Addressing Drug-Resistant TB in People Living with HIV: where are we?

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Registered new TB cases per 100,000 population in Latvia, 1971 - 2009
Registered primary and acquired MDR TB cases, 1994 - 2009
Registered new TB cases and MDR TB cases, 1991 - 2009

DOTS MDR TB treatment
Cumulative Number of HIV/AIDS Cases
June 1, 2010 - Latvia

Infectology Center of Latvia
HIV prevalence among new TB cases, 2000 - 2009
Registered TB/HIV cases, 1994 - 2009

The graph shows the number of TB/HIV cases from 1994 to 2009. The x-axis represents the year, ranging from 1994 to 2009. The y-axis represents the number of TB/HIV cases, ranging from 0 to 80. The graph distinguishes between total cases and MDR TB cases. The data indicates a significant increase in the number of cases during the later years.
Proportion of AIDS Indicator Diseases (%)  
1987-2009, Latvia  
/Infectology Center of Latvia/
TB/HIV health care algorithm

Patient

Health care specialist - doctor

TB suspect

HIV/AIDS suspect

TB specialist
TB – treatment (DOT)
Non TB – observation
HIV VCT

TB offices

Laboratory
TB HIV
DST

HIV specialist
HIV pos. – observation or treatment; TB screening
HIV neg. - observation

TB clinic in patient department
Reference laboratory
HIV/AIDS clinic out patient department

Infectology Center of Latvia

TB/HIV patients treatment is coordinated by TB and HIV specialists consilium
The location of TB cabinets and HIV/AIDS laboratories in Latvia in 2010

- TB offices
- HIV/AIDS laboratories
Tuberculosis Laboratory Diagnosis Algorithm

Specimen

- ARB microscopy
  - ARB positive
  - ARB negative

Culture on solid media

MTB Culture positive

- Drug susceptibility testing (DST) on solid media for 1st line drugs

Conformed M.tuberculosis & DST result

- If MDR TB detected

DST on solid media for 2nd line drugs

All TB suspects
**Tuberculosis Laboratory Diagnosis Algorithm**

- **Specimen**
  - **ARB microscopy**
    - **ARB positive**
    - **ARB negative**
  - **Culture on solid media**
    - **Drug susceptibility testing (DST) on solid media for 1\(^{st}\) line drugs**
      - **Conformed M.tuberculosis & DST result**
        - **If MDR TB detected**
          - **DST on solid media for 2\(^{nd}\) line drugs**
            - **All TB suspects**
          - **MTB Culture positive**
            - **Culture liquid media (BACTEC MGIT)**
              - **DST BACTEC MGIT for 1\(^{st}\) line drugs**
                - **DST result**
                  - **If MDR TB detected**
                    - **DST BACTEC MGIT for 2\(^{nd}\) line drugs**
                      - **Suspects with TB/HIV, higher risk of resistant TB, new bacillary patients, children**
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Suspects with TB/HIV, higher risk of resistant TB, new bacillary patients, children

Line Probe Assay (GenoType MTBDRplus) – detections on mutations in rpoB, inhA, katG
- MTB posit., Mutations in rpoB and katG/inhA – possible MDR TB

Patients with higher risk of MDR TB (relapses, retreatment, MDR TB contacts) if ARB positive
Molecular test (RT-PCR — GeneXpert)
MTB detection + mutations in rpoB (Rif resistance indicator, MDR TB indicator)*

MTB posit. Rif susceptible
MTB posit. Rif resist. —possible MDR TB

Culture on solid media

Drug susceptibility testing (DST) on solid media for 1st line drugs
Conformed M. tuberculosis & DST result
If MDR TB detected

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DST BACTEC MGIT for 1st line drugs
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MTB posit. Rif resist. —possible MDR TB

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ARB positive
ARB negative

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Suspects with TB/HIV, higher risk of resistant TB, new bacillary patients, children

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M.D.TB detection + mutations in rpoB (Rif resistance indicator, M.D.R TB indicator)
Comparison of treatment outcomes, new TM positive cases

**2000 - 2007**

- HIV-positive:
  - Cured and completed: 61%
  - Failure: 12%
  - Default: 11%
  - Transferred out: 15%
  - Died: 8%
  - MDR TB: 0%

- HIV-negative:
  - Cured and completed: 78%
  - Failure: 8%
  - Default: 5%
  - Transferred out: 12%
  - Died: 8%
  - MDR TB: 0%

**2008**

- HIV-positive:
  - Cured and completed: 36%
  - Failure: 11%
  - Default: 9%
  - Transferred out: 40%
  - Died: 9%
  - MDR TB: 10%

- HIV-negative:
  - Cured and completed: 77%
  - Failure: 9%
  - Default: 3%
  - Transferred out: 36%
  - Died: 11%
  - MDR TB: 10%
MDR TB treatment cohorts

![MDR TB treatment cohorts](chart)

Number of cases vs. XDR TB % / HIV positive %

- MDR TB
- XDR TB %
- HIV positive %

Year: 2001 to 2009

- 2001: 245 cases, 14% XDR TB, 5% HIV positive
- 2002: 205 cases, 11% XDR TB, 5% HIV positive
- 2003: 165 cases, 8% XDR TB, 6% HIV positive
- 2004: 208 cases, 7% XDR TB, 6% HIV positive
- 2005: 155 cases, 8% XDR TB, 6% HIV positive
- 2006: 136 cases, 8% XDR TB, 5% HIV positive
- 2007: 117 cases, 7% XDR TB, 6% HIV positive
- 2008: 116 cases, 16% XDR TB, 11% HIV positive
- 2009: 124 cases, 17% XDR TB, 10% HIV positive
The number of HAART variants

- 2007: 95
- 2008: 87
- 2009: 71
- 2010: 68
# HLA DRB 1* alleles in patients with tuberculosis

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<th>HLA alleles</th>
<th>HIV patients CD4&gt;400 c/mm³ (n=38)</th>
<th>Control group (n=400)</th>
<th>X² Mantel-Hanszel</th>
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It has been statistically proved, that tuberculosis was the most commonly diagnosed opportunistic disease (p<0,05).
Facts:

- Access to TB/HIV diagnosis and treatment are ensured in Latvia, covered by state budget.
- Strong collaboration with NGOs is established.
- Successful collaboration with Universities.
Conclusions

• Number of TB/HIV co-infection is increasing

• TB/HIV cases are at greater risk of treatment default and death

• **Challenge** is to find new forms of patient care, including home based treatment and community support
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