

# **2010 Annual Tuberculosis Surveillance Report**

**Virginia Department of Health**

**Office of Epidemiology**

**Division of Disease Prevention  
Tuberculosis Control**

**August 2011**

**Suggested Citation: Virginia Department of Health, Office of Epidemiology, Division of Disease Prevention, 2010 Annual Tuberculosis Surveillance Report, August 2011.**

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## Acknowledgements

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**The Tuberculosis Control staff within the Division of Disease Prevention would like to extend thanks and appreciation to the public health nurses and outreach workers who provide services to patients and who provide the information and data summarized here.**

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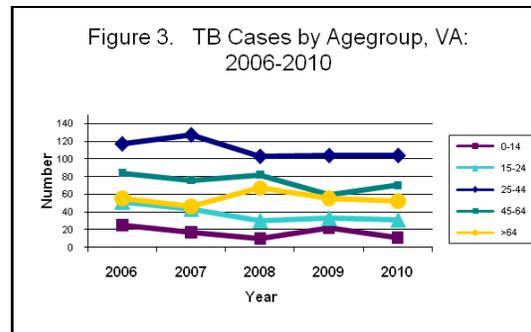
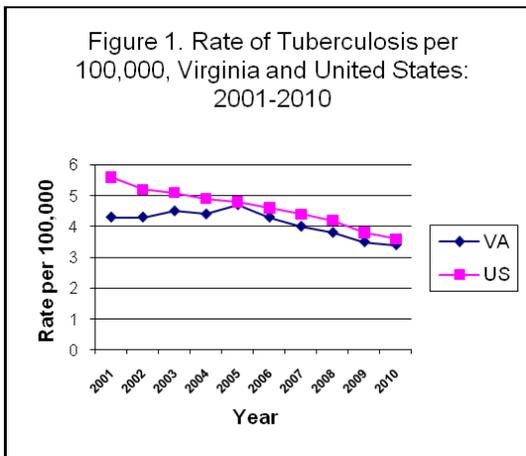
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In 2010, Virginia reported 268 *Mycobacterium tuberculosis* (TB) cases, a slight decrease from the 273 cases in 2009. For the second year in a row, TB cases reported nationally reached the lowest number and lowest rate since reporting began in 1954. Virginia ranks 11<sup>th</sup> in the nation for reported TB cases with a case rate of 3.4 per hundred thousand compared to 3.6 for the United States. In this report, data on demographics and selected risk factors are provided at the state and health region level for 2006-2010.

## Age

Eleven pediatric cases, aged 0 to 14 were reported in 2010 as compared to 22 cases in 2009. Among the 15-24 year old age group, 31 cases were reported compared to 33 cases in 2009. The 25-44 year old age also remained flat with 104 cases reported in 2009 and 2010. An increase of 15.7% was observed among those aged 45-64 from 59 cases in 2009 to 70 in 2010. Those aged 65 and older decreased from 55 in 2009 to 52 in 2010 (Figure 3).

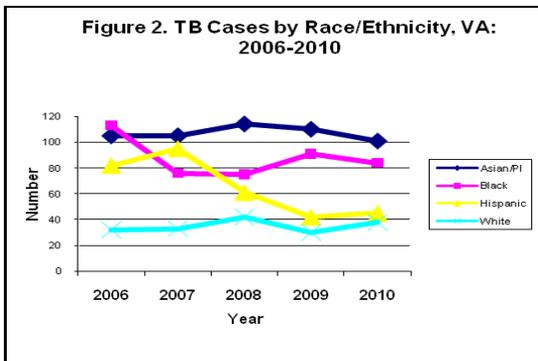


## Sex and Race

In 2010, 39.2% of TB cases were female and 60.8% were male. Among racial and ethnic groups, small declines occurred among Asian Pacific Islanders and Blacks when compared to 2009. Small increases occurred among Hispanics and Whites in the same period (Figure 2).

