Tuberculosis Epidemiology: A Global, National and Virginia Update

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Overview

Global Tuberculosis (TB) Update
National TB Update*
State TB Update*

*Please note that all 2018 data is provisional
Global Tuberculosis Incidence

- In 2017, an estimated 10 million people fell ill with TB, and 16% of those people died from the disease.

- TB is one of the top 10 causes of death worldwide

- Eight countries accounted for 67% of the new cases: India, China, Indonesia, the Philippines, Pakistan, Nigeria, Bangladesh and South Africa.

- Disease burden caused by TB is falling globally, but not fast enough to reach the first (2020) milestones of the End TB Strategy.

- Nearly one in every four people in the world is infected with latent TB.
### VISION

A world free of tuberculosis
– zero deaths, disease and suffering due to tuberculosis

### GOAL

End the global tuberculosis epidemic

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MILESTONES</th>
<th>TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2025</td>
</tr>
<tr>
<td>Reduction in number of TB deaths compared with 2015 (%)</td>
<td>35%</td>
<td>75%</td>
</tr>
<tr>
<td>Reduction in TB incidence rate compared with 2015 (%)</td>
<td>20% (&lt;85/100 000)</td>
<td>50% (&lt;55/100 000)</td>
</tr>
<tr>
<td>TB-affected families facing catastrophic costs due to TB (%)</td>
<td>Zero</td>
<td>Zero</td>
</tr>
</tbody>
</table>
Global MDR/RR-Tuberculosis

- There were an estimated 558,000 incident cases of MDR/RR-TB in 2017, with cases of MDR-TB accounting for 82%.
- The countries with the largest numbers of MDR/RR-TB were China, India and the Russian Federation.
- There were about 230,000 deaths from MDR/RR-TB in 2017.
Vaccine and Drug Research

- Vaccines to lower the risk of TB infection
- A vaccine or new drug treatment to cut the risk of TB disease in the 1.7 billion people with infection
- Rapid diagnostics that can be used at point of care
- Simpler, shorter drug regimens for treating TB disease
Tuberculosis in the United States, 2018

• Provisional 2018 United States case count: 9,029
• Provisional 2018 United States case rate: 2.76 per 100,000 population.
• This is the lowest rate and number of TB cases on record.

*Tuberculosis Case Counts* — United States, 2010–2018

*Based on provisional NTSS data as of February 11, 2019*
Tuberculosis Incidence Rates* — United States, 2010–2018

*Based on provisional NTSS data as of February 11, 2019
Tuberculosis Incidence Rates by State* — United States, 2018

*Based on provisional NTSS data as of February 11, 2019
Percentage of Tuberculosis Cases by Country of Birth*  
— United States, 1993–2018

![Graph showing the percentage of tuberculosis cases by country of birth in the United States from 1993 to 2018. The graph compares U.S.-born and non-U.S.-born cases, with the non-U.S.-born cases gradually increasing over the years. In 1993, the non-U.S.-born percentage was around 30%, while the U.S.-born percentage was around 70%. By 2018, the non-U.S.-born percentage had increased to 69.5%, and the U.S.-born percentage had decreased to 29.5%.](image-url)
Tuberculosis Incidence Rates by Country of Birth* — United States, 1993–2018

*Based on provisional NTSS data as of February 11, 2019
Tuberculosis Incidence Rates by Race/Ethnicity among U.S.-Born Persons* — United States, 2010–2018

*Based on provisional NTSS data as of February 11, 2019
Tuberculosis Incidence Rates by Race/Ethnicity among Non-U.S.–Born Persons* — United States, 2010–2018

*Based on provisional NTSS data as of February 11, 2019
Percentage of Non-U.S.–Born Tuberculosis Cases by Time of Arrival in United States* — 2018

- ≥10 years after arrival: 46.3%
- <10 years after arrival: 42.1%
- Unknown time of arrival: 11.6%

*Based on provisional NTSS data as of February 11, 2019
MDR and XDR Tuberculosis Cases* — United States, 2017

- **MDR TB — 128 cases**
  - Non-U.S.–born — 110 cases
  - Prior history of TB — 26 cases

- **XDR TB — 3 cases**
  - Non-U.S.–born — 3 cases
  - Prior history of TB — 1 case

