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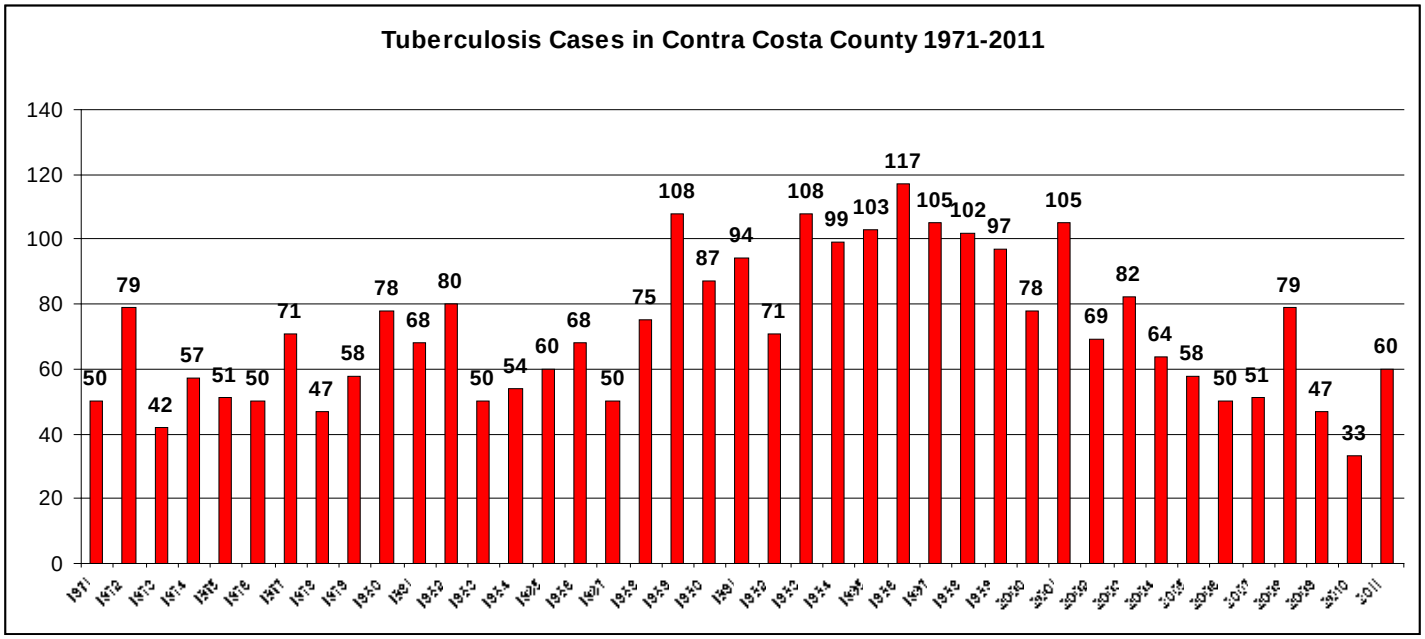
TUBERCULOSIS EPIDEMIOLOGY REPORT – 2012

In 2011, **60** cases of confirmed active tuberculosis (TB) were reported in Contra Costa County. This is an increase of 82% since our historic low number of 33 cases in 2010 (Figure 1), but similar to the average number of 64 cases from 2001-2010 (Figure 2). The case rate in 2011 was **5.7/100,000**, similar to the rate for California (5.8/100,000).