## Place of Origin

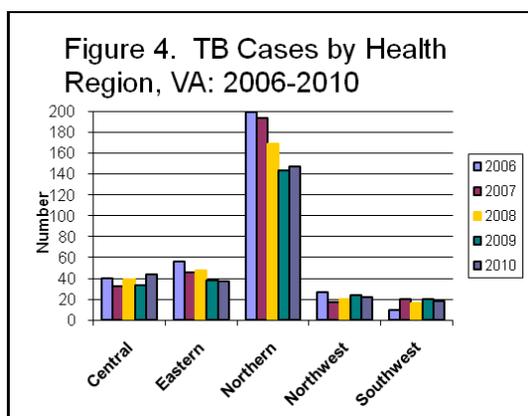
In 2010, 173 or 64.6% of Virginia's TB cases were reported among foreign-born persons. Foreign-born cases declined again in 2010 by 8.9% compared to 2009. This is the lowest number of cases reported among foreign-born persons since 2000. The number of cases reported among US-born persons is virtually unchanged from 2009.



The diversity of cultures and countries of origin among Virginia's TB cases is remarkable. These cases represent 35 countries of origin and speak 14 languages other than English. The top five countries of origin include Ethiopia, Viet Nam, India, the Philippines, and South Korea.

### Geographic Distribution

The distribution of TB cases in Virginia is quite stable with the majority of cases (54.9%) reported from the Northern Health Region. Due to an outbreak in Central Health Region an increase of 11 cases was reported. Eastern Health Region remained flat with 37 cases reported and Northern reported a 7% decrease from 2009. Northwest and Southwest Health Regions reported small decreases Figure 4).

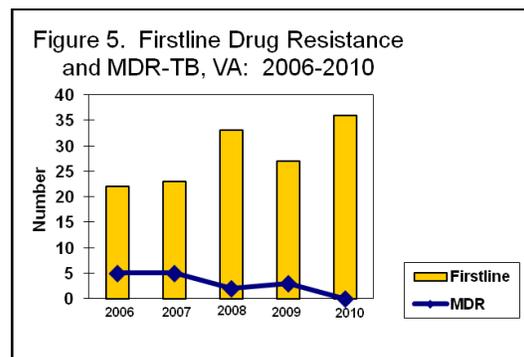


### HIV Co-Infection and Selected Risk Factors

Several risk factors are associated with TB including occupational risk, congregate living, co-infection with HIV, homelessness, substance use and diabetes. In 2010, 12 health care workers were reported with TB. TB was reported in 8 residents of long-term care facilities, 8 incarcerated persons and 12 homeless persons. Overall, 8 (3.0%) of Virginia's cases were reported with HIV infection as compared to 18 (6.6%) cases in 2009. In 2010, 24 cases (9.0%) reported excessive alcohol use and 5 cases (1.3%) reported illicit drug use. Diabetes was the most frequent risk reported with 37 cases (13.8%) reported in 2010.

### Drug Resistance

Two hundred fifteen TB cases were culture positive and had drug susceptibility testing performed. Drug resistance was found in 36 cases to one or more first-line drugs, most frequently isoniazid. No cases of multidrug resistant TB (MDR-TB) were reported in 2010. (By definition MDR-TB is resistant to both isoniazid and rifampin). No cases meeting the definition of extensively drug-resistant (XDR) TB were reported in 2010 (Figure 5).



### Mortality

In 2010, 8 (3.0%) TB cases died during treatment and seven (2.6%) cases were diagnosed at the time of death or post-mortem. The mean age of those who died was 69 years with a range of 44 to 87.

### Treatment Outcomes

For 2009, the year with the most complete data available, 90.4% of the drug-susceptible cases completed therapy within 12 months.

### Contact Investigations

In 2010, 2,101 contacts to acid-fast bacilli (AFB) sputum smear positive or sputum culture positive cases were identified. Of those, 87% were evaluated for infection and disease. Among the 326 people identified with latent TB infection (LTBI), 235 (72%) were started on treatment and 145 (62%) completed treatment for latent TB infection.

**Table 1. Number and Rate of Tuberculosis Cases: Virginia and United States, 2001-2010**

Year	Virginia		United States	
	No.	Rate	No.	Rate
2001	306	4.3	15,945	5.6
2002	315	4.3	15,056	5.2
2003	332	4.5	14,836	5.1
2004	329	4.4	14,500	4.9
2005	355	4.7	14,067	4.8
2006	332	4.3	13,727	4.6
2007	309	4.0	13,288	4.4
2008	292	3.8	12,904	4.2
2009	273	3.5	11,540	3.8
2010	268	3.4	11,181	3.6

Historical US data from: CDC. Reported Tuberculosis in the United States, 2008. Atlanta, GA: US DHHS, CDC, September 2009.