*Based on provisional NTSS data as of February 11, 2019*
Annual Percentage of Tuberculosis Cases with HIV Coinfection* † — United States, 1993–2018

*Based on provisional NTSS data as of February 11, 2019
Annual Percentage of Tuberculosis Cases by Congregate Setting and Homelessness* — United States, 1993–2018

*Based on provisional NTSS data as of February 11, 2019
Tuberculosis in Virginia, 2018*

- 205 cases in 2018
- Rate of 2.4 per 100,000 population

*Tuberculosis Cases, Virginia, 2009-2018*

*Data is provisional*
Tuberculosis Incidence Rate, Virginia, 2007-2018

Rate per 100,000 Population
Tuberculosis Case Distribution by Region, Virginia, 2009-2018

- Central
- Eastern
- Northern
- Northwest
- Southwest

Year:
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

Number of Cases
Age Group of Tuberculosis Cases in Years, Virginia, 2014-2018

- 25-44
- 45-64
- >64
- 15-24
- 0-14

Number of Cases vs. Years (2014-2018)
Tuberculosis Cases by Race and Ethnicity Among U.S.-Born Cases, Virginia 2009-2018

Number of Cases

Year


Native Hawaiian/Pacific Islander
Multi-Race
White, Not Hispanic
Hispanic
Black, Not Hispanic
Asian
Tuberculosis Cases by Race and Ethnicity Among Non-U.S.-Born Cases, Virginia 2009-2018
Percent of Total Tuberculosis Cases by Nativity, Virginia, 2009-2018

Year
Non-U.S.-Born
65 83 65 81
U.S.-Born
35 17 19
County of Birth of Tuberculosis Cases, Virginia, 2018

U.S.: 38 cases
Philippines: 16 cases
Honduras: 8 cases
India: 18 cases
Vietnam: 20 cases
Ethiopia: 24 cases
Top Five Countries of Birth Among Non-US—Born TB Cases, Virginia, 2014-2018

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>India</td>
<td>Philippines</td>
<td>India</td>
<td>Philippines</td>
<td>Ethiopia</td>
</tr>
<tr>
<td>2</td>
<td>Vietnam</td>
<td></td>
<td>India</td>
<td>Philippines</td>
<td>Vietnam</td>
</tr>
<tr>
<td>3</td>
<td>Ethiopia</td>
<td>Vietnam</td>
<td>Ethiopia</td>
<td>Ethiopia</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Philippines &amp; El Salvador &amp; South Korea</td>
<td>Ethiopia</td>
<td>Vietnam</td>
<td>Vietnam</td>
<td>Philippines</td>
</tr>
<tr>
<td>5</td>
<td>Nepal &amp; Pakistan</td>
<td>South Korea</td>
<td>Honduras</td>
<td>Guatemala</td>
<td>Honduras &amp; South Korea</td>
</tr>
</tbody>
</table>
Tuberculosis Cases among Non-U.S.-Born Persons by Time of Residence in the U.S., Virginia, 2009-2018

- >10 Years
- 6 to 10 Years
- 3 to 5 Years
- <=2 Years

Yearly breakdown:
- 2009: 33% >10 Years, 28% 6 to 10 Years, 30% 3 to 5 Years, 18% <=2 Years
- 2010: 35% >10 Years, 24% 6 to 10 Years, 28% 3 to 5 Years, 13% <=2 Years
- 2011: 38% >10 Years, 23% 6 to 10 Years, 28% 3 to 5 Years, 12% <=2 Years
- 2012: 38% >10 Years, 28% 6 to 10 Years, 30% 3 to 5 Years, 12% <=2 Years
- 2013: 34% >10 Years, 30% 6 to 10 Years, 27% 3 to 5 Years, 22% <=2 Years
- 2014: 40% >10 Years, 27% 6 to 10 Years, 29% 3 to 5 Years, 16% <=2 Years
- 2015: 41% >10 Years, 29% 6 to 10 Years, 26% 3 to 5 Years, 14% <=2 Years
- 2016: 49% >10 Years, 26% 6 to 10 Years, 29% 3 to 5 Years, 11% <=2 Years
- 2017: 43% >10 Years, 29% 6 to 10 Years, 29% 3 to 5 Years, 13% <=2 Years
- 2018: 43% >10 Years, 31% 6 to 10 Years, 29% 3 to 5 Years, 12% <=2 Years
Tuberculosis Cases with Diabetes, Virginia, 2009-2018

