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— Editorial —

Tuberculosis Mortality in Older Age Groups

Mortality statistics compiled for 1947 show that tuberculosis death rates have again declined in the United States. In 1947 the rate was 33.5 per 100,000 as compared to 36.4 in 1946. These figures are gratifying, for they show that we are still making progress toward our goal, the disappearance of tuberculosis from the United States.

An analysis of the 1947 mortality data which appear in the following pages of this issue brings out a fact, however, which should provoke thoughtful attention: the proportion of deaths from tuberculosis among people over 45 years of age is steadily increasing.

For many years we have been accustomed to think of tuberculosis as a disease primarily of young adults. The majority of those it killed were between the ages of 15 and 45—people in the prime of life, wage earners, parents of small children, young people just starting their life work. In 1900, for example, 64 percent of all the reported tuberculosis deaths took place in the 15–44 age group. Only 24 percent of those who died were over 45. By 1940 these proportions had changed. The majority of tuberculosis deaths reported, 53 percent, still took place among people between the ages of 15 and 45, but deaths of those 45 and over had risen to 42 percent of the total.

Even more marked is the shift apparent in the 7 years between 1940 and 1947. In 1947, 52 percent of all those who died of tuberculosis were over 45. The number of deaths in the “vulnerable” ages, 15–44, had fallen to 45 percent of the total.

An important factor in this shift has been the fact that mortality rates have declined more slowly in the older age groups than in the younger. The increasing age of the population as a whole further accentuates the degree of change.

This is the thirty-eighth of a series of special issues of PUBLIC HEALTH REPORTS devoted exclusively to tuberculosis control, which will appear in the first week of each month. The series began with the Mar. 1, 1946, issue. The articles in these special issues are reprinted as extracts from the PUBLIC HEALTH REPORTS. Effective with the July 5, 1946, issue, these extracts may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 10 cents a single copy. Subscriptions are obtainable at \$1.00 per year; \$1.25 foreign.

The shift toward older ages at death has great significance for tuberculosis case-finding activities. A comprehensive study of the mass X-ray survey made in Muscogee County, Georgia, published in the March 4 issue of this journal, contains one of the few available tabulations of the ages of those X-rayed. It was disappointing to see the percentages of older people who took part in that survey. Although 62 percent of the population of the county in the age group 45-54 were X-rayed—a percentage roughly comparable to those in the younger ages—only 50 percent of those from 55-64 participated, 34 percent of those 65-74 and 17 percent of those over 75.

Obviously there are many reasons why people do not take part in mass surveys. Many of the very old people are not able to be X-rayed because of illness or incapacity. There are many others not so old, however, who fail to be examined because they think tuberculosis is a disease whose threat they have "outgrown." They must be cautioned that those over 45 are definitely subject to tuberculosis just as younger people are.

Control workers should be reminded that older people also form a major source of infection in the population. Special efforts are needed to discover the disease among those over 45 for the protection both of individuals and of the community. It is our responsibility to urge all men and women, young and old, to have periodic X-ray examinations either in mass surveys or as part of their annual physical examination by private physicians. Only by special emphasis and special efforts can all cases of tuberculosis be discovered, isolated, and brought under treatment.

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Tuberculosis Mortality in the United States, 1947

By SARA A. LEWIS*

Fewer people died of tuberculosis in the United States in 1947 than in the previous year. Tuberculosis deaths numbered 48,064, a decrease of 2,847, or 6 percent from the number recorded in 1946. The tuberculosis mortality rate in 1947 was 33.5 per 100,000 estimated midyear population, or 8 percent below the rate of 36.4 in 1946.

Early in the war, it was feared that crowded living quarters, long hours of work, and shortages of medical facilities and personnel, would result in increased tuberculosis mortality, and, because of the chronic nature of the disease, there was also the possibility that these conditions would result in a postwar rise in the death rate. However, mortality rates decreased in each year of the war. Moreover, the decline in the rates has continued through the postwar years, and the tuberculosis mortality rate for 1947 was the lowest ever recorded in the United States. An even further reduction in the tuberculosis death rate in 1948 is indicated by the estimated rate of 30.3, based on a 10 percent sample of death certificates.

Trend of the Death Rate

There has been a tremendous reduction in tuberculosis mortality since the turn of the century. In 1900,¹ tuberculosis was the second leading cause of death with a death rate of 194.4 per 100,000 population. By 1947, it had dropped to the seventh rank in the list of leading causes of death, and the death rate of 33.5 was less than one-fifth of that recorded in 1900.