2010 Data from Trends in Tuberculosis --- United States, 2010 MMWR March 25, 2011/60(11): 333-337.

**Table 2. Tuberculosis Cases and Rate per 100,000 by Health Region: Virginia, 2006-2010**

Region	2006			2007			2008			2009			2010		
	No.	%	Rate												
<b>Total</b>	<b>332</b>	<b>100</b>	<b>4.3</b>	<b>309</b>	<b>100</b>	<b>4.0</b>	<b>292</b>	<b>100</b>	<b>3.8</b>	<b>273</b>	<b>100</b>	<b>3.5</b>	<b>268</b>	<b>100</b>	<b>3.4</b>
Central	40	12.0	3.1	32	10.4	2.4	39	13.4	2.9	33	12.1	2.5	44	16.4	3.3
Eastern	56	16.9	3.1	46	14.9	2.6	48	16.4	2.7	38	13.9	2.1	37	13.8	2.0
Northern	199	59.9	9.7	194	62.8	9.3	169	57.9	8.0	158	57.9	7.3	147	54.9	6.6
Northwest	27	8.1	2.3	17	5.5	1.4	20	6.8	1.7	24	8.8	2.0	22	8.2	1.8
Southwest	10	3.0	0.8	20	6.5	1.5	16	5.5	1.2	20	7.3	1.5	18	6.7	1.3

**Table 3. Tuberculosis Cases by Demographics and Location: Virginia, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	332		309		292		273		268	
	No	%								
<b>Sex</b>										
Female	142	42.8	129	41.7	123	42.1	121	44.3	105	39.2
Male	190	57.2	180	58.3	169	57.9	152	55.7	163	60.8
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	105	31.6	105	34.0	114	39.0	110	40.3	101	37.7
Black, Not Hispanic	113	34.0	76	24.6	75	25.7	91	33.3	84	31.3
Hispanic	82	24.7	95	30.7	61	20.9	42	15.4	45	16.8
White, Not Hispanic	32	9.6	33	10.7	42	14.4	30	11.0	38	14.2
<b>Age</b>										
0-14	25	7.5	17	5.5	10	3.4	22	8.1	11	4.1
15-24	51	15.4	43	13.9	30	10.3	33	12.1	31	11.6
25-44	117	35.2	127	41.1	103	35.3	104	38.1	104	38.8
45-64	84	25.3	76	24.6	82	28.1	59	21.6	70	26.1
>64	55	16.6	46	14.9	67	22.9	55	20.1	52	19.4
<b>Place of Birth</b>										
Foreign-born	230	69.3	230	74.4	212	72.6	190	69.6	173	64.6
US-born	102	30.7	79	25.6	80	27.4	83	30.4	95	35.4
<b>Health Region</b>										
Central	40	12.0	32	10.4	39	13.4	33	12.1	44	16.4
Eastern	56	16.9	46	14.9	48	16.4	38	13.9	37	13.8
Northern	199	59.9	194	62.8	169	57.9	158	57.9	147	54.9
Northwest	27	8.1	17	5.5	20	6.8	24	8.8	22	8.2
Southwest	10	3.0	20	6.5	16	5.5	20	7.3	18	6.7

