2013 Annual Tuberculosis Surveillance Report

Virginia Department of Health

Office of Epidemiology

Division of Disease Prevention
Tuberculosis Control

July 2014

Suggested Citation: Virginia Department of Health, Office of Epidemiology, Division of Disease Prevention, 2013 Annual Tuberculosis Surveillance Report. July 2014.

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Acknowledgements

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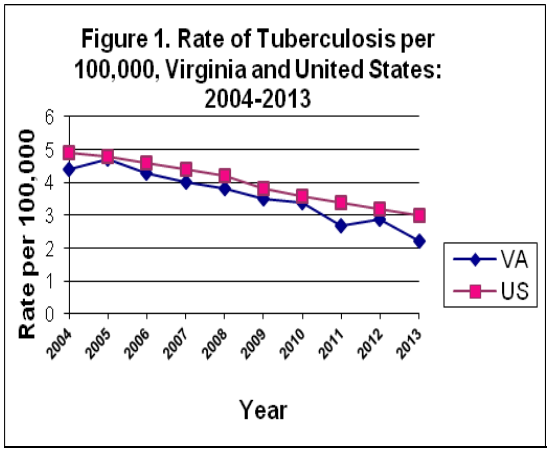
The Tuberculosis Control staff within the Division of Disease Prevention would like to extend thanks and appreciation to the public health nurses and outreach workers who provide services to patients and who provide the information and data summarized here.

Contents

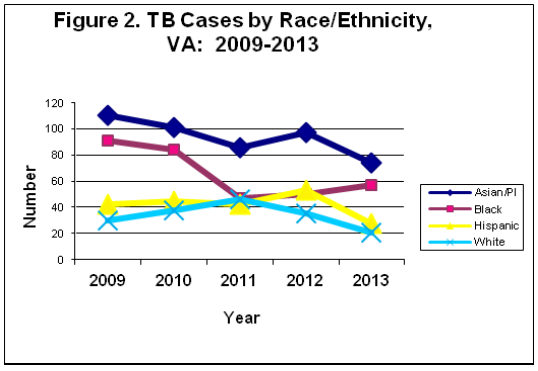
Epidemiology of Tuberculosis: 2013

In 2013, Virginia reported 180 tuberculosis (TB) cases, a 23.4% decrease from the 235 cases reported in 2012. For the fourth year in a row, TB cases reported nationally reached the lowest number and the lowest rate since reporting of TB began in 1954. Virginia plummeted to 15th in the nation for the number of reported TB cases with a case rate of 2.2 per 100,000 compared to 3.0 per 100,000 for the United States. In this report, data on demographics and selected risk factors are provided at the state level for 2009-2013.



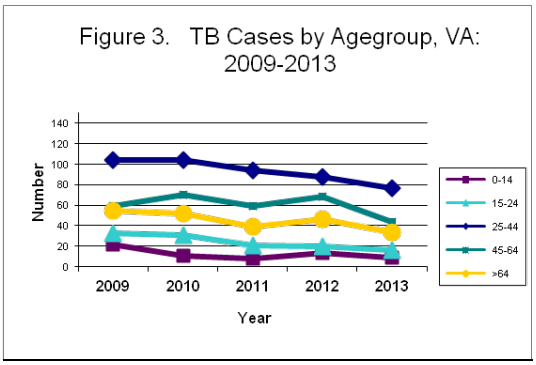
Sex and Race

In 2013, 40% of TB cases were female and 60% were male. Among racial and ethnic groups, all groups except Blacks saw a decrease. A 32% increase among foreign born Blacks, from 28 cases in 2012 to 41 cases in 2013, accounts for the increase in that group. A striking decrease is seen among Hispanics. The 28 cases reported in 2013 is a 44% decrease from the five year average of 49 cases per year.



Age

Nine pediatric cases, aged 0 to 14 were reported in 2013 as compared to 13 cases in 2012. Among the 15-24 year old age group, 16 cases were reported compared to 20 cases in 2012. For the third year in a row, the 25-44 year old age group had a decrease compared to the previous year, from 88 cases in 2012 to 77 cases in 2013. Among those aged 45-64, 44 cases were reported in 2013 compared to 68 in 2012. Those aged 65 and older decreased from 46 in 2012 to 34 in 2013 (Figure 3).