A time series of tuberculosis mortality rates by race and sex from 1910¹ (the first year for which mortality statistics were tabulated by cause, race, and sex) through 1947 are shown in table 1 and figure 1. As seen in the chart, the tuberculosis mortality rate declined with few interruptions throughout this period. The decline was rather slow in the early years but subsequent to the peak in 1918 (which was associated with the great influenza pandemic), a much more rapid decline in the rate is evident.

The rate of decline was greater for whites than for nonwhites during 1920-41, but since 1941 the rates for nonwhites have been declining somewhat faster. Within each race group, the decline has been more

From the National Office of Vital Statistics. This is the sixth in a series of reports on tuberculosis mortality in the United States. See references (1) to (5) for preceding papers.

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¹ The data for 1900 through 1932 are for the expanding area of the Death Registration States. Beginning with 1933, the Death Registration Area has included the entire United States.

Table 1. *Death rates for tuberculosis (all forms) by race and sex: Death Registration States, 1910-47*

[Rates per 100,000 estimated midyear population in each specified group]

Year	All races			White			Nonwhite		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1947 ¹	33.5	43.0	24.2	27.1	36.3	18.0	88.0	100.6	76.0
1946 ¹	36.4	46.2	26.9	29.8	39.2	20.6	92.3	106.2	79.2
1945 ¹	40.1	53.0	28.6	32.7	45.1	21.7	102.6	120.9	86.5
1944 ¹	41.3	53.1	30.5	33.7	45.0	23.3	106.2	122.7	91.3
1943 ¹	42.6	52.9	32.6	34.3	44.4	24.7	112.9	126.4	100.0
1942 ¹	43.1	52.3	34.0	34.4	43.3	25.6	118.4	131.4	106.0
1941 ¹	44.5	52.5	36.5	35.4	43.3	27.4	124.2	134.3	114.5
1940 ¹	45.8	54.1	37.5	36.5	44.7	28.2	127.6	138.7	116.9
1939	47.1	54.0	40.1	37.7	44.7	30.6	129.1	137.3	121.1
1938	49.1	56.0	42.1	39.1	46.2	31.9	136.8	144.0	129.8
1937	53.8	61.3	46.2	43.4	50.9	35.8	145.0	155.0	135.2
1936	55.9	63.4	48.2	45.0	52.2	37.6	151.6	163.9	139.6
1935	55.1	62.1	47.9	44.9	51.7	37.8	145.1	155.4	135.0
1934	56.7	63.1	50.1	46.2	52.7	39.6	148.8	156.9	140.8
1933	59.6	65.4	53.7	48.5	54.3	42.6	157.7	165.6	149.9
1932	62.5	68.0	56.8	50.2	55.9	44.4	173.5	179.5	167.5
1931	67.8	73.5	62.0	54.2	60.1	48.2	191.1	197.4	184.9
1930	71.1	76.2	65.9	57.7	63.4	51.9	192.0	194.3	189.8
1929	75.3	79.3	71.3	62.4	67.1	57.6	192.0	191.5	192.6
1928	78.3	82.5	74.1	64.9	69.7	59.9	199.5	199.4	199.6
1927	79.6	82.9	76.1	66.5	70.7	62.2	208.7	205.4	212.1
1926	85.5	89.1	81.7	72.0	76.4	67.5	223.8	221.5	226.1
1925	84.8	88.0	81.4	71.6	75.8	67.2	221.3	215.8	226.7
1924	87.9	91.5	84.3	74.9	79.3	70.4	218.6	215.0	222.3
1923	91.7	95.4	87.9	79.5	84.4	74.5	213.1	206.3	220.0
1922	95.3	99.5	91.0	82.6	87.5	77.4	218.9	216.6	221.2
1921	97.6	101.1	94.1	84.7	89.1	80.2	239.3	233.7	245.1
1920	113.1	116.6	109.5	99.5	104.1	94.8	262.4	255.4	269.6
1919	125.6	134.2	116.9	110.9	121.1	100.4	284.0	275.5	292.7
1918	149.8	167.7	131.8	134.3	153.2	115.4	346.0	351.0	340.9
1917	143.5	158.7	127.7	129.6			332.6		
1916	138.4	152.9	123.3	125.7	141.3	109.5	322.7	322.3	323.0
1915	140.1	155.9	123.5	128.5	144.0	112.2	401.1	420.2	380.5
1914	141.7	158.5	123.9	130.3	146.9	112.9	396.7	417.8	374.0
1913	143.5	158.7	127.4	132.6	147.7	116.7	386.5	401.9	369.9
1912	145.4	159.3	130.7	136.0	149.4	121.8	429.0	459.9	394.5
1911	155.1	168.2	141.3	145.0	157.5	131.9	461.4	484.8	435.2
1910	153.8	167.1	139.8	145.9	158.2	132.8	445.5	479.3	406.8

