Paediatric Drug-resistant TB in South Africa

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Moscow
Paediatric TB

- ~1 million paediatric cases annually
- 75% in 22 high burden countries
- ~95% smear-negative, so these are likely underestimates
- Traditionally neglected
  - Low risk of transmitting TB
- Important in assessing drug-resistant TB
  - Often represent recently infected cases
  - Usually primary resistance
    - Therefore, reflect circulating strains & prevalent drug susceptibility patterns
Figure 1. Trends in notification rate of new smear-positive tuberculosis cases among children aged 0–14 years (per 100,000 population). Source: WHO reports 2001–2009 [5].
Drug Resistance

- Limited international paediatric data
- South Africa:
  
  All age groups (2008):
  
  9.6% (8 026) MDR
  
  20.2% (16 960) any INH resistance
  
  10.5% (573) of MDR-TB tested found to be XDR
  
  Western Cape:

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<th>1995</th>
<th>2007</th>
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<tr>
<td>Any resistance</td>
<td>6.9%</td>
<td>15.1%</td>
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<td>(INH or Rif)</td>
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<td>MDR-TB</td>
<td>2.3%</td>
<td>6.7%</td>
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Gauteng (2008)

- 140 culture-confirmed paediatric cases
  - 2 Johannesburg academic hospitals

- 49% HIV-infected
- INH-resistant 14.2%
- MDR-TB 8.8%
  - 85% no previous TB treatment
  - None with history of adult MDR-TB contact
  - 30% history of adult TB contact
  - 54% HIV-infected
- Treatment initiation:
  - 0.5-15 months, median 2.5 months from date specimen submitted
  - Probably much longer in rest of country
  - Hopefully will decrease with molecular testing of isolates
- 30% mortality, quarter of this prior to confirmation of MDR-TB
HIV & TB (all ages)

Figure 1. Geographic distribution of the estimated number of human immunodeficiency virus (HIV)-positive tuberculosis cases. For each country (red circles) and World Health Organization region (gray circles), the number of incident tuberculosis cases arising in people infected with HIV is shown as a percentage of the global total of such cases. Data are from the World Health Organization [2]. AFR, African region; AMR, American region; DR Congo, Democratic Republic of the Congo; EMR, Eastern Mediterranean region; EUR, European region; SEAR, Southeast Asian region; TB, tuberculosis; UR Tanzania, United Republic of Tanzania; WPR, Western Pacific region.
FIGURE 5   Percentage of MDR-TB cases by age group among all TB cases, by country group

Multidrug and extensively drug-resistant TB (M/XDR-TB)
2010 GLOBAL REPORT ON SURVEILLANCE AND RESPONSE
XDR-TB

- Limited data

- 2 confirmed paediatric cases in Gauteng
  - Both multiple prior courses of TB treatment
  - Both HIV-infected
  - 1 death
  - 1 ‘cure’

- ? Rest of country
MDR-TB Treatment at Sizwe Hospital

- Predominantly treated as in-patients
- Each province has its own MDR-TB treatment facility
- Isolates tested for second-line drug susceptibility:
  - ethambutol, ethionamide, streptomycin, amikacin, ofloxacin, kanamycin
  - NOT: PAS, capreomycin, PZA, terizidone or other quinolones
- Largely in line with National Guidelines, but individualised based on specific isolates
- Additional drugs used occasionally
  - High-dose INH, clarithromycin, Augmentin®, moxifloxacin, PAS, capreomycin
- HAART to all HIV-infected irrespective of clinical or immunological staging
- Outcomes:
  - Almost no data
  - Sizwe: 2 deaths & 1 treatment failure since 2005
  - Already ‘preselected’ for survival