Eradicating Perinatal HIV Transmission, Is It Possible: A Model for Case Managers

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Statement of the Problem

·124,911 reported Female AIDS cases in the U.S. (CDC, 2001)
· 127,000 reported Female AIDS cases in the U.S. (CDC, 2007)

· 6000 to 7000 women give birth in the US, yearly (CDC, 2007)
· Approx 40% of mothers whose infants are perinatally infected have no documentation of HIV status, despite recommendations that all pregnant women be tested for HIV prenatally (CDC, 2007)

· 40% of women of childbearing age are unaware that treatment is available to treat perinatal infection (CDC, 2007)

·1,750 estimated infant HIV-infections occur yearly from mother to child without intervention (CDC, 2001)
·280 to 370 estimated infant HIV-infections occur yearly from mother to child without intervention (CDC, 2007)

·91% of all Pediatric AIDS cases in the U.S. are accounted for by mother to child transmission (CDC, 2001)
·67% of all Pediatric AIDS cases in the U.S. are accounted for by mother to child transmission (CDC, 2007)

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Statement of the Problem II

·Medical Research suggests that ZDV administered to pregnant women who are HIV positive can prevent a baby from sero-converting to a positive HIV status (ACOG, 2000)

· 40% of women of childbearing age are unaware that treatment is available to treat perinatal infection (CDC, 2005)

· CDC (2004) indicates that rapid HIV screening in labor and delivery is acceptable and feasible; yet, only 1/3 of US hospitals have rapid HIV testing available to women in labor (less than ½ of those have policies to routinely offer rapid HIV test to women w/undocumented HIV status

[Opt-Out] [Opt-In]

·Increased HIV services are needed to prevent HIV infection in women and to encourage early PNC that includes HIV testing

·Identifying factors and predictors of HIV testing for women during PNC is necessary to know more about what factors are motivating women to get tested, so those factors may be a focus of interventions designed to motivate all women to seek HIV testing during PNC.

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Review of Literature

•Research examining factors associated with HIV testing has mostly included male samples. A paucity of research exists involving HIV testing for women during PNC. As of 2007, the few studies found regarding HIV testing and PNC were conducted in Canada, Brazil, and urban Zimbabwe [Opt-out] vs. [Opt-in]

· One study, Joo et al. (2000), examined the number of US women who were offered and accepted HIV testing during PNC; the survey was descriptive

It was reported that women receiving PNC from a private practice were less likely than women receiving PNC in a cmmty clinic or hospital to be offered HIV testing

Also, it was reported that practice setting was a stronger determinant than race and age for the women being offered HIV testing during PNC.

The Joo et al., study did not examine other factors, such as HIV education, HIV risk appraisal.

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Purpose

·Examine factors associated with HIV testing for women during PNC

·Examine predictors of HIV testing for women during PNC

·Two Hypotheses concerning motivators to HIV testing were examined (using the general theme of the HBM)

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Research Questions

- (I) Does a relationship exist between HIV testing for women during prenatal care and race; age; level of education; marital status; formal HIV education, inform HIV education, HIV risk appraisal and PNC facility (private MD/HMO, Clinic, Other)?
- (2) What factors in the adapted HBM (race, age level of education , marital status, cues to action, HIV risk appraisal and practice setting) predict HIV testing for women during PNC?
- (3) Does the regression model accurately predict HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample?

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Theoretical Framework

- The Health Belief Model - theory developed as a tool to explain and predict health-related behaviors (Janz and Becker, 1974)
- HBM includes three broad constructs: (1) general health motivation, (2) perception of the threat-value of a specific disease, (3) perception of the effectiveness of a specific health behavior for reducing that threat.
- The adapted version of the HBM (Becker, 1990) includes cues to action. The general theme of the HBM, predicting health-related behaviors, and the cues to action feature are used to guide this research study.

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Research Methods

- National Center for Health Behavioral Change Survey data were used for this study
- Trained interviewers conducted interviews using laptop computers for some sections and in-person interviews for other sections
- IRB Approved

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- Non-institutionalized civilian women
- Age range: 15 - 44
- Mean Age = 27 (SD = 5.8)
- Education: 40% have some or more college
- probability sample
- 29% African-American
- 71% European-American

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Measures

- Data were gathered using the NSFG survey instrument
- The dependent variable was “HIV Testing” - whether the respondent received HIV testing during prenatal care
- Eight independent variables were selected based on theory, research findings, and availability of data

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Table 1: Independent Variables

