

Online Data Supplement

Tuberculosis Mortality in the United States: Epidemiology and Prevention Opportunities

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Table E1. Study sites, TB cases, and TB mortality

TBESC* Site	Total TB Cases		Died Before Diagnosis			Died During Treatment		
	2005	2006	2005	2006	Total	2005	2006	Total
California	2,900	2,778	43	62	105	208	187	395
Colorado	101	124	3	3	6	8	6	14
Florida	1,093	1,033	27	25	52	74	60	134
Georgia	505	507	2	15	17	35	29	64
Illinois	589	562	6	5	11	46	40	86
Maryland	283	252	4	9	13	19	12	31
Mississippi	103	115	9	5	14	9	13	22
New Jersey	482	508	14	11	25	30	24	54
New York City	984	948	18	16	34	73	0	73
New York, rest of state	300	315	8	6	14	17	27	44
North Carolina	329	374	7	7	14	24	14	38
Washington	254	262	7	4	11	13	20	33
Tennessee	299	277	7	7	14	18	28	46
Houston Texas MSA [†]	341	377	14	16	30	16	39	55
Tarrant County, Texas	129	108	4	1	5	7	6	13
Harris County, Texas	378	413	11	10	21	19	32	51
all site totals	9,070	8,953	184	202	386	616	537	1,153

*Tuberculosis Epidemiologic Studies Consortium

[†] Metropolitan Statistical Area

Table E2. Characteristics of adult patients with TB-related death during treatment, comparing those who died within 30 days of diagnosis and those who died \geq 31 days from diagnosis

Characteristic	Patients who died during treatment \leq 30 days from diagnosis (N=329) N (%)	Patients who died during treatment \geq 31 days from diagnosis (N=371) N (%)	P-value
<i>Demographic</i>			
Age, mean, median (IQR)	67.5, 71.1 (55.1, 81.5)	62.8, 62.4 (48.2, 78.1)	<0.001
Male	225 (68)	253 (68)	1.0
White non-Hispanic	146 (44)	144 (39)	0.1
Black non-Hispanic	100 (30)	145 (39)	0.02
Asian	78 (24)	75 (20)	0.3
Hispanic	69 (21)	89 (24)	0.3
US-born	179 (54)	196 (53)	0.7
<i>Socioeconomic/behavioral</i>			
Unemployed	251 (76)	288 (78)	0.7
Homeless	24 (7)	40 (11)	0.1
Incarcerated	8 (2)	9 (2)	1.0
Injection drug use	13 (4)	21 (6)	0.3
Non-injection drug use	23 (7)	52 (14)	0.003
Excess alcohol	60 (18)	66 (18)	0.9
Long-term care facility	34 (10)	75 (20)	<0.001
<i>Clinical</i>			
Pulmonary TB only	218 (66)	220 (59)	0.06
Extra-pulmonary TB only	24 (7)	48 (13)	0.01
Both extra-pulmonary and pulmonary TB	87 (26)	103 (28)	0.7
Bilateral disease	168 (51)	159 (43)	0.03
Cavities on chest image	68 (21)	111 (30)	0.005
Effusion	125 (38)	146 (39)	0.7
Hemorrhage	4 (1)	3 (0.8)	0.6
Meningeal TB	36 (11)	39 (11)	0.9
Gastrointestinal TB	13 (4)	15 (4)	0.9
Peritoneal TB	8 (2)	18 (5)	0.1
Miliary TB	18 (5)	28 (8)	0.3
Pneumothorax	14 (4)	11 (3)	0.4
Extensive pulmonary destruction	119 (36)	132 (36)	0.9
Respiratory failure	199 (60)	150 (40)	<0.001
Smear positive ^a	205 (62)	218 (59)	0.3
Multidrug-resistant TB	6 (2)	8 (2)	0.7
History of TB	27 (8)	29 (8)	0.9
<i>HIV status</i>			
Negative	114 (35)	169 (46)	Ref
Positive	42 (13)	96 (26)	0.05
Test not offered	60 (18)	38 (10)	<0.001
Test refused	9 (3)	15 (4)	0.8
Unknown result	104 (32)	53 (14)	<0.001
Coronary artery disease	67 (20)	76 (20)	1.0
Cancer	24 (7)	42 (11)	0.07
COPD	89 (27)	95 (26)	0.7
Condition affecting the liver ^b	89 (27)	125 (34)	0.06
Cirrhosis	29 (9)	40 (11)	0.4
Hepatitis (viral)	31 (9)	58 (16)	0.01
Diabetes mellitus	93 (28)	90 (24)	0.2
Cognitive impairment	88 (27)	110 (30)	0.4

Physical inability to self-medicate	40 (12)	68 (18)	0.02
Immunosuppressive medications^c	14 (4)	26 (7)	0.1
No reported TB symptom	21 (6)	25 (7)	0.9
Reported cough^d	190 (62)	230 (66)	0.2
Reported fever^d	158 (51)	197 (57)	0.7
Reported hemoptysis^d	27 (9)	45 (13)	0.1
Reported night sweats^d	70 (23)	107 (31)	0.7
Reported weight loss^d	176 (57)	246 (71)	<0.001
Healthcare			
Diagnosis as inpatient	306 (93)	315 (85)	<0.001
Intensive phase of treatment as inpatient	245 (74)	309 (83)	0.004
Early report^e	327 (99)	363 (98)	0.08
No insurance	30 (9)	45 (12)	0.2
Competing diagnosis^f	149 (45)	154 (42)	0.3
NAAT not done	155 (47)	180 (49)	0.7
TST not done	189 (57)	149 (40)	<0.001
Incomplete evaluation^g	62 (19)	61 (16)	0.4
Pyrazinamide was excluded from initial treatment regimen	31 (9)	25 (7)	0.2

^aSmear-positive=positive on AFB smear microscopy. Comparison group was negative or unknown results on AFB smear microscopy. AFB= acid-fast bacilli

^bPatient had cirrhosis or viral hepatitis or reported using excess alcohol

^cIncludes prednisone, TNF-alpha inhibitors

^dDenominators are for patients who reported any TB symptom--patients who died within 30 days of treatment=308; patients who died \geq 31 days of treatment=346

^e Report within 10d of diagnosis

^fA diagnosis other than TB was made prior to TB diagnosis

^gPatient pulmonary evaluation did not include collection of three consecutive sputum samples for AFB smear microscopy within 4 days of hospitalization, or, within 30 days if the pulmonary patient was diagnosed as an outpatient. Or, for patients with extrapulmonary TB only, no imaging nor laboratory tests were documented.

Table E3. Comparison of the study algorithm and death certificate for identifying a TB-related death^a

Study algorithm/death certificate	TB was not an immediate, underlying, or contributing cause of death	TB was an immediate, underlying, or contributing cause of death	Total
	N (%)	N (%)	N (%)
Not TB-related death	185 (75)	61 (25)	246 (23)
TB-related death	378 (45)	469 (55)	847 (77)
Total^a	563 (52)	540 (48)	1093 (100)

Kappa = 0.21 (0.16–0.26)

^aDeath certificates were not available for 10% of decedents

Figure E1. Flowchart for Determining TB-related Deaths

