

# Optimising Identification of Infected Children

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Presented By KG Technau  
Coronation Paediatric HIV ARV Rollout Site

Based on work by Prof Gayle Sherman



# Introduction



# WHY DIAGNOSE?

- Essential for containing paediatric epidemic
  - **Prevention:**
    - Monitor efficacy of current PMTCT programme - feed-back
    - Especially in face of diversifying guidelines
      - HAART
      - Different regimens in different provinces
    - Staff motivation

# Why diagnose?

## ■ Treatment:

- Identify infected children early
- Proven success of HAART
- By 1 yr and 2 yrs of age, 33% and 50% of HIV+ kids died respectively (Newell ML, et al Lancet 2004;364:1236)
- Rapid progressors: 66% of 10mo old infected infants needed treatment at Coronation Hospital (MOPE Toronto 2006)

# **Prevention and Treatment**

# Benefits of treatment

- **Prophylaxis against OIs reduces mortality in HIV+ children**
  - **Zambia:** (Chintu et al.) Cotrimoxazole prophylaxis in HIV-infected children can reduce mortality by 43% in populations where ART is not available
- **Availability of pediatric ART improves survival rates**
  - **South Africa:** (Eley et al.) Of those who received ART for at least 6 months (N=17), 84% progressed from severe disease to become clinically well while experiencing no severe drug reactions

# HISTORY OF POOR ACCESS TO DIAGNOSIS FOR CHILDREN

- Diagnosis in children neglected in low resource settings
  - expense & complexity of testing
- Seroreversion & breastfeeding “complicate” diagnosis in kids
- “Low resource protocol”:
  - 85% lost to followup at Coro by 12mo
  - 38% of HIV+ kids deaths by 12mo
- Advocacy Issues

# Diagnosis

# WHICH TESTS TO USE?

- WHO guidelines low resource settings recommend
  - viral detection assays available for <18 months
  - >18 months test as for adults = lab-based ELISA or rapid tests
- Viral detection assays:
  - HIV DNA PCR or
  - HIV RNA PCR or
  - Ultrasensitive p24 Ag (no other p24 Ag – low sensitivity)

# Which Test?

- Timing of assay e.g. why at 6 weeks?
  - 1 assay – need for repeat test? after 18 mo of age to validate
  - Our practice
- WHO favours VIRAL LOAD testing - In SA, HIV DNA PCR used until further validation of VL

# WHAT'S THE BIG DEAL ABOUT DBS?

- All can be done on DBS
- Most experience with HIV DNA PCR
- Advantage of DBS over liquid samples
  - smaller volumes
  - heelprick = less training
  - no rush to lab
- DBS testing as accurate as liquid blood BUT
  - More laborious in lab
  - New Card – increasing cost



75



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**GTG BiogeneCard**  
(For biological sample collection)

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# ...BUT...CUTTING DOWN ON PCR TESTS:

- Seroreversion usually around 9-12 months
  - therefore testing all kids with PCR 9-18 months = overkill
- Remember that +ve HIV Ab detection assay <18 months = HIV EXPOSURE
- --ve Ab test rules out HIV infection UNLESS
  - Breastfeeding or early test
- Can use Ab test to rule out infection

# Important Concepts

- Always correlate clinical picture!
- Counsel mother/caregiver thoroughly
  - Continue normal growth monitoring
  - Continue immunisations
  - Report any concerns
  - If worried about the result's validity – repeat and follow-up

# **BREASTFEEDING & TESTING**

- Test 6 weeks after last drop
- Applies to both Ab and Viral detection

# TEST RESULTS DISCORDANT WITH CLINICAL ASSESSMENT

- If clinically positive:
  - If Ab pos or neg => do PCR
  - If PCR neg => repeat, could consider VL and investigate further
  - Most importantly follow-up
- If clinically negative and stays so:
  - If PCR pos => could repeat or do Ab at 12 months or later

# WHERE & HOW TO FIND THE KIDS THAT NEED TESTING

- Ideal world
  - All HIV+ pregnant women identified
  - Receive PMTCT; marked on child's RTHC without risking stigmatisation
  - When child comes for 6-week immunisation - viral detection
- All are brought back for their results;
  - b/fed kids retested 6 wks after cessation
  - HIV+ kids referred for clinical staging until ART indicated
  - If no signs: consider retesting in case 6wk PCR false pos
  - HIV-, non-breastfed kids require no further testing (assuming clinically well) & moms told to bring them back if concerned since no lab test infallible.