¹ Excludes deaths among armed forces overseas. Rates based on population excluding armed forces overseas.

rapid for females than for males, particularly in recent years. This difference between the sexes in the rate of decline has been more marked among whites than among nonwhites. White females showed the greatest improvement, and the rate for this group dropped 86 percent between 1910 and 1947. For white males the decrease in rate between these years was 77 percent. Furthermore, the rate for white males levelled off between 1938 and 1942 and increases occurred between 1942 and 1945.² The decreases in the death rates from 1910 to 1947 for the two sex groups in the nonwhite population were quite similar, 79 percent for nonwhite males and 81 percent for nonwhite females.

² These increases in the rate for white males do not seem to indicate a true increase in tuberculosis mortality. They appear to have resulted from the fact that the populations for which the rates were computed excluded the predominantly healthy group serving in the armed forces overseas. For further data on this point, see the previous reports in this series.

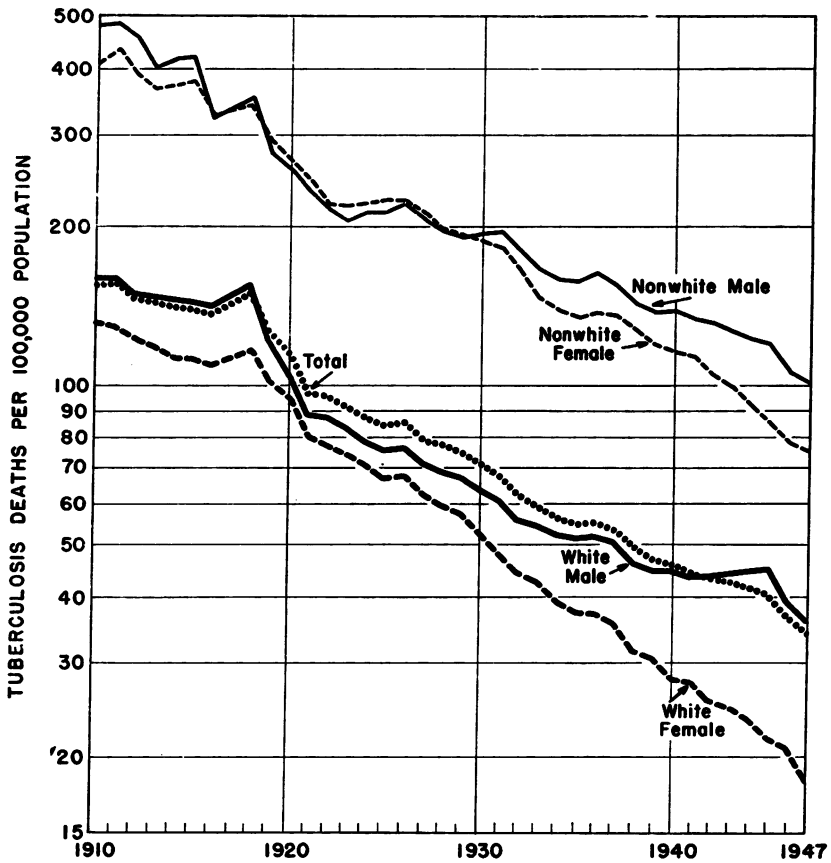


Figure 1. Death rates for tuberculosis (all forms), by race and sex: Death registration, States, 1910-47.

Respiratory and Nonrespiratory Tuberculosis

Of the total number of tuberculosis deaths registered during 1947, 44,462 or 92.5 percent were attributed to respiratory tuberculosis, and 3,602 or 7.5 percent to the nonrespiratory forms of the disease (table 2). The death rate for respiratory tuberculosis alone was 31.0 per 100,000 population, while the rate for all other forms was 2.5. For both respiratory and nonrespiratory infections, similar relationships are maintained for the race-sex groups, the mortality being higher among males than among females and among nonwhites than among whites.