**Table 4. Tuberculosis Cases by Demographics and Region: Central, 2006-2010**

	2006		2007		2008		2009		2010	
	<b>40</b>		<b>32</b>		<b>39</b>		<b>33</b>		<b>44</b>	
<b>Total Cases</b>	No.	%								
<b>Sex</b>										
Female	12	30.0	12	37.5	13	33.3	13	39.4	17	38.6
Male	28	70.0	20	62.5	26	66.7	20	60.6	27	61.4
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	6	15.0	1	3.1	10	25.6	4	12.1	6	13.6
Black, Not Hispanic	24	60.0	19	59.4	17	43.6	23	69.7	27	61.4
Hispanic	3	7.5	8	25.0	7	17.9	2	6.1	3	6.8
White, Not Hispanic	7	17.5	4	12.5	5	12.8	4	12.1	8	18.2
<b>Age</b>										
0-14	2	5.0	2	6.3	2	5.1	5	15.2	6	13.6
15-24	3	7.5	8	25.0	8	20.5	3	9.1	4	9.1
25-44	12	30.0	8	25.0	14	35.9	12	36.4	14	31.8
45-64	14	35.0	9	28.1	7	17.9	5	15.2	13	29.5
>64	9	22.5	5	15.6	8	20.5	8	24.2	7	15.9
<b>Place of Birth</b>										
Foreign-born	11	27.5	13	40.6	16	41.0	8	24.2	11	25.0
US Born	29	72.5	19	59.4	23	59.0	25	75.8	33	75.0

**Table 5. Tuberculosis Cases by Demographics and Region: Eastern, 2006-2010**

	2006		2007		2008		2009		2010	
	<b>56</b>		<b>46</b>		<b>48</b>		<b>38</b>		<b>37</b>	
<b>Total Cases</b>	No.	%								
<b>Sex</b>										
Female	30	53.6	19	41.3	28	58.3	15	39.5	19	51.4
Male	26	46.4	27	58.7	20	41.7	23	60.5	18	48.6
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	12	21.4	17	37.0	16	33.3	11	28.9	10	27.0
Black, Not Hispanic	33	58.9	19	41.3	16	33.3	17	44.7	13	35.1
Hispanic	9	16.1	4	8.7	5	10.4	4	10.5	3	8.1
White, Not Hispanic	2	3.6	6	13.0	11	22.9	6	15.8	11	29.7
<b>Age</b>										
0-14	5	8.9	1	2.2	2	4.2	5	13.2	1	2.7
15-24	9	16.1	1	2.2	4	8.3	1	2.6	5	13.5
25-44	12	21.4	13	28.3	11	22.9	10	26.3	10	27.0
45-64	13	23.2	21	45.7	13	27.1	11	28.9	10	27.0
>64	17	30.4	10	21.7	18	37.5	11	28.9	11	29.7
<b>Place of Birth</b>										
Foreign-born	20	35.7	20	43.5	24	50.0	14	36.8	15	40.5
US-born	36	64.3	26	56.5	24	50.0	24	63.2	22	59.5

**Table 6. Tuberculosis Cases by Demographics and Region: Northern, 2006-2010**

	2006		2007		2008		2009		2010	
	<b>199</b>		<b>194</b>		<b>169</b>		<b>158</b>		<b>147</b>	
<b>Total Cases</b>	No.	%								
<b>Sex</b>										
Female	90	45.2	85	43.8	74	43.8	76	48.1	56	38.1
Male	109	54.8	109	56.2	95	56.2	82	51.9	91	61.9
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	85	42.7	81	41.8	79	46.7	86	54.4	77	52.4
Black, Not Hispanic	48	24.1	29	14.9	35	20.7	36	22.8	32	21.8
Hispanic	54	27.1	77	39.7	40	23.7	27	17.1	31	21.1
White, Not Hispanic	12	6.0	7	3.6	15	8.9	9	5.7	7	4.8
<b>Age</b>										
0-14	14	7.0	12	6.2	4	2.4	7	4.4	4	2.7
15-24	34	17.1	30	15.5	15	8.9	20	12.7	20	13.6
25-44	81	40.7	94	48.5	65	38.5	69	43.7	65	44.2
45-64	48	24.1	38	19.6	51	30.2	35	22.2	38	25.9
>64	22	11.1	20	10.3	34	20.1	27	17.1	20	13.6
<b>Place of Birth</b>										
Foreign-born	179	89.9	179	92.3	153	90.5	143	90.5	130	88.4
US-born	20	10.1	15	7.7	16	9.5	15	9.5	17	11.6