Construct and and Variable Name	Categories/Description
Block 1:	
Demographics	
Age	Chronological age at time of interview
Race	White/ Minority
Education	HS or less/ College
Marital Status	Married/ Single
Block 2:	
Cues to Action	
HIV/AIDS formal educ	YES/NO
HIV/AIDS prevention	YES/NO
Block 3:	
HIV Risk Appraisal {Collapsed to new variable--No risk/Presence of risk}	
IDU non-prescriptive	YES/NO
Sex with gay or bi-sexual men	YES/NO
Sex with male IDU	YES/NO
Sex with males having sex with other female partners	YES/NO
Other Independent Variable not in Model:	
Type of Care Facility Respondent received prenatal care	Clinic/Private doctor's office or HMO

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Hypotheses

(I)There is a relationship between HIV testing during PNC and race, age, level of education, marital status, HIV risk appraisal, cues to action, and practice setting.

(II) The following factors predict HIV testing for women during PNC: race, age, marital status, level of education, cues to action, HIV/AIDS formal education, and HIV/AIDS informal education; and HIV risk appraisal.

(III) The regression model accurately predicts HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample.

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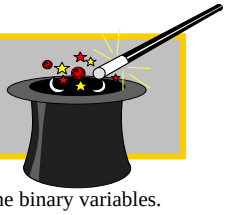
Analysis of Data



- Chi-square tests were performed to examine relationships between the binary variables.
- Independent t-test was performed to determine if a relationship existed between the dependent variable and age.
- Logistic regression analyses were used to test hypotheses when the dependent variable is whether women received HIV testing.
- Odds ratios were produced and used to interpret the relationship between the constructs: demographics, cues to action, HIV risk appraisal and the likelihood of the women receiving HIV testing during prenatal care
- Variables were entered within the first block [No theoretical reason to guide entry]

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Results for Hypothesis I

Table 5.1: Respondent's race and HIV testing during prenatal care

HIV Blood Test During Prenatal Care

Race		No	Yes	Total
Minority	%	32.1%	67.9%	100%
	Count	45	95	140
White	%	57.8%	42.2%	100%
	Count	212	155	367
Total				
	Count	257	250	507

Chi-square = 26.618 df = 1 Level of Significance < .001

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Results

Table 5.6: Respondent's cues to action (formal education) and HIV testing
HIV Blood Test During Prenatal Care

Cues to Action		No	Yes	Total
No Formal Educ	%	57.6%	42.4%	100%
	Count	95	70	165
Yes Formal Educ	%	47.0%	53.0%	100%
	Count	162	180	342
Total				
	Count	257	250	507

Chi-Square = 4.639 df = 1 Level of Significance = .031

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Results

Table 5.7: Respondent's cues to action (informal education) and HIV testing
HIV Blood Test During Prenatal Care

Informal Education		No	Yes	Total
No Informal Educ	%	50.5%	49.5%	100%
	Count	160	157	317
Yes Informal Educ	%	51.1%	48.9%	100%
	Count	97	93	190
Total				
	Count	257	250	507

Chi-Square = 26.618 df = 1 Level of Significance = .899

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Results

Table 5.8: Respondent's Practice Setting and HIV testing during prenatal care

Practice Setting		HIV Blood Test During Prenatal Care: No	Yes	Total
Clinic	%	38.1%	61.9%	100%
	Count	45	73	118
Private MD/HMO	%	54.5%	45.5%	100%
	Count	212	177	389
Total				
	Count	257	250	507

Chi-Square = 9.698 df = 1 Level of Significance = .002

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Results for Hypothesis II

Table 6: Results of the Logistic Regression Analysis of the Test Sample

Variable	df	B	S.E.	Wald	Sig.	Exp(B)
Formal Edu	1	.409	.212	3.744	.053	1.506
Inform Edu	1	-.377	.211	3.207	.073	.686
HIV Risk	1	.227	.290	.613	.434	1.255
Edu level	1	-.317	.210	2.278	.131	.729
Race	1	-.765	.229	11.109	.001*	.465
Prac Setting	1	-.174	.245	.506	.477	.840
Mari Status	1	-.714	.246	8.410	.004*	.490
Age	1	-.013	.019	.434	.510	.987
Constant	1	1.472	.591	6.191	.013	4.356

* p-value less than critical .005 level

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Results

Table 7: HIV Testing Predicted in the Test Sample for Model with Eight Terms (N = 517)

		Predicted HIV Testing		
Observed		No	Yes	Percentage Correct
HIV Test	No	190	67	73.9
	Yes	110	140	56.0

(1) The cut value is .500

$X^2 = 61.097$, p-value < .001

Kappa = .300, p-value < .001

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Results for Hypothesis III

Table 8: Results of the Logistic Regression Analysis of the Cross Validation Sample

