

2016 Suburban Cook County
Annual Tuberculosis Surveillance
Report

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Public Health

Promoting health. Preventing disease. *Protecting you.*

Communicable Disease Control and
Prevention Unit

March 2017

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Suggested Citation

Cook County Department of Public Health. *Annual Tuberculosis Surveillance Report, 2016*. Forest Park, IL 2017.

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ACRONYMS, ABBREVIATIONS & DEFINITIONS

Active TB: (see TB Disease)

BCG: Bacille Calmette Guérin, a vaccination given to persons, usually infants, in countries where TB is common. BCG is NOT used in the United States.

Extrapulmonary TB: A person with *Mycobacterium tuberculosis* infection outside of the lungs, the pleural space, and the larynx (voice box). A person with extrapulmonary disease can also have pulmonary TB (see below).

I-NEDSS: Illinois-National Electronic Disease Surveillance System. I-NEDSS is a web-based application that establishes a secure and real-time communication link between hospitals, laboratories and other health care providers with state and local health department staff for the purposes of reporting and managing communicable disease information. All TB cases in suburban Cook County are reported to the Illinois Department of Public Health using I-NEDSS.

LTBI: Latent Tuberculosis Infection; a person with TB infection who is not contagious.

MDR-TB: Multi-drug resistant TB. MDR-TB is defined as TB resistant to isoniazid and rifampin, the two most important first line anti-tuberculosis medications.

Pulmonary TB: A person with *Mycobacterium tuberculosis* infection of the lungs, pleural space or the larynx (voice box). A person with pulmonary TB can also have extrapulmonary TB.

QFT-G: QuantiFERON-TB Gold Test, a blood test used to detect *Mycobacterium tuberculosis*. This test cannot distinguish persons with LTBI from persons with TB disease. In contrast to the TST (see below), QFT-G can distinguish persons with either LTBI or TB disease from persons who may have received BCG vaccination. QFT-G has greater specificity than TST.

TB: Tuberculosis

TB Disease: A person with TB infection who is contagious to others; a person with TB disease can have pulmonary TB, extrapulmonary TB, or both.

TST: Tuberculin Skin Test, a test whereby purified protein derivative (PPD) is injected under the skin in the forearm. Persons with TB infection react to the PPD which results in a bump (induration) where the PPD was injected. Qualified healthcare personnel can measure the size of the bump and determine whether the test is positive or negative. A positive TST can indicate active TB infection, LTBI, or prior BCG vaccination. However, the TST is not able to distinguish between these three possibilities.

XDR-TB: Extensively drug resistant TB. XDR-TB is defined as MDR-TB plus TB that is resistant to any fluoroquinolone plus resistance to one of the three injectable drugs (i.e., amikacin, kanamycin, or capreomycin).

OVERVIEW

Epidemiologic Summary

- Eighty three (83) new cases of TB were reported in suburban Cook County in 2016. This represents a rate of 3.3 cases per 100,000, a 3% decrease in cases reported the previous year (Figure 1, Table 1)
- The North District had the highest TB rate (5.4 per 100,000) of the four public health districts in suburban Cook County (Table 7).

TB Burden in Foreign-born Persons

- The proportion of TB cases among foreign-born persons was 86% in 2016 (Figure 2).
- Three countries accounted for 68% of all foreign-born cases: India (25%), Mexico (24%) and the Philippines (18%; Table 3).
- Among foreign-born persons diagnosed with TB, 62% arrived 5 or more years prior to receiving a diagnosis of TB disease (Figure 4).

Drug Resistance

- In 2016, one case of MDR-TB was identified (Table 5).

Coinfection with HIV

- Between 1-4 cases with TB were coinfecting with HIV (Table 6) in 2016; these persons are defined, per AIDS case definition, as having AIDS. The exact number of coinfecting cases is not given in order to protect the confidentiality of those persons.

