HIV incidence, cascade and testing among mothers in Western Kenya

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Poster 764

Background

- There are limited evaluations of prevention of mother to child HIV transmission (PMTCT) programs, particularly testing coverage in pregnant women, since the implementation of option B+ in sub-Saharan Africa.
- The Impact of Expanded Screening Strategies (IESS) study aimed at reconstructing the PMTCT cascade in Ndhiwa sub-county where HIV prevalence (24%) and incidence (3.5,ew cases per 100PY) among pregnant/breastfeeding women are among the highest in the world.

Objectives

- To estimate HIV incidence and prevalence among HIV-infected mothers
- To evaluate each step of the cascade of care among HIV-infected mothers
- To measure ANC coverage, HIV testing and retesting coverage during pregnancy and breastfeeding period

Methods

Setting and duration The study took place in Ndhiwa, a sub-county of Homa bay county in western Kenya from February 2016 to January 2017. Out of the 33 health facilities providing ART and PMTCT services at the time of the study, 26 were included: 1 hospital, 3 health centers and 22 dispensaries

Design Cross-sectional facility-based survey at expanded programs of immunization (EPI) and maternity with prospective home-based and/or facility follow-up of HIV+ infants

Study population and Inclusion criteria Mothers of infants aged 0 (at birth), between 2 to 10 weeks and 8 to 10 months at one of the 26 selected facilities were considered eligible

Laboratory procedures

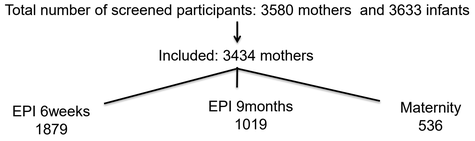
- HIV testing: Serial testing algorithm using Determine Rapid HIV-1/2 Antibody (Abbott Labora- tories, Abbott Park, IL, USA) followed by Unigold Rapid HIV Test (Trinity Biotech PLC, Bray, Ireland)
- Morther Viral Load: blood was collected on DBS card for VL (Abbott) at KEMRI/CDC Research Laboratory

Incidence estimation: Using testing history. Numerator as the number of newly diagnosed women who were previously negative and the denominator as the total number of women negative at their previous test; the person time was determined from the average time since last test

Ethics. Each participants provided written consent. Study approved by KEMRI ERB and CPP in Paris.

Results

A/ Study inclusion and Patients' characteristics



- Participation was high, at 95.9% and the median age was 23 years [IQR 19-29]
- Socio-demographic characteristics: Of 3434 mothers screened, 75% reached primary level at school, 97% resided in Ndhiwa, 83% were married, 93% were christians, 44% were farmers and 88% had an income <50$ a month

B/ ANC attendance, place of delivery, systematic retesting

- ANC coverage was high as 98% (95%CI 97.4-98.6) of women reported at least one ANC within a health facility and 90.7% (95%CI 89.6-91.8) had 3 or more ANC consultations during their last pregnancy. However, 14.8% (95%CI 13.7-16.1) of women had their first ANC consultation in their last trimester of pregnancy
- Considering women enrolled from EPI only, 66.1% (95%CI 64.3-67.8) of them delivered within a health facility while 29.7% (95%CI 28.0-31.3) delivered at home and 4.2% (95%CI 3.6-5.0) delivered in other places such as roadside
- Among all women, 3301/3434 had their HIV status ascertained during their last pregnancy: 3.1% (95%CI 2.5-3.7) were not tested, 13.8% (95%CI 12.7-15.0) were known positive, 83.1% (95%CI 81.8-84.3) were tested, with 35.3% (95%CI 33.5-37.1) tested twice and 14.9% (95%CI 13.7-16.3) tested 3 times or more.
- Among those who were not known positive, 17.1% (95%CI 15;7-18.5) had their first HIV test in their last trimester of pregnancy
- Overall, 43.7% (95%CI 41.9-45.4) of all women had their last HIV test more than three months ago.