The relative difference in the rates by sex is considerably greater for respiratory than for nonrespiratory forms of the disease. The respiratory tuberculosis death rate for males in 1947 was 40.1, or 82 percent greater than the rate of 22.0 for females. For nonrespiratory tuberculosis, the death rate for males was 2.8 as compared with 2.2 for females, a difference of 27 percent.

Table 2. Number of deaths and death rates for tuberculosis of the respiratory system and for other forms, by race and sex: United States, 1947

[Exclusive of deaths among armed forces overseas. Rates per 100,000 estimated midyear population in each specified group, excluding armed forces overseas]

Race and sex	Respiratory tuberculosis		Nonrespiratory tuberculosis	
	Number	Rate	Number	Rate
All races.....	44,462	31.0	3,602	2.5
Male.....	28,558	40.1	2,027	2.8
Female.....	15,904	22.0	1,575	2.2
White.....	32,504	25.3	2,279	1.8
Male.....	21,871	34.3	1,296	2.0
Female.....	10,633	16.5	983	1.5
Nonwhite.....	11,958	79.3	1,323	8.8
Male.....	6,687	90.7	731	9.9
Female.....	5,271	68.3	592	7.7

While the frequency of deaths from nonrespiratory tuberculosis has reached a very low level among whites, it is still of substantial importance in the nonwhite population. In 1947, the death rate for nonrespiratory tuberculosis was 1.8 per 100,000 population for whites, whereas the rate for nonwhites was 8.8, or almost 5 times as large. This race differential is much greater than that seen for respiratory tuberculosis. The respiratory tuberculosis death rate for nonwhites in 1947 was 79.3 or a little over 3 times the rate of 25.3 for whites.

Of the deaths in 1947 from nonrespiratory tuberculosis, 28.2 percent were caused by disseminated tuberculosis and 27.1 percent by tuberculosis of the meninges and central nervous system (table 3). An additional third (35.2 percent) resulted from tuberculosis of the intestines and peritoneum, of the vertebral column, and of the genito-urinary system.

In interpreting these figures, it is important to note that they represent only a part of the total number of cases in which non-

Table 3. Number of deaths and death rates for tuberculosis, by specified form: United States, 1947

[Exclusive of deaths among armed forces overseas. Rates per 100,000 estimated midyear population excluding armed forces overseas]

Form	Number of deaths	Percent of total	Death rate
Tuberculosis (all forms).....	48,064	100.0	33.5
Tuberculosis of the respiratory system.....	44,462	92.5	31.0
Tuberculosis (other forms).....	3,602	7.5	2.5
Tuberculosis of the meninges and central nervous system.....	977	2.0	.7
Tuberculosis of the intestines and peritoneum.....	478	1.0	.3
Tuberculosis of the vertebral column.....	433	.9	.3
Tuberculosis of the bones and joints (except vertebral column).....	153	.3	.1
Tuberculosis of the skin and subcutaneous cellular tissue.....	18	0.0	0.0
Tuberculosis of the lymphatic system (except bronchial, mediastinal, mesenteric, and retroperitoneal lymph nodes).....	75	.2	.1
Tuberculosis of the genito-urinary system.....	358	.7	.2
Tuberculosis of other organs.....	93	.2	.1
Disseminated tuberculosis.....	1,017	2.1	.7

respiratory involvement is mentioned on the death certificate. When respiratory and nonrespiratory forms of tuberculosis are jointly reported, respiratory tuberculosis is chosen as the primary cause for statistical classification. The effects of this classification procedure are shown by cross-tabulation of the regularly published primary cause data by secondary cause of death. Such a tabulation is available for 1940 and the data on nonrespiratory tuberculosis are summarized in table 4. Column 1 shows the number of deaths from tuberculosis in that year for which no respiratory infection was reported. Column 2 shows the numbers of cases in which a non-respiratory condition appeared on the death certificate and was classified as secondary to some other form of tuberculosis. The sum of the cases in columns 1 and 2 are shown in column 3.