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Cases</th>
<th>Percent of Total Cases</th>
</tr>
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<tbody>
<tr>
<td>2009</td>
<td>33</td>
<td>12%</td>
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<tr>
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<td>31</td>
<td>12%</td>
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<tr>
<td>2011</td>
<td>30</td>
<td>14%</td>
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<tr>
<td>2012</td>
<td>29</td>
<td>12%</td>
</tr>
<tr>
<td>2013</td>
<td>26</td>
<td>15%</td>
</tr>
<tr>
<td>2014</td>
<td>33</td>
<td>17%</td>
</tr>
<tr>
<td>2015</td>
<td>45</td>
<td>21%</td>
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<tr>
<td>2016</td>
<td>32</td>
<td>16%</td>
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<tr>
<td>2017</td>
<td>32</td>
<td>16%</td>
</tr>
<tr>
<td>2018</td>
<td>35</td>
<td>17%</td>
</tr>
</tbody>
</table>
Tuberculosis Cases with HIV Co-Infection, Virginia, 2009-2018

<table>
<thead>
<tr>
<th>Year</th>
<th># HIV Positive</th>
<th>% HIV Positive</th>
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<tbody>
<tr>
<td>2009</td>
<td>18</td>
<td>6.6%</td>
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<tr>
<td>2010</td>
<td>8</td>
<td>3.0%</td>
</tr>
<tr>
<td>2011</td>
<td>9</td>
<td>4.1%</td>
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<tr>
<td>2012</td>
<td>12</td>
<td>5.1%</td>
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<tr>
<td>2013</td>
<td>10</td>
<td>5.6%</td>
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<tr>
<td>2014</td>
<td>10</td>
<td>5.1%</td>
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<tr>
<td>2015</td>
<td>7</td>
<td>3.3%</td>
</tr>
<tr>
<td>2016</td>
<td>8</td>
<td>3.9%</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>2018</td>
<td>4</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
Drug Resistance Among Tuberculosis Cases, Virginia, 2009-2018

Number of Cases/Percent of Cases

Year

Firstline MDR % Total Cases

2009 3 2 5
2010 35
2011 2
2012 5
2013 1
2014 3
2015 1
2016 1
2017 4
2018 3
How to we continue down from the plateau?
Addressing TB Infection

- Education
- Surveillance
- Testing
- Treatment
Labs Currently Reporting IGRA via ELR:

- LabCorp
- Quest Horsham
- Quest Atlanta
- Quest Teterboro
- Quest Tampa
- Riverside Walter Reed
- Riverside Regional Medical Center
- Riverside Tappahannock Hospital
- Riverside Doctors Hospital of Williamsburg
- Riverside Memorial Hospital
- Mary Immaculate Hospital
- St Mary’s Hospital
- ARUP Laboratories
- Lewis Gale Medical Center
- Va Medical Center – Salem
- Catawba Hospital
- Smyth Community Hospital
- Russell Medical Center
- DePaul Medical Center
Reports Received

1493 Reports

- 885 Electronic Lab Reports (deduplicated)
- 203 Electronic Epi-1s through the RedCap Portal
- 405 faxed/mailed reports
Next Steps

- VDH TB Program is working to enter/create investigations in VEDSS for all current LTBI reports
- Provide districts with district level feedback
- Convene LTBI Work Group – thank you to those who have volunteered!
- Review level of reporting (actionable vs. purely surveillance)
- Develop education, tools, recommendations and strategies for moving forward in collaboration with districts and LTBI Work Group
  - Identification of reporting gaps
  - Provider outreach
  - Targeted follow-up
Program Reminder

Please report your confirmed and presumptive cases to the VDH TB Program via RedCap within three days.
Questions?

Contact:
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804-864-7922
References

World TB Day — March 24, 2019. MMWR Morb Mortal Wkly Rep 2019;68:257. DOI: http://dx.doi.org/10.15585/mmwr.mm6811a1