Figure 1

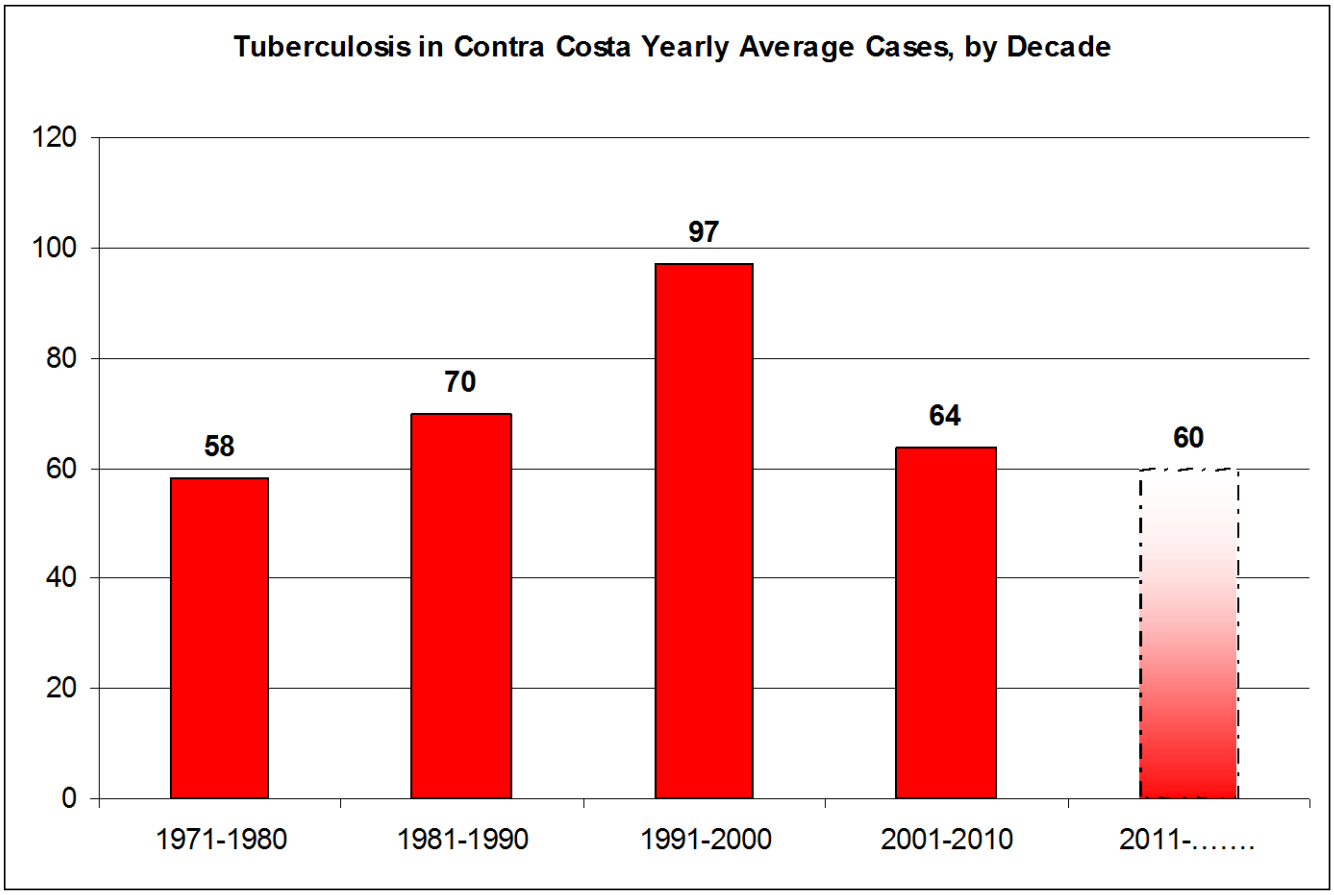


Place of Birth

Of the 60 cases, 11 (18%) were born in the US[1], and 49 (82%) were foreign born (Table 1). The proportion of US and foreign born cases remained stable since 2010. Of the 49 foreign-born cases, 36 (73.5%) were from Asia and 13 (26.5%) were from the Americas. The most common country of origin was the Philippines (11 cases). Of the 49 foreign-born cases, 42 (86%) had an immigration visa (29 immigrant visas, four student visas, five tourist visas, two work visas, and two refugees). The remaining seven had another or unknown immigration status.

[1] Including persons born outside the U.S. whose parents were both US citizens.

Figure 2



Demographic Characteristics

Of the 60 cases, 35 (58%) were Asians, 15 (25%) were Hispanics, five (8.3%) were African Americans and five (8.3%) were Whites (two US born and three foreign born). There were **four pediatric[2] cases**. Of these, three were US born and one was foreign born. Two were Hispanics and two were Asians. 29 (48%) cases were from West County, an increase of 164% compared with 11 cases (33%) in 2010. The proportions of cases from the Central and East County regions both declined.

Risk Factors and Co-morbidities

Among our cases, 7 (12%) had a substance use disorder[3] and 4 (6.7%) were homeless. Two (3.3%) had HIV infection, 48 (80%) were HIV negative, and ten (17%) had an unknown HIV status. Nine (15%) had diabetes, and three (5%) had end-stage renal disease. One was on post-transplant immunosuppressive therapy. None was on anti-TNF-α suppressive therapy or immunosuppressed from other causes.

[2] Under the age of 14 years.
[3] Including injection drug use, non-injection drug use and excessive alcohol use.

Table 1

Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total Cases	50	51	79	47	33	**60**
Gender						
Male	32 (64%)	30 (59%)	50 (63%)	30 (64%)	22 (67%)	**33 (55%)**
Female	18 (36%)	21 (41%)	29 (37%)	17 (36%)	11 (33%)	**27 (45%)**
Age						
0-14 years	1 (2%)	3 (6%)	4 (5%)	2 (4%)	0	**4 (6.7%)**
15-24 years	10 (20%)	6 (12%)	8 (10%)	3 (6%)	4 (12%)	**5 (8.3%)**
25-44 years	16 (32%)	12 (24%)	31 (39%)	16 (34%)	10 (30%)	**20 (33%)**
45-64 years	12 (24%)	19 (37%)	19 (24%)	12 (26%)	11 (33%)	**14 (23%)**
65 years	11(22%)	11 (22%)	17 (22%)	14 (30%)	8 (24%)	**17 (28%)**
Race/Ethnicity						
White	4 (8%)	5 (10%)	9 (11%)	5 (11%)	1 (3%)	**5 (8.3%)**
African American	13 (26%)	12 (24%)	15 (19%)	6 (13%)	6 (18%)	**5 (8.3%)**
Hispanic	10 (20%)	12 (24%)	21 (27%)	11 (23%)	9 (27%)	**15 (25%)**
Asian/PI	22 (44%)	22 (41%)	34 (43%)	25 (53%)	17 (52%)	**35 (58%)**
Country of Origin						
US Born	21 (42%)	19 (37%)	24 (30%)	10 (21%)	6 (18%)	**11 (18%)**
Foreign Born	29 (58%)	32 (63%)	55 (70%)	37 (79%)	27 (82%)	**49 (82%)**
County Region						
West	16 (32%)	20 (39%)	39(49%)	21 (45%)	11 (33%)	**29 (48%)**
Central	18 (36%)	15 (29%)	18 (23%)	17 (35%)	12 (36%)	**15 (25%)**
East	16 (32%)	16 (31%)	22 (28%)	9 (19%)	10 (30%)	**16 (27%)**
Risk Factor						
Substance Abuse	8 (16%)	9 (18%)	10 (13%)	4 (9%)	4 (12%)	**7 (12%)**
Homelessness	4 (8%)	3 (6%)	5 (6%)	2 (4%)	0	**4 (6.7 %)**