Table 4. Number of deaths from nonrespiratory tuberculosis, by specified form: associated cause tabulation United States, 1940

Form	(1) Primary cause	(2) Secondary to other forms of tu- berculosis	(3) Total pri- mary and secondary
Nonrespiratory tuberculosis.....	4, 852	6, 428	11, 280
Tuberculosis of the meninges and central nervous system.....	1, 310	1, 396	2, 706
Tuberculosis of the intestines and peritoneum.....	904	2, 741	3, 645
Tuberculosis of the vertebral column.....	596	320	916
Tuberculosis of the bones and joints (except vertebral col- umn).....	256	291	547
Tuberculosis of the skin and subcutaneous cellular tissue.....	15	22	37
Tuberculosis of the lymphatic system (except bronchial, mediastinal, mesenteric, and retroperitoneal lymph nodes).....	131	121	252
Tuberculosis of the genito-urinary system.....	436	592	1, 028
Tuberculosis of other organs.....	117	204	321
Disseminated tuberculosis.....	1, 087	741	1, 828

In addition to the 4,852 deaths in 1940 for which nonrespiratory forms of tuberculosis were entered as the primary cause, there were 6,428 cases in which these conditions were listed as contributory to death from respiratory, or another nonrespiratory form of tuberculosis. The bulk of this group, 5,662, was associated with respiratory tuberculosis. The figures for tuberculosis of the intestines and peritoneum are particularly interesting. While 904 deaths were attributed to these forms of the disease as the primary cause, there were 2,715, or over 3 times as many cases, in which intestinal and peritoneal tuberculosis were associated with respiratory tuberculosis. In all, there were 3,645 deaths for which tuberculosis of the intestines and peritoneum were mentioned as either the primary or secondary cause, a number greater than the corresponding total for any of the other nonrespiratory forms. In the tabulation of primary cause alone, however, tuberculosis of the intestines and peritoneum ranked third in frequency among the non-respiratory forms of the disease.

Mortality by Age, Race, and Sex

The pattern formed by the age-specific tuberculosis mortality rates for the four race-sex groups in 1947 is in general similar to that seen in recent years (figure 2 and table 5). From a relatively low point for children under 5, the rates for all four groups decline to a minimum

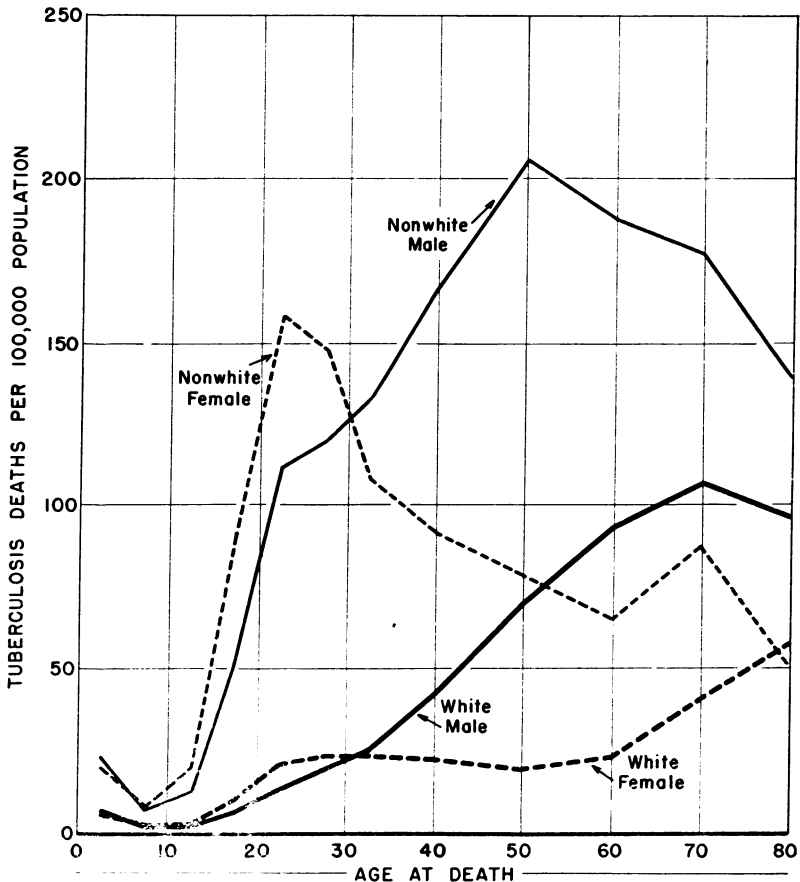


Figure 2. Death rates for tuberculosis (all forms) by age, race and sex: United States, 1947.

level for children 5-9 years of age. After this point, the variation in the rates with age becomes very distinct for each of the race-sex groups. The rates for white males rise continuously to a maximum of 106.5 in the age group 65-74. The rates for white females in the younger ages rise more rapidly and are somewhat higher than those for males, but through the adult ages remain fairly level and are lower than those for males. Only in the two oldest age groups does a pronounced increase in the rate for white females again occur.