Variable	df	B	S.E.	Wald	Sig.	Exp(B)
Formal Edu	1	.048	.204	.056	.813	1.050
Inform Edu	1	.155	.206	.562	.453	1.167
HIV Risk	1	.485	.268	3.275	.070	1.625
Edu level	1	.035	.203	.030	.863	1.036
Race	1	-.370	.219	2.869	.090	.690
Prac Setting	1	-.373	.251	2.208	.137	.689
Mari Status	1	-.281	.239	1.373	.241	.755
Age	1	-.019	.018	1.066	.302	.981
Constant	1	.998	.546	3.342	.068	2.713

p-value less than critical .005 level

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Results

Table 9: HIV Testing Predicted in the Cross Validation Sample for Model with Eight Terms (N = 516)

		Predicted HIV Testing		
Observed		No	Yes	Percentage Correct
HIV Test	No	200	67	74.9
	Yes	139	103	42.6

(1) The cut value is .500
X^2 = 21.012, p-value = .001
Kappa = .189, p-value < .001

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Results

Table 10: Regression Coefficient Confidence Intervals for the Test Sample and Cross Validation Sample

Variable	Test Sample Beta	CI	Cross Validation Sample Beta	CI
Formal Edu	.409	-0.006 to .824	.048	-0.351 to .447
Inform Edu	-.377	-0.789 to .036	.155	-0.248 to .558
HIV Risk	.277	-0.341 to .795	.485	-0.040 to 1.01
Edu Level	-.317	-0.728 to .094	.035	-0.362 to .432
Race	-.765	-1.213 to –0.317	-.370	-0.799 to .059
Prac Setting	-.174	-0.654 to .306	-.373	-0.864 to .118
Mari Status	-.714	-1.196 to –0.232	-.281	-0.749 to .187
Age	-.013	-0.050 to .024	-.019	-0.054 to .016

X^2 = 10.321, p-value = .332

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Findings (Hypothesis I)

The following variables had a significant association with HIV testing for women during PNC:

- Race
- Age
- Level of Education
- Marital Status
- HIV risk appraisal
- Practice Setting

The following Variables were not significantly associated with HIV Testing for women during PNC:

- Informal Education (Cues to Action)
- Formal Education

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Findings (Hypothesis II)

- The adapted HBM [including race, age, level of education, marital status, HIV risk appraisal, cues to action (formal and informal HIV education), and practice setting] was a significant model for predicting women who did not receive HIV testing during PNC.

- However, the model does poorly when predicting women who received HIV testing during PNC.

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Findings (Hypothesis III)

- The cross validation analysis revealed that the prediction model is a reliable model when comparing the regression coefficients.
- The cross validation logic regression model did not reveal any significant predictors of HIV testing.
- However, an examination of the difference between the regression coefficients for the test model and the cross validation model revealed no differences. Thus, the analysis of the cross validation model suggests that the difference in non significant predictors may be **due to variability, rather than chance.**

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Limitations

- This study attempted to explain and predict motivating factors of HIV testing for women during PNC using the general theme of the HBM.
- However, the use of secondary data limited the use of variables to explain all parts of the HBM.
- Therefore, the findings cannot be used to support the use of the HBM to predict HIV testing for women during PNC. The findings do support the use of the general theme of the HBM.
- The Data were self-report data and no effort was made to ascertain the reliability of what the respondents reported (there may have been underreporting or overreporting).

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Implications for Practice

- Social service workers and counselors are frontline workers with women of childbearing age and can play a pivotal role in educating women about the importance of PNC including HIV testing, and awareness of treatment for perinatal infections
- Public health Social workers in direct practice should be encouraged to be familiar with agencies that may provide women with affordable PNC that includes HIV testing

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Table 1: Comprehensive HIV Perinatal Transmission Education Model

Step 1. Training	Remain current on perinatal HIV transmission knowledge. Attend trainings and conferences regarding HIV testing, and its importance for preventing perinatal HIV transmission. If the staff in your agency has the expertise, consider offering such trainings.
Step 2. Resources	Locate and develop a list of HIV testing centers. Document the protocol (e.g., anonymous) each center uses, and any fee involved.
Step 3. Cues to Action	Display posters and pamphlets concerning the importance of HIV testing [check with your local health department, CDC, or ACOG for posters and pamphlets] http://www.acog.org/bookstore/
Step 4. Education	Educate sexually-active clients of childbearing age about the importance of HIV testing, early prenatal care, and the advancement health knowledge for preventing perinatal HIV transmission.
Step 5. Counseling	Prepare to identify anxiety and provide counseling to clients who may present with anxiety about HIV testing and HIV related stigma.

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