Laboratory Test Data for Near Real-time Longitudinal Cohort Monitoring of HIV

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INTRODUCTION

• National Health Laboratory Service’s Corporate Data-Warehouse (NHLS CDW) HIV laboratory test results at facility level for 80% of S.A’s population

• HIV PCR and VL test results in NHLS CDW used e.g.
  Monitor uptake and coverage of EID (incl. birth testing)
  Assist in clinical care (‘Results for Action’ Reports for 0-19 years)

• We demonstrate the potential for NHLS CDW to

  ➢ Perform near real-time Paediatric HIV Surveillance at district level
  UNAIDS 90-90-90 cascade and Longitudinal Cohort Monitoring to measure targets and identify specific patients, with virological failure or loss to follow up, for tracing

  ➢ Provide analysis of programmatic data
  Describe age at diagnosis within the infant testing program
S.A. Paediatric 90:90:90 Cascade 2016

- Total # of HIV+ children in South Africa: 352,476
- # diagnosed HIV+: 176,825
- Total Remaining on ART: 285,505
- # VL suppressed: 63,359

37% of those diagnosed HIV+ are on ART, 96% of those on ART have VL suppressed, and 69% of HIV+ children in South Africa are diagnosed.
Longitudinal Cohort Monitoring of HIV PCR Positive Infants 2015/16

Follow-up period: 13-24 months

- **HIV PCR+**: 304 (100%)
  - Returned for result: 218 (72%)
    - Median time: 16 (7-69) days
  - Retained in care at 6 months: 58 (19%)
    - Median time: 6 (5-7) mo
  - LTFU=160 (53%)
    - Median time: 6 (3-7) mo
  - LTFU=40 (13%)
    - Median time: 16 (7-69) days

- Frequencies:
  - 24/50 : VL <1000
  - 26/50 : VL >=1000
  - 18/31 : VL <1000
  - 13/31 : VL >=1000
Modes of HIV Transmission

2015/16

IU *in-utero*, IP *intra-partum*, PN *post-natal*

Early Dx <3 months of age
NHLS CDW: Age at 1st HIV PCR Pos

- NHLS CDW - effective EID monitoring within the National PMTCT program for <2mo olds
  - 2010 – 2015:
    - EID coverage 54% – >85%
    - Early MTCT rates 4.3% – 1.5%
- BUT only 1/3rd of all HIV PCR positive results from infants <2mo
- Absence of a unique patient identifier – no de-duplication of positive HIV PCR results in older infants
- Using a probabilistic linking algorithm, we define age at first positive PCR result and describe the burden of late infant diagnosis from 2010 – 2015
Age at 1\textsuperscript{st} HIV PCR Pos (2010 – 2015)

• Of all HIV PCR positive infants, 1\textsuperscript{st} HIV PCR positive occurred in 37% aged <2 months and 49% aged <3 months

• 36 485 infants tested PCR positive ≥3 months of age:
  
  ➢ postnatal infection: 4 513 (12%)
    previous negative PCR result at <3 months
  
  ➢ late presenters: 31 972 (45% of total PCR pos)
    suggests poor access to care among HIV-infected MIP pairs

• 2010 – 2015, the annual number of
  
  ➢ postnatal infections increased from 175 to 862 infants
    (1.1 – 7.9% of total PCR pos)
  
  ➢ late presenters decreased from 8 352 to 4 080
    (54 – 37% of total PCR pos)
• Late presentation for first PCR pos test declined from 2010 – 2015

• In 2015, despite high EID coverage, late presentation accounted for more than a third of infections in infants suggesting poor access to care among HIV-infected mother-infant pairs

• Late presenters likely represent different modes of transmission, including in-utero, intrapartum and postnatal infections, and threaten efforts to eliminate MTCT

• De-duplicating routine laboratory PCR data can readily be incorporated into the NHLS CDW for more effective & comprehensive paediatric HIV surveillance
1) Until satisfactory Tier.net coverage is achieved, the NHLS CDW represents an opportunity to deliver near real time Paediatric HIV Surveillance (e.g. Longitudinal Cohort Monitoring) and retrospective analysis (e.g. age at first HIV PCR positives)

2) Development is once off and costly, but maintenance can be undertaken by an NICD core team. Total cost is far less than for national surveys.

3) Reporting is rapidly scalable via online access or email distribution however, ongoing training is required to maximize use in the field
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