Directly Observed Therapy

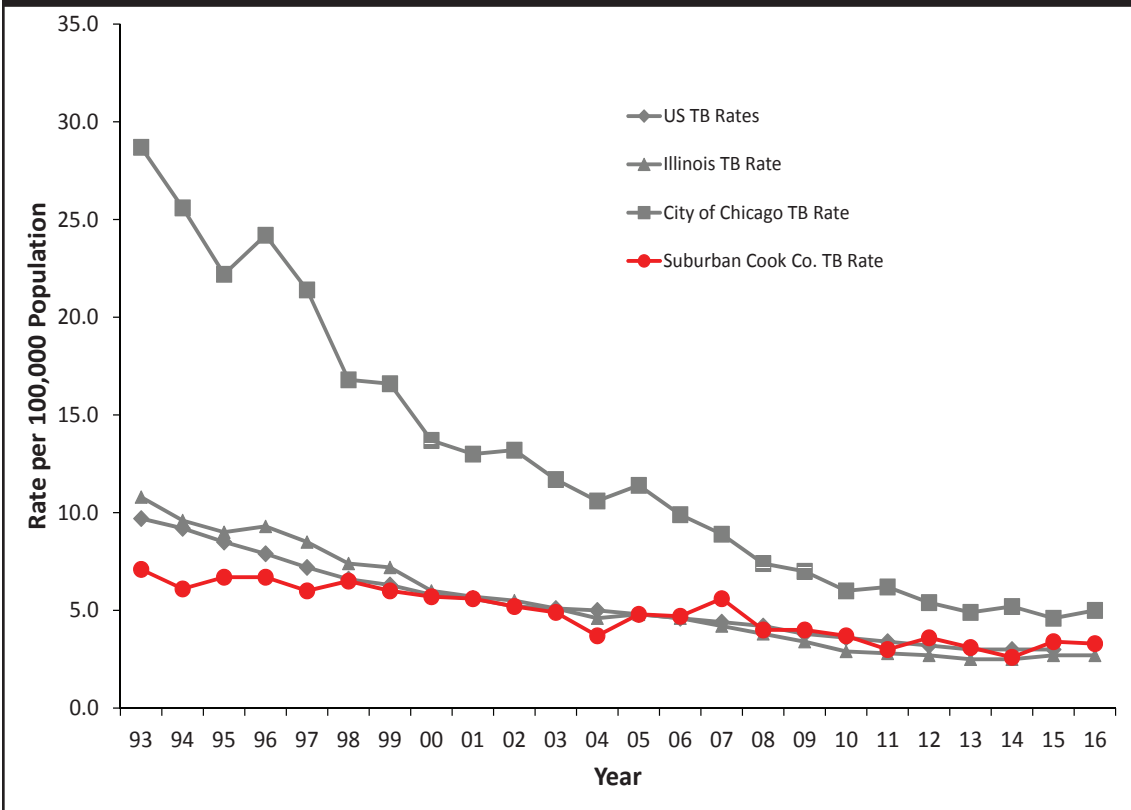
- In 2016, 98% of patients with pulmonary TB received DOT (Figure 5).

Completion of Therapy

- For TB cases diagnosed in 2014, the most recent year for which complete data on completion of tuberculosis therapy are available, 100% of persons with TB disease who were eligible completed treatment (Figure 6).
- Among persons diagnosed in 2014 and who were eligible* to complete TB treatment in 12 months, 92% of cases did so. This is just slightly below the Healthy People 2020 goal of 93% (Figure 6).

* Eligible cases are persons who were alive at the time of TB diagnosis and did not die during therapy, and excludes persons with TB resistant to rifampin and pediatric cases (<15 years) with a diagnosis of meningeal, bone/joint, or miliary TB.

Figure 1. Rates of Reported Tuberculosis Cases by Selected Jurisdictions, 1993-2016



◀ **Figure 1.** In suburban Cook County, TB rates declined from 7.1 per 100,000 population in 1993 to 2.6 per 100,000 population in 2014, rising to 3.3 per 100,000 population in 2016. Declines in both numbers and rates of TB occurred nationally and in Illinois. TB rates in Chicago declined from 28.7 per 100,000 population in 1993 to 5.0 per 100,000 in 2016.

Table 1. Number and Rate (per 100,000 population) of Reported Tuberculosis Cases by Selected Public Health Jurisdictions, 1993-2016

Year	Suburban Cook County		City of Chicago		Illinois		USA	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate†
1993	165	7.1	798	28.7	1,235	10.8	25,107	9.7
1994	142	6.1	714	25.6	1,101	9.6	24,205	9.2
1995	155	6.7	619	22.2	1,024	9.6	22,728	8.5
1996	155	6.7	674	24.2	1,060	9.3	21,210	7.9
1997	140	6.0	597	21.4	974	8.5	19,751	7.2
1998	150	6.5	469	16.8	850	7.4	18,287	6.6
1999	140	6.0	463	16.6	825	7.2	17,501	6.3
2000	141	5.7	398	13.7	743	6.0	16,310	5.8
2001	139	5.6	377	13.0	707	5.7	15,945	5.6
2002	130	5.2	382	13.2	680	5.5	15,056	5.2
2003	122	4.9	339	11.7	633	5.1	14,836	5.1
2004	91	3.7	308	10.6	569	4.6	14,500	5.0
2005	120	4.8	329	11.4	596	4.8	14,067	4.8
2006	116	4.7	287	9.9	569	4.6	13,727	4.6
2007	139	5.6	258	8.9	521	4.2	13,288	4.4
2008	100	4.0	214	7.4	469	3.8	12,904	4.2
2009	100	4.0	202	7.0	418	3.4	11,540	3.8
2010	93	3.7	161	6.0	372	2.9	11,181	3.6
2011	75	3.0	166	6.2	359	2.8	10,521	3.4
2012	89	3.6	146	5.4	347	2.7	9,951	3.2
2013	78	3.1	131	4.9	319	2.5	9,588	3.0
2014	64	2.6	141	5.2	320	2.5	9,421	3.0
2015	85	3.4	125	4.6	344	2.7	9,563	3.0
2016	83	3.3	135	5.0	342	2.7	9,287	2.9

* Rates (per 100,000 population) for years 1993-1999 calculated using 1990 US census data; rates for 2000 - 2009 calculated using 2000 US census data. Rates for 2010-present calculated using 2010 US census data.