**Table 7. Tuberculosis Cases by Demographics and Region: Northwest, 2006-2010**

	2006		2007		2008		2009		2010	
	<b>27</b>		<b>17</b>		<b>20</b>		<b>24</b>		<b>22</b>	
<b>Total Cases</b>	No.	%								
<b>Sex</b>										
Female	9	33.3	8	47.1	5	25.0	6	25.0	5	22.7
Male	18	66.7	9	52.9	15	75.0	18	75.0	17	77.3
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	2	7.4	4	23.5	5	25.0	6	25.0	4	18.2
Black, Not Hispanic	7	25.9	3	17.6	4	20.0	6	25.0	10	45.5
Hispanic	15	55.6	5	29.4	7	35.0	7	29.2	5	22.7
White, Not Hispanic	3	11.1	5	29.4	4	20.0	5	20.8	3	13.6
<b>Age</b>										
0-14	3	11.1	0	0.0	2	10.0	1	4.2	0	0.0
15-24	4	14.8	0	0.0	3	15.0	6	25.0	1	4.5
25-44	10	37.0	9	52.9	7	35.0	10	41.7	6	27.3
45-64	6	22.2	5	29.4	7	35.0	6	25.0	7	31.8
>64	4	14.8	3	17.6	1	5.0	1	4.2	8	36.4
<b>Place of Birth</b>										
Foreign-born	20	74.1	10	58.8	12	60.0	18	75.0	10	45.5
US-born	7	25.9	7	41.2	8	40.0	6	25.0	12	54.5

**Table 8. Tuberculosis Cases by Demographics and Region: Southwest, 2006-2010**

	2006		2007		2008		2009		2010	
	<b>10</b>		<b>20</b>		<b>16</b>		<b>20</b>		<b>18</b>	
<b>Total Cases</b>	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Sex</b>										
Female	1	10.0	5	25.0	3	18.8	11	55.0	8	44.4
Male	9	90.0	15	75.0	13	81.3	9	45.0	10	55.6
<b>Race/Ethnicity</b>										
Asian/Pacific Islander	0	0.0	2	10.0	4	25.0	3	15.0	4	22.2
Black, Not Hispanic	1	10.0	6	30.0	3	18.8	9	45.0	2	11.1
Hispanic	1	10.0	2	10.0	2	12.5	3	15.0	3	16.7
White, Not Hispanic	8	80.0	10	50.0	7	43.8	5	25.0	9	50.0
<b>Age</b>										
0-14	1	10.0	2	10.0	0	0.0	4	20.0	0	0.0
15-24	1	10.0	4	20.0	0	0.0	3	15.0	1	5.6
25-44	2	20.0	3	15.0	7	43.8	3	15.0	9	50.0
45-64	3	30.0	3	15.0	3	18.8	2	10.0	2	11.1
>64	3	30.0	8	40.0	6	37.5	8	40.0	6	33.3
<b>Place of Birth</b>										
Foreign-born	0	0.0	8	40.0	7	43.8	7	35.0	7	38.9
US-born	10	100.0	12	60.0	9	56.3	13	65.0	11	61.1

**Table 9. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Virginia, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born
<b>Total</b>	<b>101</b>	<b>231</b>	<b>79</b>	<b>230</b>	<b>80</b>	<b>212</b>	<b>83</b>	<b>190</b>	<b>95</b>	<b>173</b>
Asian/Pacific Islander	5	100	3	102	3	111	7	103	1	100
Black, Not Hispanic	62	51	45	31	37	38	48	43	52	32
Hispanic	8	74	5	90	3	58	3	40	7	38
White, Not Hispanic	26	6	26	7	37	5	25	4	35	3

**Table 10. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Central Region, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born								
<b>Total</b>	<b>29</b>	<b>11</b>	<b>19</b>	<b>13</b>	<b>23</b>	<b>16</b>	<b>25</b>	<b>8</b>	<b>33</b>	<b>11</b>
Asian/Pacific Islander	0	6	0	1	1	9	0	4	0	6
Black, Not Hispanic	21	3	14	5	17	0	21	2	26	1
Hispanic	1	2	1	7	0	7	0	2	0	3
White, Not Hispanic	7	0	4	0	5	0	4	0	7	1

