Road to Health Booklets as Unique Patient Identifiers

Ahmad Haeri Mazanderani\textsuperscript{1,2}, Gayle Sherman\textsuperscript{1,3}, Ute Feucht\textsuperscript{4,5}

1. Centre for HIV & STIs, National Institute for Communicable Diseases, National Health Laboratory Service, Johannesburg, South Africa 2. Department of Medical Virology, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa 3. Department of Paediatrics & Child Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa 4. Department of Paediatrics and Child Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa 5. Tshwane District Health Services, Gauteng Department of Health

Best Practices and Innovations in Paediatric HIV and TB Care and Treatment

November 2-3, 2017
Pretoria, South Africa
Introduction

- No unique patient identification system within public health sector
  - Hampers surveillance efforts, e.g. estimating incidence and prevalence of laboratory diagnosed diseases
  - Monitoring paediatric HIV particularly challenging
- The National Department of Health has developed a Health Patient Registration System (HPRS)
  - First step is to register primary patient identifiers and link these to HPRS-created Unique Patient Identification Number (MPI)
  - RSA IDs and alternative numbers from official documentation (e.g. asylum seeker permits, passports) used as primary patient identifiers
  
→ This leaves a gap in providing unique patient identifiers to neonates
Methods

• Between May 2016 - June 2017, Tshwane District Health Services implemented a unique patient identifier pilot project
  o unique readable barcoded patient identifiers were incorporated within Road to Health Booklets (RTHBs) prior to distribution

• We report on
  o use of RTHB Identifiers at birth HIV PCR testing
  o describe performance of RTHBs in linking follow-up HIV PCR results
<table>
<thead>
<tr>
<th>District</th>
<th>Facility</th>
<th>Ward</th>
<th>Folder No</th>
<th>Patient Surname</th>
<th>Patient Name</th>
<th>Patient Age</th>
<th>Taken Date</th>
<th>Episode No</th>
<th>RTHB No</th>
<th>HIV PCR Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Tshwane</td>
<td>Dr George Mukhari Hospital</td>
<td>Ward 31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>18-DEC-2016</td>
<td>RTHB7512FB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Kgabo Health Centre Clinic</td>
<td>Not Applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>23-DEC-2016</td>
<td>RTHB5841ABCD</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Kalafong Hospital</td>
<td>Paediatric Opd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 months 25</td>
<td>30-NOV-2016</td>
<td>RTHB7498GB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Laudium Community Health Centr</td>
<td>Arv Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 months 21</td>
<td>22-DEC-2016</td>
<td>RTHB8758MM</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Mamelodi Hospital</td>
<td>Post-natal Ward 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>11-DEC-2016</td>
<td>RTHB9601GB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Stanza Bopape Chc</td>
<td>Ward Not Stated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 years</td>
<td>26-NOV-2016</td>
<td>NO RTHB NUMBER</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Lotus Gardens Clinic</td>
<td>Arv Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 months 5</td>
<td>29-NOV-2016</td>
<td>NO RTHB NUMBER</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Mamelodi Hospital</td>
<td>Post-natal Ward 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>02-DEC-2016</td>
<td>RTHB8395CB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Bronkhorstspruit Hospital</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>07-DEC-2016</td>
<td>NO RTHB NUMBER</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>Dr George Mukhari Hospital</td>
<td>Ward 31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 months</td>
<td>13-DEC-2016</td>
<td>RTHB7052DB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Tshwane</td>
<td>ODI Community Hospital</td>
<td>Labour Ward</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 day</td>
<td>06-OCT-2016</td>
<td>RTHB1439CB</td>
<td></td>
</tr>
<tr>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RTHBs Captured at Birth

No. RTHBs Captured

- May-16: 2%
- Jun-16: 13%
- Jul-16: 21%
- Aug-16: 25%
- Sep-16: 37%
- Oct-16: 48%
- Nov-16: 52%
- Dec-16: 52%
- Jan-17: 53%
- Feb-17: 47%
- Mar-17: 49%
- Apr-17: 56%
- May-17: 56%
- Jun-17: 56%

- % Birth PCRs with RTHBs
  - May-16: 0%
  - Jun-16: 10%
  - Jul-16: 20%
  - Aug-16: 30%
  - Sep-16: 40%
  - Oct-16: 50%
  - Nov-16: 60%
  - Dec-16: 70%
  - Jan-17: 80%
  - Feb-17: 90%
  - Mar-17: 100%
  - Apr-17: 110%
  - May-17: 120%
  - Jun-17: 130%

- RTHBs at Birth
- % Birth PCRs with RTHBs

- National Institute for Communicable Diseases
- Division of the National Health Laboratory Service
- Gauteng Province
- Republic of South Africa
Results

• 5 318 HIV PCR tests among infants aged <7 days were extracted from the NHLS CDW
  o 635 (11.9%) infants had a linked HIV PCR test after birth test
• Demographic details at the time of birth and subsequent PCR test were compared
  o <4% of infants had exact matches for name, surname, date of birth and sex
  o 74% had variations of ‘born to’, ‘baby to’, ‘baby’, etc. in place of a first name on their birth test
  o 61% had surnames that matched exactly
  o 18% of infants had both tests performed at the same facility, of whom only 27% had the same patient folder number on both test results
  o >20% of cases no potential matching would have been possible using a probabilistic matching algorithm
Conclusions & Recommendations

1) Leveraging RTHBs as unique patient identifiers promises to be an effective, scalable solution to providing all infants at birth, irrespective of nationality, a means of reliable identification

2) RTHB Identifiers can be integrated within electronic health records systems, and can potentially be incorporated within the HPRS, thereby filling a much needed gap in providing neonates with unique patient identifiers

3) Use of RTHB Identifiers will assist clinical and laboratory surveillance as well as provide an opportunity to link mother-infant pairs and facilitate longitudinal cohort monitoring, provide ready-to-use neonate folder numbers, and link a child’s RTHB to electronic health records (including electronic RTHB)
ACKNOWLEDGEMENTS

Tshwane District Health Services
Foundation for Professional Development (FPD)
USAID
NHLS CDW and team
All co-authors