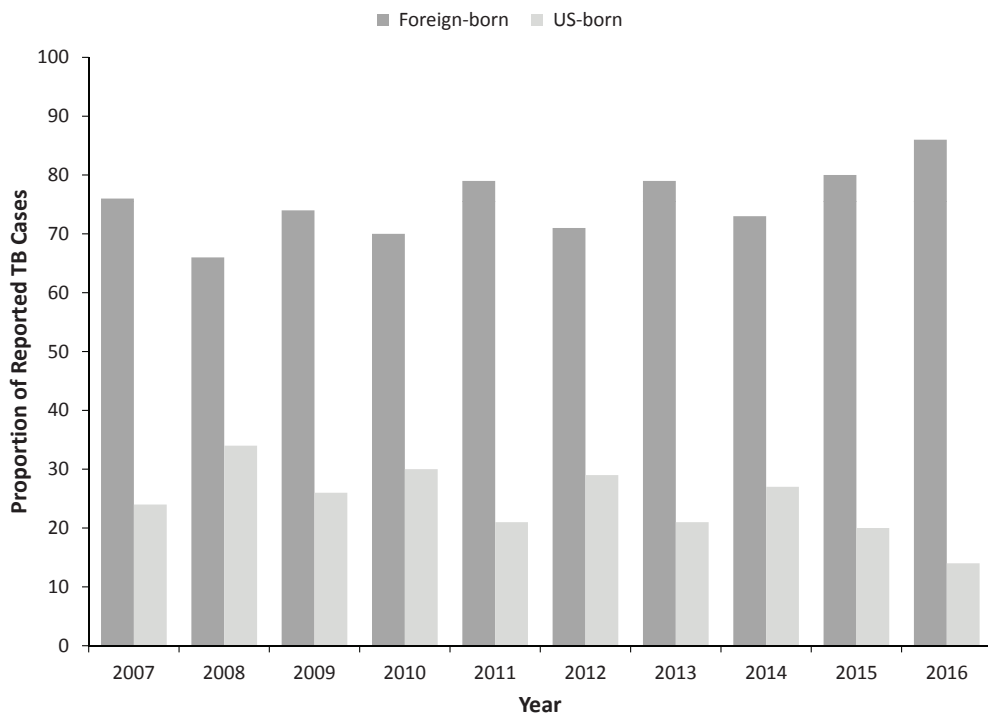
† US rates calculated using intercensal estimates from the US Census Bureau.

Table 2. Number and Percentage of Reported Tuberculosis Cases by Selected Characteristics, Suburban Cook County, 2007-2016

Characteristic	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Sex																				
Male	73	(52)	58	(58)	47	(47)	51	(55)	41	(55)	50	(56)	45	(58)	36	(56)	47	(55)	45	(54)
Female	67	(48)	42	(42)	53	(53)	42	(45)	34	(45)	39	(44)	33	(42)	28	(44)	38	(45)	38	(46)
Age Groups (Y)																				
<5	3	(2)	2	(2)	2	(2)	2	(2)	1	(1)	4	(4)	0	(0)	3	(0)	0	(0)	2	(0)
5-14	2	(1)	1	(1)	0	(0)	0	(0)	2	(3)	0	(0)	0	(0)	1	(2)	1	(1)	2	(2)
15-24	14	(10)	4	(4)	13	(13)	9	(10)	6	(8)	10	(11)	10	(13)	8	(13)	8	(9)	5	(6)
25-44	32	(23)	40	(40)	40	(40)	24	(26)	24	(32)	18	(20)	27	(35)	17	(27)	25	(29)	28	(34)
45-64	58	(41)	30	(30)	22	(22)	29	(31)	21	(28)	34	(38)	23	(29)	21	(33)	24	(28)	24	(29)
65+	31	(22)	23	(23)	23	(23)	29	(31)	21	(28)	23	(26)	23	(29)	14	(22)	27	(32)	22	(27)
Race/Ethnicity																				
White, not Hispanic	27	(19)	21	(21)	15	(15)	14	(15)	10	(13)	22	(25)	7	(9)	13	(20)	14	(16)	8	(10)
Black, not Hispanic	16	(11)	24	(24)	10	(10)	11	(12)	13	(17)	13	(15)	16	(21)	8	(13)	8	(9)	15	(18)
Hispanic	28	(20)	17	(17)	24	(24)	31	(33)	20	(27)	15	(17)	16	(21)	21	(33)	18	(21)	19	(23)
Asian	68	(49)	38	(38)	49	(49)	37	(40)	32	(43)	39	(44)	39	(50)	22	(34)	44	(52)	40	(48)
Native Hawaiian or Pacific Islander	0	(0)	0	(0)	1	(1)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	1	(1)	0	(0)
American Indian or Alaskan Native	0	(0)	0	(0)	1	(1)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
Two or More Races	1	(1)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	1	(0)
TOTAL	140	(100)	100	(100)	100	(100)	93	(100)	75	(100)	89	(100)	78	(100)	64	(100)	85	(100)	83	(100)