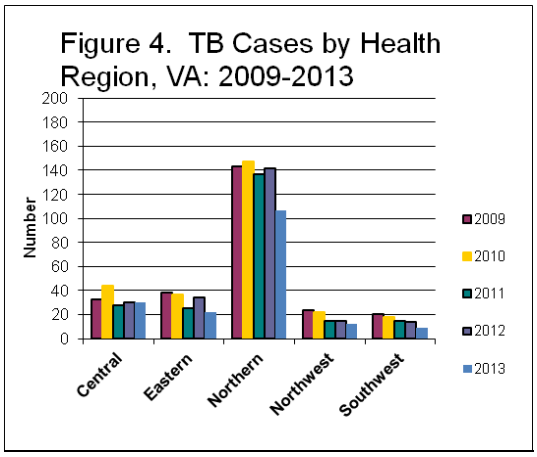
Place of Origin

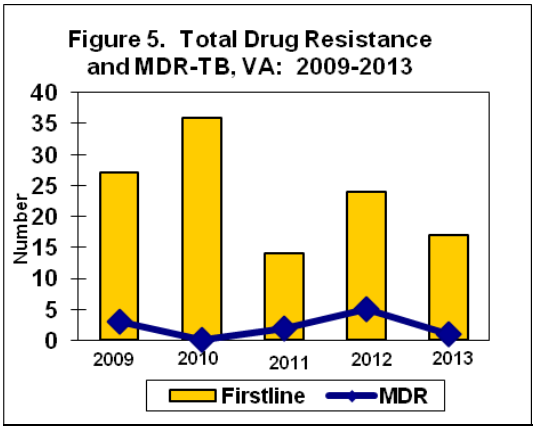
In 2013, 149 or 83% of Virginia's TB cases were reported among foreign-born persons.

The diversity of cultures and countries of origin among Virginia's TB cases is remarkable. These cases represent 34 countries of origin. The top five countries of origin include Ethiopia, India, Viet Nam, the Philippines, and El Salvador.

Geographic Distribution

In 2013, all the Health Regions, with the exception of Central had a decline in cases. The Northern Region, with a caseload that is overwhelmingly comprised of foreign-born people, reported 59% (107 cases) of the total cases for Virginia. Eastern Health Region reported 22 cases for 12%, Central Region reported 30 cases for 17%, Northwest Region reported 12 cases for 7 % and Southwest Region reported 9 cases for 5% of the total (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. Diabetes was the most frequent risk observed with 26 cases (14%) reported in 2013. In 2013, 5 health care workers were reported with TB. TB was reported in 4 residents of long-term care facilities, no incarcerated persons and 8 homeless persons. Overall, 10 (6%) of Virginia's cases were reported with HIV infection. In 2013, 13 cases (7%) reported excessive alcohol use and 9 cases (5%) reported drug use.

Drug Resistance

Drug susceptibility tests were performed for 135 culture positive cases. Drug resistance was found in 17 cases to one or more first-line drugs, most frequently isoniazid. One case of multidrug resistant TB (MDR-TB) was reported in 2013. (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 2013 (Figure 5).

Mortality

In 2013, 8 (4.4%) TB cases died during treatment and 7 (3.9%) cases were diagnosed at the time of death or post-mortem. The mean age of those who died was 68 years with a range of 42-94.

Treatment Outcomes

For 2012, the year with the most complete data available, 84.8% of the drug-susceptible cases completed therapy within 12 months.

Contact Investigations

In 2012, 1,640 contacts to acid-fast bacilli (AFB) sputum smear positive or sputum culture positive cases were identified. Of those, 80 % were evaluated for infection and disease. Among the 295 people identified with TB infection (TBI), 161 (55%) were started on treatment and 102 (63%) completed treatment for TB infection.

Table 1. Number and Rate of Tuberculosis Cases: Virginia and United States, 2004-2013

	Virginia		United States	
Year	No.	Rate	No.	Rate
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
2011	221	2.7	10,521	3.4
2012	235	2.9	9,951	3.2
2013	180	2.2	9,588	3.0

Historical US data from: CDC. Reported Tuberculosis in the United States, 2012. Atlanta, GA: US DHHS, CDC, October 2012.