**Table 11. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Eastern Region, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born								
<b>Total</b>	<b>36</b>	<b>20</b>	<b>26</b>	<b>20</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>14</b>	<b>22</b>	<b>15</b>
Asian/Pacific Islander	1	11	1	16	0	16	1	10	0	10
Black, Not Hispanic	32	1	19	0	13	3	16	1	13	0
Hispanic	1	8	1	3	1	4	1	3	0	3
White, Not Hispanic	2	0	5	1	10	1	6	0	9	2

**Table 12. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Northern Region, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born								
<b>Total</b>	<b>20</b>	<b>179</b>	<b>15</b>	<b>179</b>	<b>16</b>	<b>153</b>	<b>15</b>	<b>143</b>	<b>17</b>	<b>130</b>
Asian/Pacific Islander	4	81	2	79	2	77	5	81	1	76
Black, Not Hispanic	4	44	7	22	2	33	2	34	3	29
Hispanic	4	50	3	74	1	39	1	26	6	25
White, Not Hispanic	8	4	3	4	11	4	7	2	7	0

**Table 13. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Northwest Region, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born
<b>Total</b>	<b>7</b>	<b>20</b>	<b>7</b>	<b>10</b>	<b>8</b>	<b>12</b>	<b>6</b>	<b>18</b>	<b>12</b>	<b>10</b>
Asian/Pacific Islander	0	2	0	4	0	5	0	6	0	4
Black, Not Hispanic	4	3	2	1	3	1	3	3	8	2
Hispanic	1	14	0	4	1	6	0	7	1	4
White, Not Hispanic	2	1	5	1	4	0	3	2	3	0
Other	0	0	0	0	0	0	0	0	0	0

**Table 14. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Southwest Region, 2006-2010**

Race/Ethnicity	2006		2007		2008		2009		2010	
	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born
<b>Total</b>	<b>10</b>	<b>0</b>	<b>12</b>	<b>8</b>	<b>9</b>	<b>7</b>	<b>13</b>	<b>7</b>	<b>11</b>	<b>7</b>
Asian/Pacific Islander	0	0	0	2	0	4	1	2	0	4
Black, Not Hispanic	1	0	0	3	2	1	6	3	2	0
Hispanic	1	0	3	2	0	2	1	2	0	3
White, Not Hispanic	8	0	9	1	7	0	5	0	9	0

**Table 15. Tuberculosis Cases by Selected Risk Factors: Virginia, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	332		309		292		273		268	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Occupation</b>										
Health Care	6	1.8	5	1.6	6	2.1	11	4.0	12	4.5
Migrant	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	13	3.9	2	0.6	5	1.7	3	1.1	8	3.0
Prison/Jail	4	1.2	6	1.9	5	1.7	4	1.5	8	3.0
Homeless	2	0.6	8	2.6	4	1.4	9	3.3	12	4.5
<b>Co-Morbidity</b>										
Diabetes	33	9.9	29	9.4	40	13.7	37	13.6	37	13.8
HIV	22	6.6	10	3.2	9	3.1	18	6.6	8	3.0
<b>Substance Use</b>										
Alcohol	28	8.4	25	8.1	19	6.5	21	7.7	24	9.0
IDU	6	1.8	5	1.6	0	0.0	6	2.2	1	0.4
Non-IDU	9	2.7	8	2.6	6	2.1	6	2.2	4	1.5

**Table 16. Tuberculosis Cases by Selected Risk Factors: Central Region, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	40		32		39		39		44	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Occupation</b>										
Health Care	1	2.5	0	0.0	0	0.0	1	2.6	2	4.5
Migrant	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	1	2.5	0	0.0	1	2.6	0	0.0	2	4.5
Prison/Jail	0	0.0	2	6.3	1	2.6	1	2.6	4	9.1
Homeless	2	5.0	1	3.1	0	0.0	2	5.1	2	4.5
<b>Co-Morbidity</b>										
Diabetes	4	10.0	1	3.1	3	7.7	6	15.4	7	15.9
HIV	6	15.0	0	0.0	1	2.6	1	2.6	1	2.3
<b>Substance Use</b>										
Alcohol	8	20.0	4	12.5	3	7.7	7	17.9	9	20.5
IDU	6	15.0	0	0.0	0	0.0	2	5.1	0	0.0
Non-IDU	1	2.5	3	9.4	2	5.1	1	2.6	0	0.0