▲ **Table 2.** In 2016, 54% of TB cases were male; 90% were aged 25 years or older; 48% were Asian. There were 2 pediatric cases (<15 years of age) diagnosed in 2016 in suburban Cook County.

Figure 2. Proportion of Reported Tuberculosis Cases by Birthplace, Suburban Cook County, 2007-2016



◀ **Figure 2.** The proportion of TB cases in the foreign-born population in suburban Cook County in 2016 was 86%.

► **Figure 3.** Important race/ethnicity differences exist in the distribution of cases by birthplace. Among foreign-born persons, Asians accounted for the majority (56%) of cases. By comparison, non-Hispanic Blacks (75%) accounted for the largest proportion of U.S.-born TB cases.

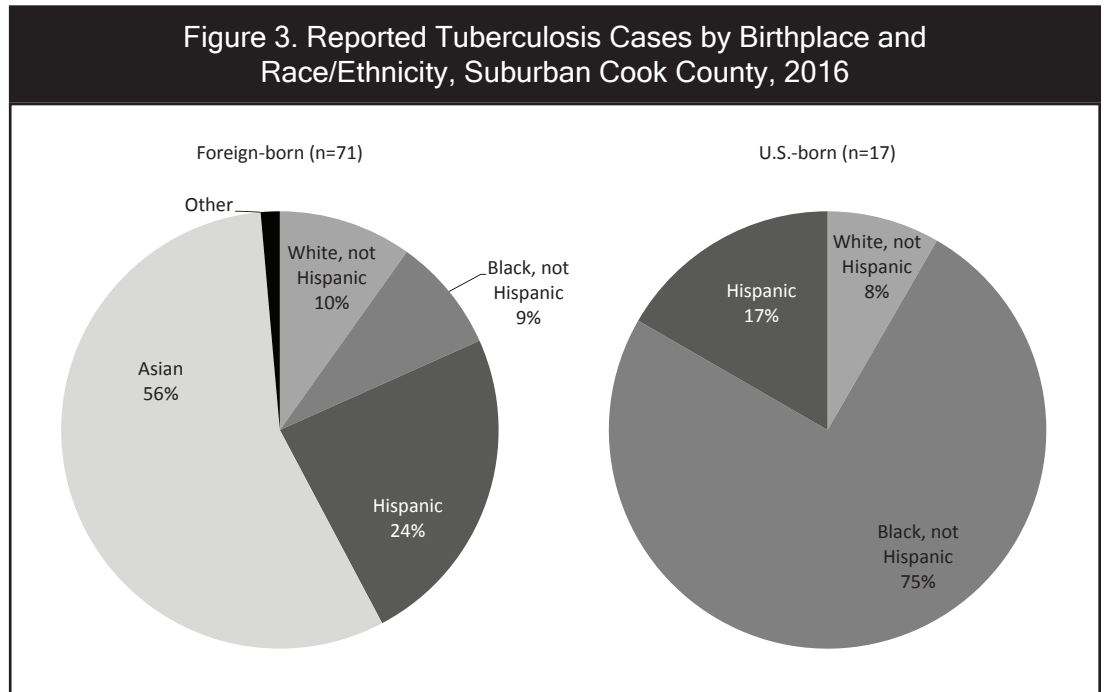


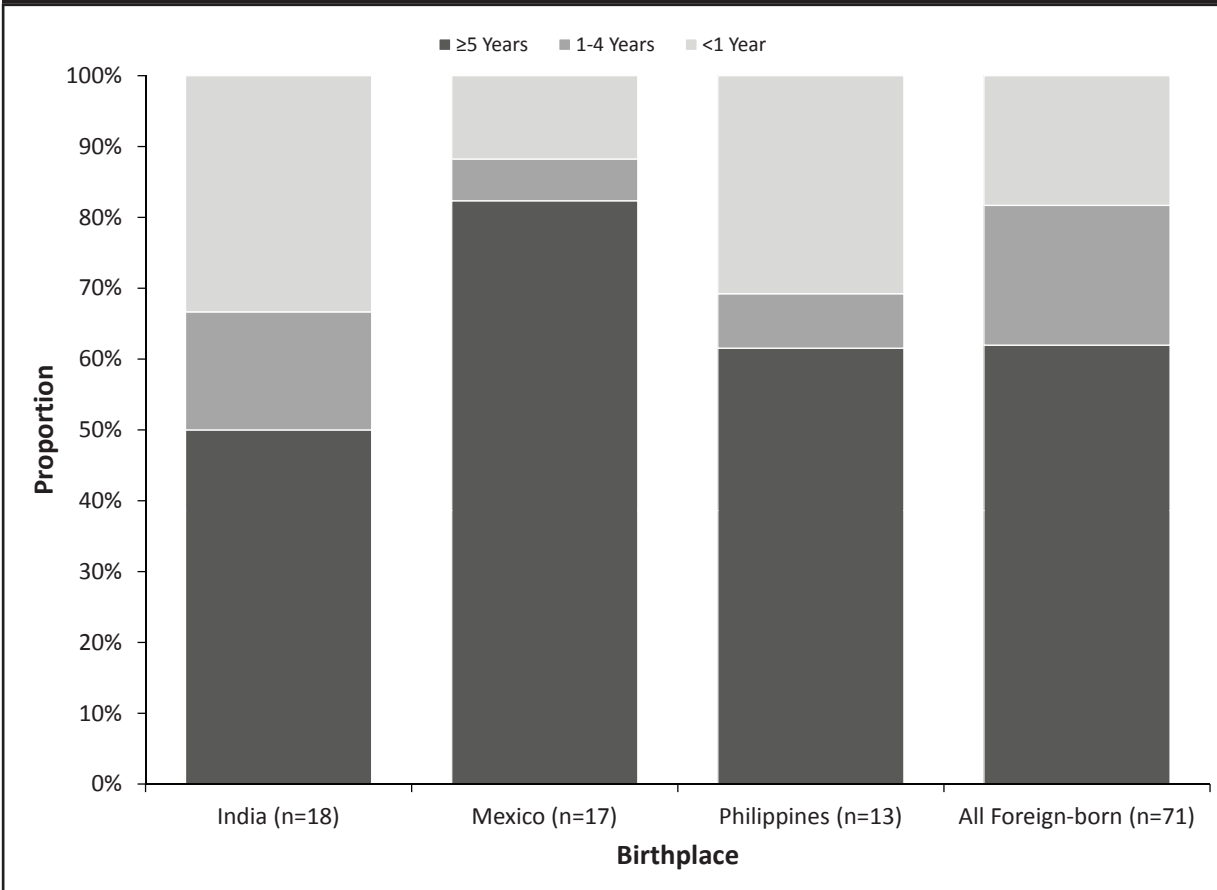
Table 3. Tuberculosis Cases by Most Frequently Reported Countries of Origin, Suburban Cook County, 2007 - 2016

Birthplace	Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
India	30	10	18	20	18	17	17	7	21	18
Mexico	18	11	17	21	17	10	11	16	14	17
Philippines	21	17	11	8	5	12	7	9	7	13
Vietnam	1	2	6	1	2	1	1	0	3	3
Nigeria	0	1	1	0	3	0	2	1	2	3
China	1	4	2	2	0	2	6	1	3	2
Pakistan	5	1	3	0	0	2	2	0	2	2
Korea [South]	5	1	2	2	1	0	1	1	1	1
Haiti	1	0	2	0	0	2	1	0	0	1