Among nonwhite males, the tuberculosis mortality rates rise rapidly during childhood and the young adult years, reaching a peak of 205.2

Table 5. *Number of deaths from tuberculosis (all forms), death rates and percentage changes in rates, by age, race, and sex: United States, 1939-41 average, 1946 and 1947*

[Exclusive of deaths among armed forces overseas. Rates per 100,000 estimated midyear population in each specified group, excluding armed forces overseas]

Race, sex, and year													
All ages ¹	Under 5 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 years over	Not stated
NUMBER													
All races, both sexes:													
1947.....	48,064	1,099	226	373	1,720	3,612	3,896	3,801	8,314	8,865	7,959	5,585	2,544
1946.....	50,911	1,300	313	434	1,946	4,119	4,356	4,408	8,919	9,314	8,133	5,316	2,314
1939-41.....	60,429	1,613	475	799	3,388	5,719	6,236	5,811	10,846	10,373	7,960	5,104	2,052
Male:													
1947.....	30,585	579	107	148	637	1,440	1,685	1,919	5,338	6,845	6,377	3,971	1,522
1946.....	31,886	666	181	174	740	1,620	1,935	2,265	5,693	7,121	6,368	3,715	1,378
1939-41.....	35,433	831	251	306	1,234	2,306	2,782	3,038	6,803	7,650	5,786	3,308	1,109
Female:													
1947.....	17,479	520	119	225	1,083	2,172	2,211	1,882	2,976	2,020	1,622	1,615	1,022
1946.....	19,025	634	132	200	1,206	2,499	2,421	2,143	3,220	2,193	1,765	1,601	933
1939-41.....	24,996	782	224	493	2,154	3,413	3,454	2,773	4,043	2,723	2,174	1,796	943
White, both sexes:													
1947.....	34,783	724	122	150	764	1,795	2,209	2,406	5,778	6,726	6,823	4,947	2,321
1946.....	37,340	842	181	210	909	2,246	2,658	2,872	6,284	7,201	6,909	4,797	2,113
1939-41.....	43,282	1,014	265	372	1,617	3,180	3,828	3,827	7,605	8,183	6,865	4,596	1,904
Male:													
1947.....	23,167	377	57	63	296	717	988	1,206	3,752	5,314	5,401	3,531	1,305
1946.....	24,283	430	106	84	324	872	1,192	1,467	4,037	5,606	5,546	3,342	1,241
1939-41.....	26,330	520	141	132	589	1,239	1,690	2,000	4,848	6,143	5,042	2,955	1,013
Female:													
1947.....	11,616	347	65	87	468	1,078	1,221	1,200	2,026	1,412	1,332	1,416	965
1946.....	13,057	412	75	126	585	1,374	1,466	1,405	2,227	1,595	1,453	1,455	872
1939-41.....	16,932	494	124	220	1,028	1,941	2,138	1,827	2,757	2,040	1,823	1,641	891
Nonwhite, both sexes:													
1947.....	13,281	375	104	223	956	1,817	1,087	1,395	2,536	2,139	1,176	639	223
1946.....	13,571	458	132	224	1,037	1,873	1,696	2,635	2,635	2,113	1,134	519	201
1939-41.....	17,147	599	210	427	1,771	2,539	2,408	1,984	3,241	2,190	1,095	508	148
Male:													
1947.....	7,418	202	50	85	341	723	697	713	1,586	1,531	886	440	157
1946.....	7,603	236	75	90	416	748	743	798	1,642	1,515	822	373	137
1939-41.....	9,083	311	110	154	645	1,067	1,092	1,038	1,955	1,507	744	353	96
Female:													
1947.....	5,863	173	54	138	615	1,094	990	682	950	908	290	199	66
1946.....	5,968	222	57	134	621	1,125	955	738	993	538	312	146	64
1939-41.....	8,064	288	100	273	1,126	1,472	1,316	946	1,286	983	351	155	52

See footnote at end of table.