# BUT...

- Estimated that ~10% of women in LRS accessing PMTCT
- => miss 90% of exposed kids for testing!

# For this reason... suggest:

- 1. Advocate ROUTINE testing with 'opt out' option of all children at EPI by screening with rapid tests or testing mom?
- 2. Establish VCT centers for children
- 3. Remind adult VCT centers to counsel their patients about getting their kids tested
- 4. Test all children presenting ill e.g. TB clinics, malnutrition, infections e.g. LRTI

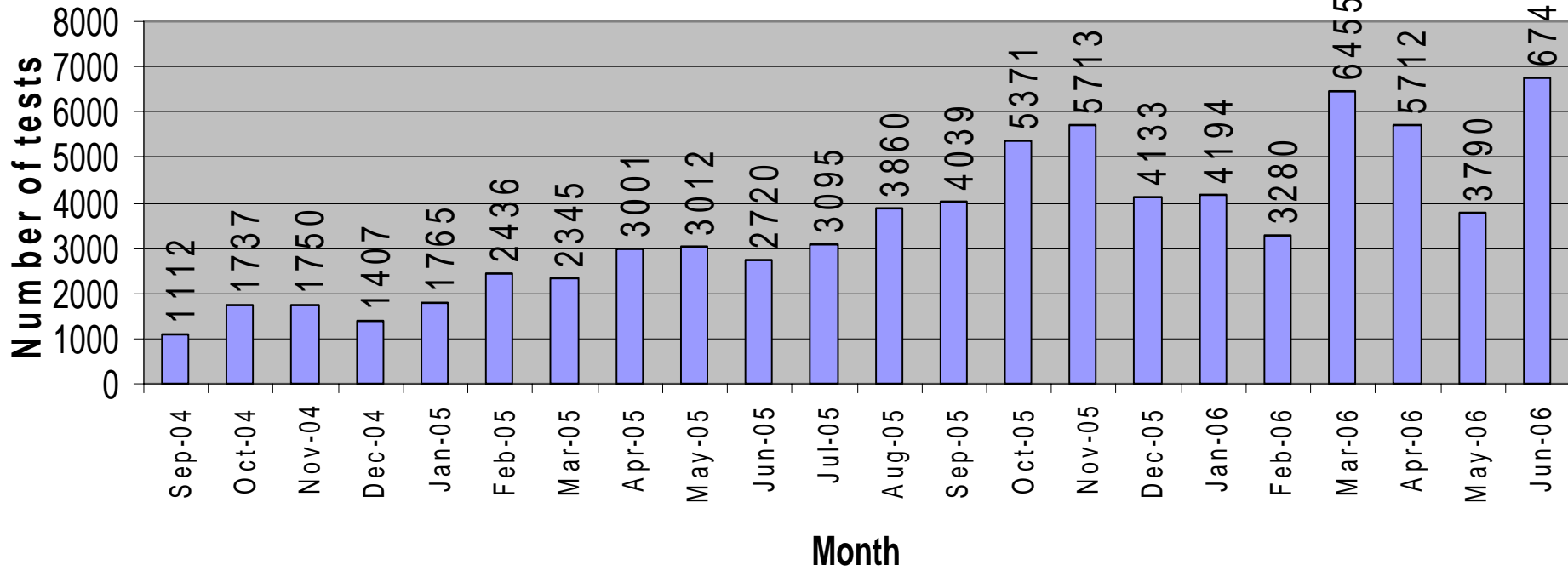
# Managing HIV + Children

- Provide early diagnosis
- Stage clinically and immunologically early and correctly
- Provide OI Prophylaxis
- Realise importance of early HAART and high risk and rate of rapid progression
- Follow at least monthly
- Intensive counselling and support of mother

# HOW IS SA DOING?

- ANC prevalence rate for 2005 = 30% nationally
- Birth rate approx 1mill per annum = 300 000 babies exposed
- At present lab capacity exceeds ability of clinics to find kids to test.....
- Lab scale up is possible e.g. JHB lab 200 tests per month to 3500 in <2yrs (>17 fold increase)

## Number of HIV PCR tests per month



# Graph of PCR testing

- At peak in June 06 of 6700 tests:
- met ~30% of capacity (viz. 300 000 tests per annum required = 25 000 per month & NHLS is processing 6700 per month at most)

# Conclusion:

- HIV has to be detected early
- Infants/Children need advocacy
- Paediatric testing a priority for both **prevention** and **treatment** purposes
- Staff have to understand basic concepts
  - Use of AB test and use of
  - Viral detection assay
- Large scale testing is possible if protocol realistic