* A single case of TB occurred in persons born in each of the following countries: Albania, Bosnia and Hertzgovina, Ecuador, Ethopia, Georgia, Haiti, Rwanda, Russia, South Korea, Thailand, Ukraine, and Yemen.

▲ **Table 3.** In 2016, 71 foreign-born persons with active TB came from 21 different countries. Three countries accounted for 68% of all foreign born cases: India (n=18; 25%), Mexico (n=17; 24%) and the Philippines (n=13; 18%).

Figure 4. Number of Years Living in the United States Prior to Receiving a Diagnosis of Tuberculosis Disease, Suburban Cook County, 2016



◀ **Figure 4.** Among all foreign-born TB cases reported in 2016, 62% arrived in the U.S. 5 or more years prior to receiving a diagnosis of TB disease.

Table 4. Number and Proportion of Reported Tuberculosis Cases by Site of Disease and Laboratory Results, Suburban Cook County, 2016

Site of Disease	Total Cases	Sputum Smear Positive		Sputum Culture Positive	
	No.	No.	(%)	No.	(%)
Pulmonary Only	45	15	(33)	26	(58)
Extrapulmonary Only	30	0	(0)	0	(0)
Both	8	2	(0)	2	(25)
Total	83	17	(20)	28	(34)

◀ **Table 4.** Forty five (45) reported TB cases in 2016 had pulmonary only TB; 30 cases had extrapulmonary only TB (no pulmonary involvement). Fifty eight percent (58%) of pulmonary only TB cases were culture positive.