Table 5. Number of deaths from tuberculosis (all forms), death rates and percentage changes in rates, by age, race, and sex: United States, 1939-41

Race, sex, and year		All ages ¹	Under 5 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75 years over	Not stated
		RATE													
All races, both sexes:															
1947	1947	33.5	7.5	1.9	3.5	15.6	30.3	33.3	34.2	41.4	52.8	62.8	76.2	76.5	---
1946	1946	36.4	9.7	2.7	4.1	17.7	35.5	38.1	40.1	45.1	56.1	65.5	74.0	72.4	---
1945	1945	43.8	13.2	4.4	6.8	27.5	49.2	56.2	56.5	58.9	66.8	74.7	80.4	77.4	---
Male:															
1947	1947	43.0	7.8	1.7	2.7	11.7	24.7	29.7	35.6	54.0	81.8	99.4	111.5	99.8	---
1946	1946	46.2	9.7	3.1	3.2	13.9	29.5	35.3	42.5	58.5	85.8	101.5	106.3	93.7	---
1945	1945	53.5	15.4	4.6	5.2	20.0	40.5	51.1	59.7	73.8	96.1	105.1	105.0	89.2	---
Female:															
1947	1947	24.2	7.3	2.0	4.3	19.5	35.7	36.6	32.8	29.2	24.0	25.6	42.8	56.8	---
1946	1946	26.9	9.6	2.3	5.0	21.3	40.8	40.7	37.7	32.1	26.4	28.7	43.4	54.3	---
1945	1945	38.0	14.9	4.2	8.6	35.1	57.7	61.1	53.4	43.9	36.0	41.8	56.2	67.0	---
White, both sexes:															
1947	1947	27.1	5.6	1.2	1.6	7.9	17.0	21.1	24.2	32.0	44.0	57.7	72.2	75.3	---
1946	1946	29.8	7.2	1.8	2.3	9.4	21.8	26.0	29.2	35.3	47.6	60.8	71.5	71.3	---
1945	1945	36.5	10.9	2.8	3.6	14.8	30.7	38.7	41.4	46.0	57.6	69.4	77.7	76.8	---
Male:															
1947	1947	36.3	5.7	1.1	1.3	6.2	13.8	19.4	24.9	42.0	69.7	92.4	106.5	96.7	---
1946	1946	39.2	7.1	2.1	1.8	6.9	17.9	24.2	30.6	46.1	74.1	95.5	102.8	91.0	---
1945	1945	44.2	11.0	3.0	2.9	10.7	24.2	34.6	43.6	58.4	84.3	99.9	101.0	87.2	---
Female:															
1947	1947	18.0	5.5	1.3	1.9	9.6	20.0	22.7	23.5	22.1	18.5	22.6	40.0	57.3	---
1946	1946	20.6	7.2	1.5	2.8	11.7	25.3	27.7	27.8	24.8	21.1	25.4	42.0	54.5	---
1945	1945	28.7	10.8	2.7	4.3	18.9	37.0	42.7	39.3	33.5	29.5	37.7	54.9	67.7	---
Nonwhite, both sexes:															
1947	1947	88.0	21.2	6.4	16.0	71.4	135.0	134.4	119.0	126.6	140.3	127.5	133.4	91.4	---
1946	1946	92.3	27.7	8.4	16.3	78.1	142.8	138.5	131.8	132.8	142.6	126.7	110.7	87.0	---
1945	1945	126.9	45.1	15.3	30.8	129.2	202.2	201.5	190.8	171.9	167.7	142.5	118.6	85.6	---
Male:															
1947	1947	100.6	22.9	6.1	12.2	51.9	110.4	118.3	131.8	166.9	205.2	187.3	177.4	138.9	---
1946	1946	106.2	28.5	9.5	13.1	64.8	120.5	131.0	148.1	173.9	207.0	177.2	154.1	129.2	---
1945	1945	136.7	47.2	16.1	22.3	96.7	182.3	195.4	208.1	213.4	224.7	182.2	158.4	118.8	---
Female:															
1947	1947	76.0	19.5	6.6	19.7	90.0	158.3	148.9	108.1	90.2	78.0	64.6	86.1	50.4	---
1946	1946	79.2	26.8	7.3	19.4	90.5	162.8	145.1	117.9	95.4	79.7	72.4	64.6	51.2	---
1945	1945	117.5	43.1	14.5	39.2	160.0	219.6	203.9	174.9	132.7	107.5	97.6	75.5	56.5	---

