The University of Alabama at Birmingham

HIV Retesting in Pregnancy: Missed Opportunities and Contributing Factors

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INTRODUCTION

The virtual elimination of mother-to-child transmission (MTCT) of HIV is possible, with reports of rates as low as 1.5% achieved in high- and middle-income country settings (1,2). It is estimated that a third of all MTCT is attributable to women with incident infection during pregnancy (3). HIV testing is the first critical step to identifying women who have been infected with HIV and linking them to care. In sub-Saharan African countries, a meta-analysis found the cumulative incidence of HIV during pregnancy and postpartum to be 3.6% (95%CI 1.9%-5.3%) (4). Retesting pregnant women who had an initial HIV-negative test in early pregnancy can capture these incident cases of HIV. This is especially crucial given that acute HIV infection is associated with an elevated risk of horizontal and vertical transmission (5,6).

METHODS

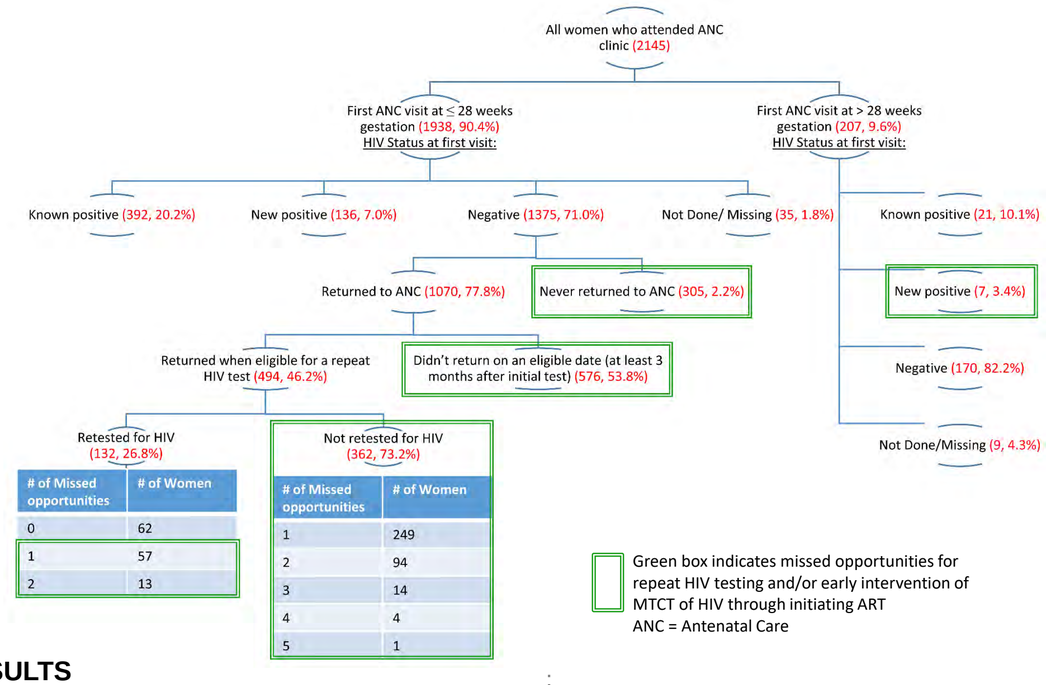
Longitudinal analyses were conducted using antenatal records of 2145 women attending antenatal care (ANC) at a large district hospital in Migori County, Kenya. Data were abstracted from registers for all women who attended ANC from the years 2011 to 2014.

Table 1. Descriptive Statistics (N = 2145)

Variable	Mean (sd)	n (%)
Age (years)	23.5 (5.48)	
Marital status		
Married		1785 (83.3)
Single		225 (10.4)
Widowed/Divorced/ Separated		99 (4.6)
Missing		36 (1.7)
Estimated village distance from hospital (km)	4.7 (6.45)	
Gestational at first ANC visit (weeks)	21.6 (6.3)	
Year of last menstrual period (LMP)		
2011		519 (24.1)
2012		738 (34.4)
2013		888 (41.4)
Gravida		
Primigravid		602 (28.0)
2		509 (23.7)
3		401 (18.9)
4		503 (23.4)
5		130 (6.1)
>6		141 (6.4)
Number of ANC visits		
1		501 (23.4)
2		509 (23.7)
3		545 (25.4)
> 4		590 (27.5)
Gestation at first ANC visit		
≤ 12 weeks		221 (10.4)
13-20 weeks		731 (33.9)
21-28 weeks		986 (45.9)
29-36 weeks		203 (9.5)
≥ 37 weeks		4 (0.2)
HIV status at delivery		
Previously positive at first visit		492 (23.0)
Newly diagnosed HIV-positive in ANC		529 (24.7)
Negative		400 (18.8)
Previously negative*		1294 (60.0)
Not done/ Missing		182 (8.5)

*Defined as having had more than three months pass since the last HIV-negative test result.