▶ **Table 5.** Fifty four (54) cases in 2016 had susceptibility testing performed. There was one case of MDR-TB and no case of XDR-TB in suburban Cook County in 2016.

Table 5. Tuberculosis Susceptibility Results by Birthplace, Suburban Cook County, 2016

Birthplace	Cases with Susceptibility Results	Any Drug Resistance		INH-Resistant		MDR-TB	
	No.	No.	(%)	No.	(%)	No.	(%)
Foreign-born	47	7	(15)	5	(11)	1	(2)
US-born	7	1	(0)	1	(0)	0	(0)
Total	54	8	(15)	5	(9)	1	(2)

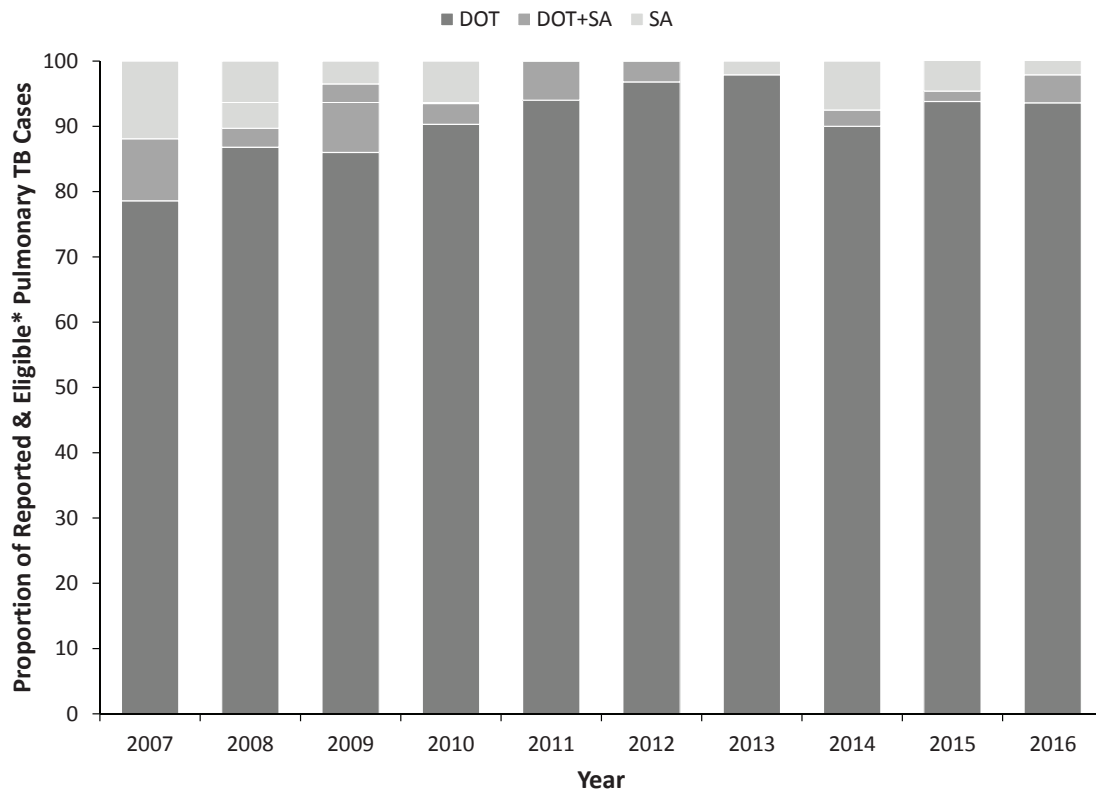
Table 6. Trends in the Number of Reported Tuberculosis Cases, HIV Testing and Coinfection with HIV, Suburban Cook County, 2007-2016

► **Table 6.** In 2016, 99% of reported TB cases had HIV results available or were tested for HIV. Between 1-4 cases were coinfecting in 2016 (the exact number is suppressed to protect confidentiality). Persons with TB and HIV coinfection are classified, by AIDS surveillance case definition, as having AIDS.

Year	TB Cases		Tested for HIV		Coinfected with HIV*	
	No.	No.	(%)	No.	(%)	
2007	139	109	(78)	6	(6)	
2008	100	87	(87)	9	(10)	
2009	100	77	(77)	5	(6)	
2010	93	72	(77)	0	(0)	
2011	75	67	(89)	†	†	
2012	89	78	(88)	5	(6)	
2013	78	76	(88)	†	†	
2014	64	64	(100)	5	(8)	
2015	85	83	(98)	†	†	
2016	83	82	(99)	†	†	

* Persons with HIV who receive a TB diagnosis are defined as having AIDS.
 † Cells with small counts (1-4) have been suppressed.