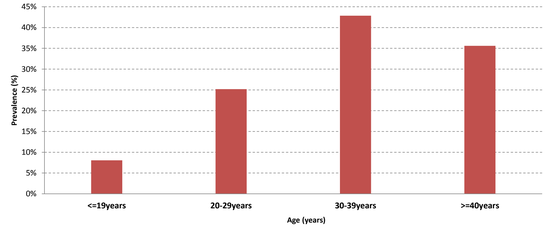
Table 1: Testing coverage among mothers, Ndhiwa sub-county, Kenya, 2016

	EPI 6 weeks (+95%CI)	EPI 9months (+95%CI)	Maternity (+95%CI)
Tested at ANC	96.1% (95.0-96.9)	96.9% (95.4-97.9)	97.1% (95.1-98.3)
Tested again at ANC	39.3% (36.9-41.9)	48.8% (45.0-52.5)	41.8% (37.1-46.7)
Tested at maternity	11.7% (10.2-13.5)	15.5% (13.0-18.4)	8.7% (6.3-11.8)
Tested at immunization	6.9% (5.7-8.3)	17.7% (15.0-20.7)	-------

C/ HIV prevalence and incidence

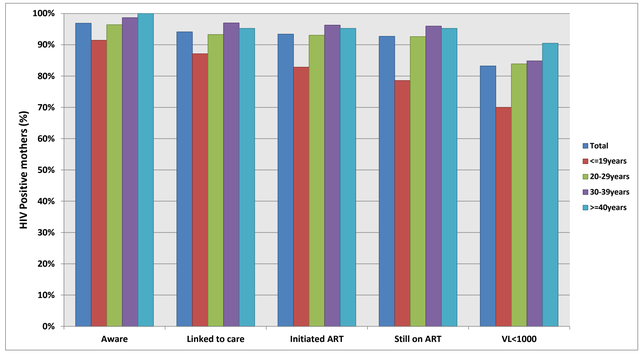
- The overall weighted HIV prevalence was 24.6% (95%CI, 23.2-26.1) (835/3397)
- Prevalence was lowest in those aged <=19years, 8.1% (95%CI 6.4-10.1) and the pic was in the 30-39years age group, 42.9% (95%CI 39.2-46.6)
- A total of 32 women were newly diagnosed during the study. Of them, 29 had a previous HIV test giving an HIV Incidence of 4.1 new cases per100PY (95%CI 2.9-5.7).
- HIV incidence varied with age from 3.1 among those <19 years to 4.7 and 5.9 new cases per 100py at 20-24 and 25-29 years; It then decreased at 3.3 new cases for those age 30 years or more

Figure 1: HIV prevalence by age, Ndhiwa sub-county, Kenya, 2016



D/ Cascade of care

Figure 3: HIV cascade of care, Ndhiwa sub-county, Kenya, 2016



- The steps of the HIV cascade of care were as follow: out of 835 HIV-infected women, 97.2% (95%CI 95.9-98.2) had been previously diagnosed, 92.8% (95%CI 90.9-94.4) were in care, 93.4% (95%CI) ever initiated treatment, 92.6% (95%CI 90.6-94.2) were still on ART, 83.1% (95%CI 80.4-85.5) had a viral load below 1,000 copies/mL. Among those on ART, 87.0% (95%CI 84.5-89.2) are virally suppressed.
- Results varied with the age of the mother. Those aged <19 years, had the lowest viral load suppression: 61.7% (95% CI 47.0-74.5)

Discussion

- This is the 1st study measuring the population impact of PMTCT programs in Kenya since the scale-up of Option B+ i
- Good cascade of care as mothers are within reach of the 90-90-90 objectives but VL suppression is <90%
- HIV incidence remains high in mothers. More efforts to diagnose and treat HIV+ positive males and prevent young women from being infected (ie. Oral PREP) could help reducing HIV incidence among mothers.
- ANC attendance and testing coverage at ANC is high but systematic retesting which is needed in high incidence areas is not yet fully implemented.
- Strengths and limitations
  - Strengths: very high participations rate
  - Limitations: Self-reported data (except for biological exams)

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