Figure 1: Missed Opportunities for Repeat HIV Testing or Early ART Initiation



RESULTS

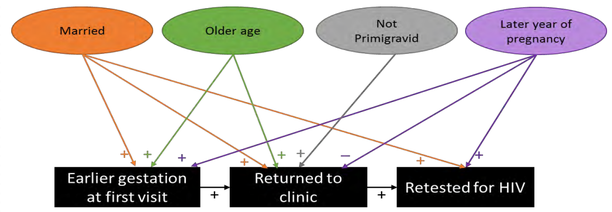
Just over 90% of women presented for their first ANC visit early enough (≤ 28 weeks gestation) to later be eligible for retesting, but several missed opportunities were noted (Figure 1). Although most women came early in pregnancy and a quarter had at least 4 ANC visits, 58.0% of all women had a "previously negative" HIV status at delivery due to lack of retesting.

In 2011, only 1 out of 105 (0.95%) eligible patients was retested; in 2012, 31/162 (19.1%) were retested; and in 2013, 100/227 (44.05%) were retested. Since Kenyan national repeat HIV testing guidelines were disseminated in mid-2011, this suggests success of the guidelines in encouraging provider-initiated retesting rather than awaiting patient-initiated requests for retest.

Table 2. Factors Associated with Retesting

	Retested for HIV among target population (N=1375)				Retested for HIV among eligible women who returned to clinic (N = 494)			
Factor	N	Odds Ratio	(95% CI)	P-value	N	Odds Ratio	(95% CI)	P-value
Marital status								
Married	1113	Ref.		0.038	425	Ref.		0.73
Not married	237	0.54	(0.30, 0.96)		56	0.89	(0.47, 1.7)	
LMP year*								
2011	316	Ref.		<0.0001	105	Ref.		<0.0001
2012	466	22.2	(3.01, 163)		162	24.3	(3.27, 181)	
2013	593	63.4	(8.80, 456)		227	81.0	(11.1, 591)	
Age of patient								
≤15 years	89	Ref.		0.17	21	Ref.		0.52
16 - 20 years	479	2.21	(0.77, 6.33)		157	0.99	(0.23, 3.84)	
21 - 30 years	711	2.58	(0.92, 7.24)		283	1.72	(0.54, 5.40)	
≥31 years	96	1.41	(0.38, 5.19)		33	1.58	(0.51, 4.87)	
Parity								
Primigravid	479	Ref.		0.77	21	Ref.		0.91
2	346	1.09	(0.69, 1.73)		157	0.97	(0.58, 1.60)	
3	247	0.93	(0.55, 1.58)		283	0.97	(9.54, 1.75)	
4	301	0.83	(0.50, 1.38)		33	0.82	(0.46, 1.44)	
Village distance from clinic								
≤15 km	1264	Ref.		0.17	457	Ref.		0.11
>15 km	50	0.37	(0.09, 1.5)		19	0.30	(0.70, 1.35)	

Figure 2. Directed Acyclic Graph for Contributing Factors



Being married, of older age, and having a later year of pregnancy were associated with earlier gestation at first ANC visit. This was, in turn, associated with a higher likelihood of returning to clinic, which was a prerequisite for getting retested for HIV.

On retest, 2/132 women tested HIV-positive, suggesting a seroconversion rate of 1.5% from early to late pregnancy. Extrapolating this rate to all women who tested HIV-negative early in pregnancy (N=1375) suggests that 19 cases of incident HIV may have been missed.

CONCLUSIONS

Failing to retest pregnant women who are at risk of HIV infection or failing to initiate women who are HIV-positive on ART early in pregnancy represent missed opportunities for prevention of mother-to-child transmission of HIV. Key reasons may be late first visit, failing to return to antenatal clinic, failing to return at least three months after initial visit, and failing to retest even though eligible.

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