2013 Data from Centers for Disease Control and Prevention. Trends in Tuberculosis --- United States, 2013. MMWR 2014; 63: 229-33.

Table 2. Tuberculosis Cases and Rate per 100,000 by Health Region: Virginia, 2009-2013

	2009			2010			2011			2012			2013		
Region	No.	%	Rate	No.	%	Rate	No.	%	Rate	No.	%	Rate	No.	%	Rate
Total	**273**	**100**	**3.5**	**268**	**100**	**3.4**	**221**	**100**	**2.7**	**235**	**100**	**2.9**	**180**	**100**	**2.2**
Central	33	12.1	2.5	44	16.4	3.3	28	12.7	2.0	30	12.8	2.0	30	16.7	2.1
Eastern	38	13.9	2.1	37	13.8	2.0	26	11.8	1.4	34	14.5	1.8	22	12.2	1.2
Northern	158	57.9	7.3	147	54.9	6.6	137	62.0	6.0	142	60.4	6.1	107	59.4	4.5
Northwest	24	8.8	2.0	22	8.2	1.8	15	6.8	1.2	15	6.4	1.2	12	6.7	1.0
Southwest	20	7.3	1.5	18	6.7	1.3	15	6.8	1.1	14	6.0	1.0	9	5.0	0.7

Table 3. Tuberculosis Cases by Demographics and Location: Virginia, 2009-2013

	2009		2010		2011		2012		2013	
Total Cases	**273**		**268**		**221**		**235**		**180**	
	No	%	No	%	No	%	No	%	No	%
Sex										
Female	121	44.3	105	39.2	95	43.0	106	45.1	72	40.0
Male	152	55.7	163	60.8	126	57.0	129	54.9	108	60.0
Race/Ethnicity										
Asian/Pacific Islander	110	40.3	101	37.7	86	38.9	97	41.3	74	41.1
Black, Not Hispanic	91	33.3	84	31.3	47	21.3	50	21.3	57	31.7
Hispanic	42	15.4	45	16.8	42	19.0	53	22.6	28	15.6
White, Not Hispanic	30	11.0	38	14.2	46	20.8	35	14.9	21	11.7
Age										
0-14	22	8.1	11	4.1	8	3.6	13	5.5	9	5.0
15-24	33	12.1	31	11.6	21	9.5	20	8.5	16	8.9
25-44	104	38.1	104	38.8	94	42.5	88	37.4	77	42.8
45-64	59	21.6	70	26.1	59	26.7	68	28.9	44	24.4
>64	55	20.1	52	19.4	39	17.6	46	19.6	34	18.9
Place of Birth										
Foreign-born	190	69.6	173	64.6	160	72.4	183	77.9	149	82.8
US-born	83	30.4	95	35.4	61	27.6	52	22.1	31	17.2
Health Region										
Central	33	12.1	44	16.4	28	12.7	30	12.8	30	16.7
Eastern	38	13.9	37	13.8	26	11.8	34	14.5	22	12.2
Northern	158	57.9	147	54.9	137	62.0	142	60.4	107	59.4
Northwest	24	8.8	22	8.2	15	6.8	15	6.4	12	6.7
Southwest	20	7.3	18	6.7	15	6.8	14	6.0	9	5.0

Table 4. Tuberculosis Cases by Race/Ethnicity and Place of Birth: Virginia, 2009-2013

	2009		2010		2011		2012		2013	
Race/Ethnicity	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born	US-born	Foreign-born
Total	**83**	**190**	**95**	**173**	**61**	**160**	**52**	**183**	**31**	**149**
Asian/Pacific Islander	7	103	1	100	3	83	3	94	0	74
Black, Not Hispanic	48	43	52	32	25	22	22	28	16	41
Hispanic	3	40	7	38	2	40	4	49	0	28
White, Not Hispanic	25	4	35	3	31	15	23	12	15	6