**Table 17. Tuberculosis Cases by Selected Risk Factors: Eastern Region, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	56		46		48		38		37	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Occupation</b>										
Health Care	0	0.0	1	2.2	0	0.0	0	0.0	3	8.1
Migrant	1	1.8	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	2	3.6	1	2.2	0	0.0	0	0.0	1	2.7
Prison/Jail	0	0.0	0	0.0	1	2.1	0	0.0	0	0.0
Homeless	0	0.0	2	4.3	0	0.0	1	2.6	4	10.8
<b>Co-Morbidity</b>										
Diabetes	7	12.5	4	8.7	9	18.8	7	18.4	6	16.2
HIV	4	7.1	3	6.5	1	2.1	2	5.3	1	2.7
<b>Substance Use</b>										
Alcohol	3	5.4	4	8.7	6	12.5	3	7.9	5	13.5
IDU	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Non-IDU	3	5.4	4	8.7	2	4.2	1	2.6	2	5.4

**Table 18. Tuberculosis Cases by Selected Risk Factors: Northern Region, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	199		194		169		158		147	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Occupation</b>										
Health Care	5	2.5	3	1.5	5	3.0	8	5.1	4	2.7
Migrant	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	3	1.5	0	0.0	4	2.4	3	1.9	6	4.1
Prison/Jail	1	0.5	1	0.5	2	1.2	0	0.0	4	2.7
Homeless	0	0.0	5	2.6	3	1.8	4	2.5	5	3.4
<b>Co-Morbidity</b>										
Diabetes	19	9.5	20	10.3	25	14.8	21	13.3	18	12.2
HIV	10	5.0	4	2.1	4	2.4	7	4.4	4	2.7
<b>Substance Use</b>										
Alcohol	5	2.5	8	4.1	7	4.1	7	4.4	6	4.1
IDU	0	0.0	1	0.5	0	0.0	1	0.6	0	0.0
Non-IDU	2	1.0	2	1.0	1	0.6	1	0.6	1	0.7

**Table 19. Tuberculosis Cases by Selected Risk Factors: Northwest Region, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	28		17		20		24		22	
	No.	%								
<b>Occupation</b>										
Health Care	0	0.0	1	5.9	1	5.0	2	8.3	3	13.6
Migrant	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	4	14.3	0	0.0	0	0.0	0	0.0	0	0.0
Prison/Jail	3	10.7	1	5.9	1	5.0	4	16.7	0	0.0
Homeless	0	0.0	0	0.0	0	0.0	2	8.3	0	0.0
<b>Co-Morbidity</b>										
Diabetes	3	10.7	1	5.9	1	5.0	0	0.0	4	0.0
HIV	2	7.1	2	11.8	2	10.0	5	20.8	1	4.5
<b>Substance Use</b>										
Alcohol	7	25.0	3	17.6	2	10.0	3	12.5	3	13.6
IDU	0	0.0	2	0.0	0	0.0	2	0.0	0	0.0
Non-IDU	1	3.6	1	5.9	1	5.0	1	4.2	0	0.0

**Table 20. Tuberculosis Cases by Selected Risk Factors: Southwest Region, 2006-2010**

Total Cases	2006		2007		2008		2009		2010	
	10		20		16		20		18	
	No.	%								
<b>Occupation</b>										
Health Care	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Migrant	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Type of Residence</b>										
Long Term Care	3	30.0	1	5.0	0	0.0	0	0.0	1	5.6
Prison/Jail	0	0.0	2	10.0	0	0.0	0	0.0	0	0.0
Homeless	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0
<b>Co-Morbidity</b>										
Diabetes	0	0.0	3	15.0	2	12.5	3	15.0	2	11.1
HIV	0	0.0	1	5.0	1	6.3	3	15.0	1	5.6
<b>Substance Use</b>										
Alcohol	4	40.0	5	25.0	1	6.3	1	5.0	1	5.6
IDU	0	0.0	2	11.8	0	0.0	1	4.2	1	4.5
Non-IDU	2	20.0	0	0.0	0	0.0	2	10.0	2	11.1