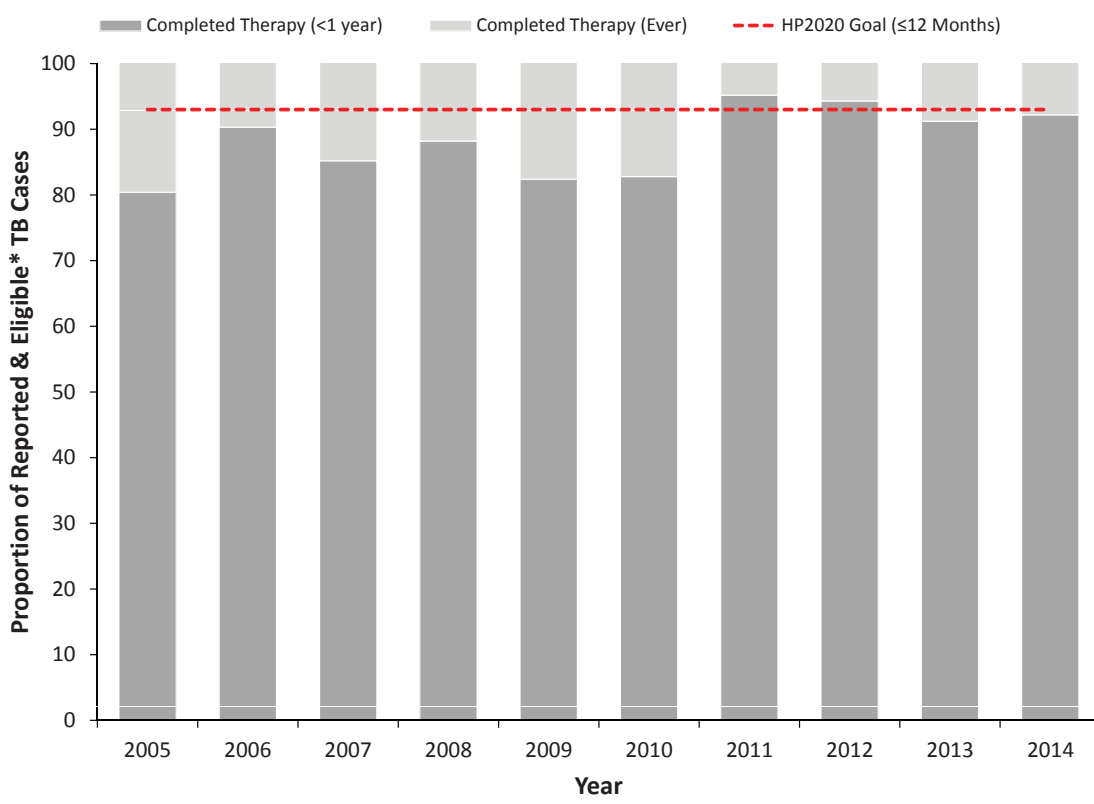
Figure 5. Mode of Treatment Administration in Reported Pulmonary Tuberculosis Cases, Suburban Cook County, 2007-2016



◀ **Figure 5.** In 2016, the proportion of TB cases receiving directly observed therapy (DOT), whether DOT only or DOT with some self-administered (SA) therapy was 98%.

* Percentage includes cases alive at diagnosis, who did not die during therapy, who did not move overseas, with one or more anti-tuberculosis drugs prescribed and excludes persons with missing or unknown information regarding mode of treatment administration.

Figure 6. Completion of Tuberculosis Therapy, Suburban Cook County, 2005-2014



◀ **Figure 6.** In 2014, the most recent year for which complete data on completion of tuberculosis therapy are available, 100% of reported TB cases who were eligible* completed treatment.

In 2014, 92% of eligible* persons completed treatment in less than one year. This is slightly below the Department of Health and Human Services Healthy People 2020 goal of 93%.

* Eligible cases are persons who were alive at the time of TB diagnosis and did not die or move overseas during therapy, and excludes persons with TB resistant to rifampin and pediatric cases (<15 years) with a diagnosis of meningeal, bone/joint, or miliary TB.

Table 7. Reported Tuberculosis Case Rates (per 100,000 population) by District and Municipality, Suburban Cook County, 2016