Table 5. Tuberculosis Cases by Selected Risk Factors: Virginia, 2009-2013

	2009		2010		2011		2012		2013	
Total Cases	**273**		**268**		**221**		**235**		**180**	
	No.	%	No.	%	No.	%	No.	%	No.	%
Occupation										
Health Care	11	4.0	12	4.5	7	3.2	8	3.4	5	2.8
Migrant	0	0.0	0	0.0	0	0.0	1	0.4	0	0.0
Corrections	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Type of Residence										
Long Term Care	3	1.1	8	3.0	5	2.3	2	0.9	4	2.2
Prison/Jail	4	1.5	8	3.0	8	3.6	6	2.6	0	0.0
Homeless	9	3.3	12	4.5	1	0.5	10	4.3	8	4.4
Co-Morbidity										
Diabetes	37	13.6	37	13.8	31	14.0	27	11.5	26	14.4
HIV	18	6.6	8	3.0	9	4.1	12	5.1	10	5.6
Substance Use										
Alcohol	21	7.7	23	8.6	17	7.7	21	8.9	13	7.2
IDU	6	2.2	1	0.4	0	0.0	2	0.9	2	1.1
Non-IDU	6	2.2	4	1.5	13	5.9	15	6.4	7	3.9

Table 6. Culture Positive Tuberculosis Cases with Drug Resistance: Virginia, 2009-2013

Initial Susceptibilities	2009		2010		2011		2012		2013	
	204		**215**		**174**		**172**		**135**	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total Drug Resistance	**30**	**14.7**	**36**	**16.7**	**14**	**8.0**	**24**	**14.0**	**17**	**12.6**
Any firstline drug	27	13.2	36	16.7	12	6.9	19	11.0	16	11.9
Multidrug**	3	1.5	0	0.0	2	1.1	5	2.9	1	0.7

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

Table 7. Tuberculosis Mortality: Virginia, 2009-2013*

Total Cases	2009		2010		2011		2012		2013	
	273		**268**		**221**		**235**		**180**	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total Deaths	**13**	**4.8**	**16**	**6.0**	**15**	**6.8**	**21**	**8.9**	**15**	**8.3**
Dead at Time Diagnosis	2	0.7	7	2.6	4	1.8	6	2.6	7	3.9
Died During Treatment	11	4.0	8	3.0	11	5.0	15	6.4	8	4.4

*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). For 2011and 2012 rates were calculated using estimates compiled by the Weldon Cooper Center for Public Service, accessed 2/20/2013 http://www.coopercenter.org/demographics/virginia-population-estimates#popestimates

Tuberculosis (TB) (*Mycobacterium tuberculosis*)

2009 Case Definition

CSTE Position Statement(s)

- 09-ID-65

Clinical Description

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

Clinical Criteria

A case that meets all the following criteria:

- A positive tuberculin skin test or positive interferon gamma release assay for *M. tuberculosis*
- Other signs and symptoms compatible with tuberculosis (TB) (e.g., abnormal chest radiograph, abnormal chest computerized tomography scan or other chest imaging study, or clinical evidence of current disease)
- Treatment with two or more anti-TB medications
- A completed diagnostic evaluation

Laboratory Criteria for Diagnosis

- Isolation of *M. tuberculosis* from a clinical specimen,* OR
- Demonstration of *M. tuberculosis* complex 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 or is falsely negative or contaminated.

Case Classification

Confirmed

A case that meets the clinical case definition or is laboratory confirmed

Comment(s)

A case should not be counted twice within any consecutive 12-month period. However, a case occurring in a patient who had previously had verified TB disease should be reported and counted again if more than 12 months have elapsed since the patient completed therapy. A case should also be reported and counted again if the patient was lost to supervision for greater than 12 months and TB disease can be verified again. Mycobacterial diseases other than those caused by *M. tuberculosis* complex should not be counted in tuberculosis morbidity statistics unless there is concurrent tuberculosis.

*Use of rapid identification techniques for *M. tuberculosis* (e.g., DNA probes and mycolic acid 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 for clinical purposes. A culture isolate of *M. tuberculosis* complex is required for complete drug susceptibility testing and also genotyping. 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, or a test produced and validated in accordance with applicable FDA and Clinical Laboratory Improvement Amendments (CLIA) regulations.

http://wwwn.cdc.gov/nndss/script/casedef.aspx?condyrid=876&datepub=1/1/2009%2012:00:00%20am