KCRI Kilimanjaro Clinical Research Institute

THE PREVALENCE OF TRANSMITTED HIV-1 DRUG RESISTANCE AMONG DRUG NAÏVE PREGNANT WOMEN ATTENDING ANTENATAL CLINIC IN NORTHERN ZAMBIA

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MMIM-I /2012

TanZamBo Annual meeting
23-24 August 2012
Moshi, Tanzania

Introduction

- 34million infected globally→23million in Africa
  34% in 10 sub-Saharan Africa
  (**UNAIDS Report on global AIDS epidemic., 2010**)

- 1.8m deaths globally in 2010, 1.2m in sub-Saharan Africa
- 5million on ART from 50,000 in 2002
  2/3 of patients requiring ART in Africa

- Zambian situation as of 2009

People with HIV	890,000-1,100,000		
Adults	800,000-940,000	Women	440,000-550,000
Children(0-14)	64,000-160,000	Deaths	30,000-60,000

Background

- Older ART services ↑HIVDR
  - North America and Western Europe
    Transmitted HIVDR 5%-24% in drug naïve
    (Wells et al., 2007. Smith et al., 2007)

- ↓HIVDR prevalence in places with ↓ART access
  ART roll-out, HIVDR mutation rates↑
  - East Africa has increase at 29%/annum since ART roll-out
  - 14% in southern Africa
  - 3% in West and Central Africa
    (Johnson et al., 2006. Gupta et al., 2012)

Transmitted HIVDR surveillance in resource limited settings

- Brain child of WHO

  To assess population level HIVDR

  Prevent DR HIV epidemic

- Standardised method

➢ ≤47 specimens, categorised as <5%, 5-15%, >15%

➢ Site and individual eligibility criteria ↓inclusion of

ARV-experienced individuals

individuals infected before ART introduction

(Bennett et al., 2008)

Rationale

- ART initiated in Zambia in 2002
  - ↑drug-induced mutations ↑HIVDR
  - →transmission
- 18-20% HIV prevalence among pregnant women since 1994
  - 75% receive PMTCT services
  - 20% babies born to infected mothers get infected
- Pregnant women <25yrs → transmitted HIVDR
- Baseline data → guide future safe-guards

Objectives

- Broad objective:

➢ To determine the prevalence of transmitted HIV-1 drug resistance among pregnant women attending antenatal clinic in northern Zambia

- Specific objectives:

➢ Determine prevalence of HIVDR mutations in treatment naïve pregnant women in northern Zambia

➢ Determine prevalence of transmitted HIVDR in pregnant women in northern Zambia

➢ Characterise HIV-1 subtypes circulating in northern Zambia

➢ Compare HIVDR levels between urban and rural communities

Methodology

- Will follow WHO HIVDR survey method
- Samples from the Zambia ANC sentinel surveillance

- Ethical considerations:

➢ Informed consent; ANCSS uses remnant samples, seeks no consent

➢ Confidentiality and anonymity;

ANCSS uses unlinked anonymous testing

Results will only be linked to unique ANCSS IDs

➢ Clearance;

TDRC and National Scientific and Ethics Review Committees

Methodology

- Study design: cross-sectional

- Study area and population:
  - Northern part of Zambia
  - Pregnant women enrolled in ANCSS, Aged <25 years
  - HIV infected and attending ANC for first pregnancy
- Samples:

  Archived at TDRC, from women testing +ve at first ANC visit for first pregnancy

- Sample size: 60
  - WHO recommends 50-70→ Successful amplification ≤47

  (**Bennett et al., 2008**)

Methodology

Laboratory analysis:

- Confirmation of positivity by ELISA
  (Murex)

- Viral load determination
  By Roche Amplicor HIV-1 analyser
  ≥ 1000copies/ml most desired

Methodology

Laboratory analysis:

- HIVDR genotyping (ViroSeq HIV-1 genotyping assay)

  Sample preparation

  Reverse transcription

  Polymerase chain reaction

  Cycle sequencing

  Automated sequence detection

  Software analysis

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