NORTH			WEST			SOUTH			SOUTHWEST		
City	No.	Rate	City	No.	Rate	City	No.	Rate	City	No.	Rate
Arlington Heights	4	5.3	Bellwood	0	0.0	Burnham	0	0.0	Alsip	0	0.0
Barrington	0	0.0	Bensenville	0	0.0	Calumet City	0	0.0	Bedford Park	0	0.0
Barrington Hills	0	0.0	Berkeley	0	0.0	Chicago Heights	1	3.3	Blue Island	3	12.7
Bartlett	0	0.0	Berwyn	1	1.8	Country Club Hills	0	0.0	Bridgeview	1	6.1
Buffalo Grove	0	0.0	Broadview	0	0.0	Dixmoor	0	0.0	Burbank	0	0.0
Des Plaines	7	12.0	Brookfield	0	0.0	Dolton	0	0.0	Calumet Park	0	0.0
Elgin	1	4.2	Burr Ridge	0	0.0	East Hazel Crest	0	0.0	Chicago Ridge	0	0.0
Elk Grove Village	1	3.0	Cicero	1	1.2	Flossmoor	0	0.0	Crestwood	0	0.0
Evanston	4	5.4	Countryside	0	0.0	Ford Heights	0	0.0	Evergreen Park	0	0.0
Glencoe	0	0.0	Elmwood Park	0	0.0	Glenwood	2	22.3	Forest View	0	0.0
Glenview	2	4.5	Forest Park	0	0.0	Harvey	2	7.9	Hickory Hills	0	0.0
Golf	0	0.0	Franklin Park	2	10.9	Hazel Crest	0	0.0	Hometown	0	0.0
Hanover Park	0	0.0	Harwood Heights	1	11.6	Homewood	0	0.0	Justice	0	0.0
Hoffman Estates	2	3.9	Hillside	0	0.0	Lansing	0	0.0	Lemont	0	0.0
Inverness	0	0.0	Hinsdale	0	0.0	Lynwood	1	11.1	Merrionette Park	0	0.0
Kenilworth	0	0.0	Hodgkins	0	0.0	Markham	0	0.0	Oak Lawn	1	1.8
Lincolnwood	1	7.9	Indian Head Park	0	0.0	Matteson	0	0.0	Orland Hills	1	14.0
Morton Grove	1	4.3	La Grange	0	0.0	Midlothian	0	0.0	Orland Park	1	1.8
Mount Prospect	0	0.0	La Grange Park	0	0.0	Oak Forest	0	0.0	Palos Heights	1	5.7
Niles	2	6.7	Lyons	0	0.0	Olympia Fields	0	0.0	Palos Hills	0	0.0
Northbrook	0	0.0	Maywood	3	12.5	Park Forest	0	0.0	Palos Park	0	0.0
Northfield	1	18.5	McCook	0	0.0	Phoenix	0	0.0	Stickney	1	14.7
Palatine	2	2.9	Melrose Park	0	0.0	Posen	0	0.0	Summit	0	0.0
Park Ridge	0	0.0	Norridge	0	0.0	Richton Park	0	0.0	Willow Springs	1	18.1
Prospect Heights	2	12.3	North Riverside	0	0.0	Riverdale	1	7.4	Worth	1	9.3
Rolling Meadows	1	4.1	Northlake	1	8.1	Robbins	0	0.0			
Roselle	1	26.9	Oak Park	0	0.0	Sauk Village	2	19.0			
Schaumburg	3	4.0	River Forest	0	0.0	So. Chicago Hts	0	0.0			
Skokie	3	4.6	River Grove	0	0.0	South Holland	2	9.1			
South Barrington	0	0.0	Riverside	0	0.0	Steger	0	0.0			
Streamwood	3	7.5	Rosemont	0	0.0	Thornton	0	0.0			
Wheeling	7	18.6	Schiller Park	0	0.0	Tinley Park	0	0.0			
Wilmette	2	7.4	Stone Park	0	0.0	University Park	0	0.0			
Winnetka	0	0.0	Westchester	1	6.0						
			Western Springs	0	0						
Total	50	5.4	Total	10	2.0	Total	11	2.3	Total	11	3.0

Rates per 100,000 population per year. Rates calculated using 2010 Census data. Use caution when interpreting rates where the count is < 20.

TECHNICAL NOTES

Surveillance Methodology

Healthcare providers and laboratories in suburban Cook County are required to report the following results within 24 hours: (1) sputum or tissue smears positive for acid-fast bacilli (AFBs); (2) cultures positive for *Mycobacterium tuberculosis*; (3) mycobacterial drug susceptibility results; (4) any other tests positive for *Mycobacterium tuberculosis*. In addition, confirmed TB cases must be reported to CCDPH within 7 days.

TB case reports are entered into I-NEDSS and provide the basis for the information presented in this report. This report includes all cases of tuberculosis reported during the year in which the case was confirmed. Confirmed TB cases who may have moved into suburban Cook County from another jurisdiction are not reflected in the data presented herein; such cases are counted in the jurisdiction that reported the case. Likewise, confirmed TB cases reported in suburban Cook County who may have moved out of suburban Cook County are included in the data presented herein.

Reported TB Case Rates

Suburban Cook County, Chicago and Illinois TB rates between 1993-1999 were calculated using 1990 census data. Suburban Cook County, Chicago and Illinois TB rates between 2000-2009 were calculated using 2000 census data. Suburban Cook County, Chicago and Illinois TB rates after 2009 were calculated using 2010 census data. National TB rates were calculated using national intercensal estimates.