
| BC | British Columbia |
| BCWH | BC Women's Hospital and Health Centre |
| cART | combination antiretroviral therapy |
| EIA | enzyme immunoassay |
| IVDU | intravenous drug use |
| LDR | labour and delivery |
| PCR | polymerase chain reaction test |