Drug resistance

Of the 26 cases with a positive culture, 24 had susceptibility tests done to first line drugs[4]. Three (12.5%) had INH resistance (with or without resistance to other drugs), including one who had **multidrug-resistant TB (MDR TB)**[5]. That isolate was resistant to 7 drugs (isoniazid, rifampin, ethambutol, pyrazinamide, streptomycin, ethionamide and moxifloxacin), making it our first case of **"pre-extensively drug resistant (pre-XDR) TB[6]"** since that term was defined. Seven additional pulmonary cases had negative sputum cultures; five did not have cultures done; and one had an unknown culture result.

[4] Isoniazid, rifampin, ethambutol and pyrazinamide.

[5] "MDR TB" is defined as resistance to at least isoniazid and rifampin.

[6] "XDR TB" is defined as MDR TB which is also resistant to **both** a fluoroquinolone **and** a second-line injectable agent (kanamycin, capreomycin or amikacin). "Pre-XDR TB" is MDR TB also resistant to **either** a fluoroquinolone **or** a second-line injectable agent.

Summary and Recommendations

The increase in the TB cases in Contra Costa County in 2011 is of concern to us all. Although the number of cases here has fluctuated somewhat from year-to-year, the increase in 2011 indicates at a minimum that the overall downward trend of the past 10 years may be leveling off. The development of four pediatric TB cases, after none in 2010, is of particular concern, as these cases generally result from recent household transmission of TB.

Clearly, a number of challenges remain if we are to achieve our goal of TB elimination[7] locally and nationally, including barriers to access of medical care that many of our patients face, and budget cuts to public health programs on the local, state and national levels. TB transmission results commonly from the delayed diagnosis of active, infectious TB, either due to patient behavior (delays in seeking care) or provider behavior (missed opportunities for diagnosis and/or reporting).

It is vital that providers test all TB patients for HIV co-infection. Although 2011 was the first year in which CA assessed and reported the HIV status of TB patients, universal HIV testing of all patients, regardless of reported risk factors, has been recommended by CDC since 2006.[8] Yet 17% of our cases had an unknown HIV status. Routine HIV testing is important because the medical management of TB is affected by HIV status. For example, the timely initiation of anti-retroviral therapy for patients with TB/HIV co-infection improves patient outcomes[9]. Yet an estimated 24-27% of HIV infected persons in the US are unaware of their HIV status[10]. In CA, at least 50% of patients with TB/HIV co-infection first learn of their HIV status at the time of TB diagnosis[11]. HIV testing is also important for surveillance, since we can monitor the impact of HIV infection on TB rates. HIV testing policies should be reviewed to ensure that HIV testing is routinely integrated into TB care, using an "opt-out" model, in which patients are informed that they may be tested for HIV unless they specifically decline.

It remains vital that persons with TB symptoms (including a cough for $\geq$ 3 weeks, fever, sweats and unexplained weight loss) seek prompt medical attention, and that health care providers remain suspicious of active TB when patients present with TB symptoms, especially if they also have socio-demographic, behavioral or medical risk factors for TB. State law requires that all health care providers report both suspected and confirmed cases of active TB to Public Health within one day of diagnosis (CCR Title 17, Section 2500).

For further information about TB or our services, go to our TB web page for providers http://cchealth.org/topics/tb/providers.php, or call us at 925-313-6740. TB medical consultation is available from one of our expert Chest Clinic providers.

[7] TB elimination is defined by the Centers for Disease Control and Prevention (CDC) as a case rate of less than 0.1/100,000.
[8] CDC. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR*, 2006; 55 (RR-14).
[9] Abdool Karim SS et al. Timing of initiation of antiretroviral drugs during TB therapy. *NEJM*, 2010; 362:697.
[10] Qaseem A et al. Screening for HIV in Health Care Settings. *Ann Int Med*, 2009; 150:125.
[11] CDPH, TBCB, unpublished data.