**Table 21. Culture Positive Tuberculosis Cases with Drug Resistance: Virginia, 2006-2010**

Initial Susceptibilities	2006		2007		2008		2009		2010	
	253		219		219		204		215	
	No.	%								
<b>Total Drug Resistance</b>	<b>27</b>	<b>10.7</b>	<b>28</b>	<b>12.8</b>	<b>35</b>	<b>16.0</b>	<b>30</b>	<b>14.7</b>	<b>36</b>	<b>16.7</b>
Any first-line drug	22	8.7	23	10.5	33	15.1	27	13.2	36	16.7
Multidrug**	5	2.0	5	2.3	2	0.9	3	1.5	0	0.0

\*\*Multidrug resistance or MDR is by definition resistance to isoniazid and rifampin.

**Table 22. Tuberculosis Mortality: Virginia, 2006-2010\***

Total Cases	2006		2007		2008		2009		2010	
	332		309		292		273		268	
	No.	%								
<b>Total Deaths</b>	<b>27</b>	<b>8.1</b>	<b>11</b>	<b>3.6</b>	<b>20</b>	<b>6.8</b>	<b>13</b>	<b>4.8</b>	<b>16</b>	<b>6.0</b>
Dead at Time Diagnosis	11	3.3	5	1.6	3	1.0	2	0.7	7	2.6
Died During Treatment	16	4.8	6	1.9	17	5.8	11	4.0	8	3.0

\*If a person is diagnosed with TB post-mortem or diagnosed with TB at the time of death they are coded as dead at the time of diagnosis. If they died during TB treatment, they are coded as died during treatment. There may be people in either of these categories whose underlying cause of death is not TB.

## Technical Notes

TB disease is a reportable condition as defined in the *Regulations for Disease Reporting and Control*. In addition, TB infection in children under age 4 is also a reportable condition. The Division of Disease Prevention, TB Control conducts surveillance for TB disease in the entire population and for TB infection among children. It collects, analyzes, and disseminates data as an integral part of TB control.

### Rates per 100,000

In Tables 1 and 2, rates for 2001-2010 were calculated using 2000 Census data released by the United States Bureau of the Census, Population Estimates Program. Annual Estimates of the Population for Counties of Virginia: April 1, 2000 to July 1, 2010 (CO-EST2006-01-51).

### Definitions

**Pediatric:** In this report “pediatric” refers to persons up to and including the age of 14 years old.

### **Tuberculosis Case Definition<sup>1</sup>**

Cases confirmed as official morbidity in Virginia and included in this report meet the following case definition:

#### Clinical description

A chronic bacterial infection caused by *Mycobacterium tuberculosis*, characterized pathologically by the formation of granulomas. The most common site of infection is the lung, but other organs may be involved.

#### Clinical Case Definition

A case that meets the following criteria:

- A positive tuberculin skin test
- Other signs and symptoms compatible with tuberculosis (e.g., an abnormal, unstable [i.e., worsening or improving] chest radiograph, or clinical evidence of current disease)
- Treatment with two or more antituberculosis medications
- A completed diagnostic evaluation [*to rule out other conditions*]
- [*Virginia also requires documented clinical improvement on treatment*]

#### Laboratory criteria for diagnosis

- Isolation of *M. tuberculosis* from a clinical specimen\* or
- Demonstration of *M. tuberculosis* from a clinical specimen by nucleic acid amplification test\*\*, or
- Demonstration of acid-fast bacilli in a clinical specimen when a culture has not been or cannot be obtained.

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<sup>1</sup> CDC. Case Definitions for infectious conditions under public health surveillance. MMWR 1997;46 (No. RR-10):40-41.

Case classification

Confirmed: a case that meets the clinical case definition or is laboratory confirmed.

\*Use of rapid identification techniques for *M. tuberculosis* (e.g., DNA probes and mycolic acids high-pressure liquid chromatography performed on a culture from a clinical specimen) are acceptable under this criterion.

\*\*Nucleic acid amplification (NAA) tests must be accompanied by culture for mycobacteria species. However, for surveillance purposes, CDC will accept results obtained from NAA tests approved by the Food and Drug Administration (FDA) and used according to the approved product labeling on the package insert.