PERCENTAGE CHANGE													
All races, both sexes:													
1946 to 1947.....	-8.0	-22.7	-29.6	-14.6	-11.9	-14.6	-12.6	-14.5	-8.2	-5.9	-4.1	+3.0	+5.7
1939-41 to 1947.....	-26.9	-50.7	-56.8	-48.5	-43.3	-38.4	-40.7	-39.5	-29.7	-21.0	-15.9	-5.2	-1.2
Male:													
1946 to 1947.....	-6.9	-19.6	-45.2	-15.6	-15.8	-16.3	-15.9	-16.2	-7.7	-4.7	-2.1	+4.9	+6.5
1939-41 to 1947.....	-19.6	-49.9	-63.0	-48.1	-41.5	-39.0	-41.9	-40.4	-26.8	-14.9	-6.3	+6.2	+11.9
Female:													
1946 to 1947.....	-10.0	-24.0	-13.0	-14.0	-8.5	-12.5	-10.1	-13.0	-9.0	-9.1	-10.8	-1.4	+4.6
1939-41 to 1947.....	-36.3	-61.0	-52.4	-50.0	-44.4	-38.1	-40.1	-38.6	-33.5	-33.3	-38.8	-26.8	-15.2
White, both sexes:													
1946.....	-9.1	-22.2	-33.3	-30.4	-16.0	-22.0	-18.8	-17.1	-9.3	-7.6	-5.1	+1.0	+5.6
1939-41 to 1947.....	-25.8	-48.6	-57.1	-55.6	-46.6	-44.6	-45.5	-41.5	-30.4	-23.6	-16.9	-7.1	-2.0
Male:													
1946 to 1947.....	-7.4	-19.7	-47.6	-27.8	-10.1	-22.9	-19.8	-18.6	-8.9	-5.9	-3.2	+3.6	+6.3
1939-41 to 1947.....	-17.9	-48.2	-63.3	-55.2	-42.1	-43.0	-43.9	-42.9	-28.1	-17.3	-7.5	+5.4	+10.9
Female:													
1946 to 1947.....	-12.6	-23.6	-13.3	-32.1	-17.9	-20.9	-18.1	-15.5	-10.9	-12.3	-11.0	-4.8	+5.1
1939-41 to 1947.....	-37.3	-49.1	-51.9	-55.8	-49.2	-45.9	-46.8	-40.2	-34.0	-37.3	-40.1	-27.1	-16.4
Nonwhite, both sexes:													
1946 to 1947.....	-4.7	-23.5	-23.8	-1.8	-8.6	-5.5	-3.0	-9.7	-4.7	-1.6	+6	+20.5	+5.1
1939-41 to 1947.....	-30.7	-63.0	-58.2	-48.1	-44.7	-33.2	-33.3	-37.6	-26.4	-16.3	-10.5	+12.5	+6.8
Male:													
1946 to 1947.....	-5.3	-19.6	-35.8	-6.9	-19.9	-8.4	-9.7	-11.0	-4.0	-9	+5.7	+15.1	+7.5
1939-41 to 1947.....	-26.4	-51.5	-62.1	-45.3	-46.3	-39.4	-39.5	-36.7	-21.8	-8.7	+2.8	+12.0	+16.9
Female:													
1946 to 1947.....	-4.0	-27.2	-9.6	+1.5	-6	-2.8	+2.6	-8.3	-5.5	-2.1	-10.8	+33.3	-1.6
1939-41 to 1947.....	-35.3	-64.8	-54.5	-49.7	-43.7	-27.9	-28.0	-38.2	-32.0	-27.4	-33.8	+14.0	-10.8

¹ Totals for rate and percentage figures include ages not stated.

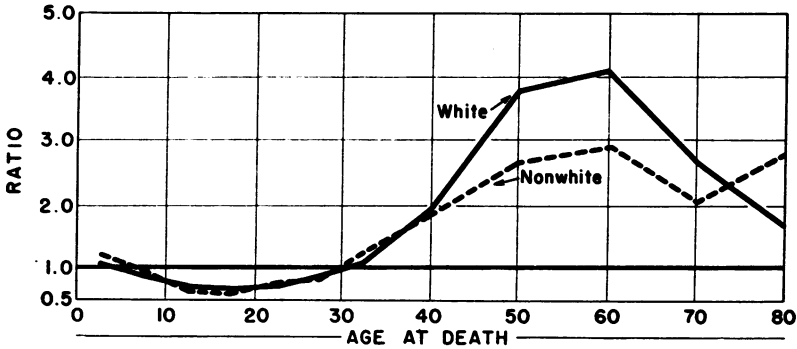


Figure 3. Ratio of tuberculosis death rates for males to death rates for females, by age and race: United States, 1947.

at the age group 45-54. This increase is more rapid between the ages of 10 and 24 than between 25 and 54. After 54, the rates for nonwhite males decrease gradually but remain well above those for the other groups in the population.

For nonwhite females in the age groups between 10 and 24, the rates exhibit a particularly sharp rise to a pronounced peak at 20-24 years, and are substantially higher than those for the other three race-

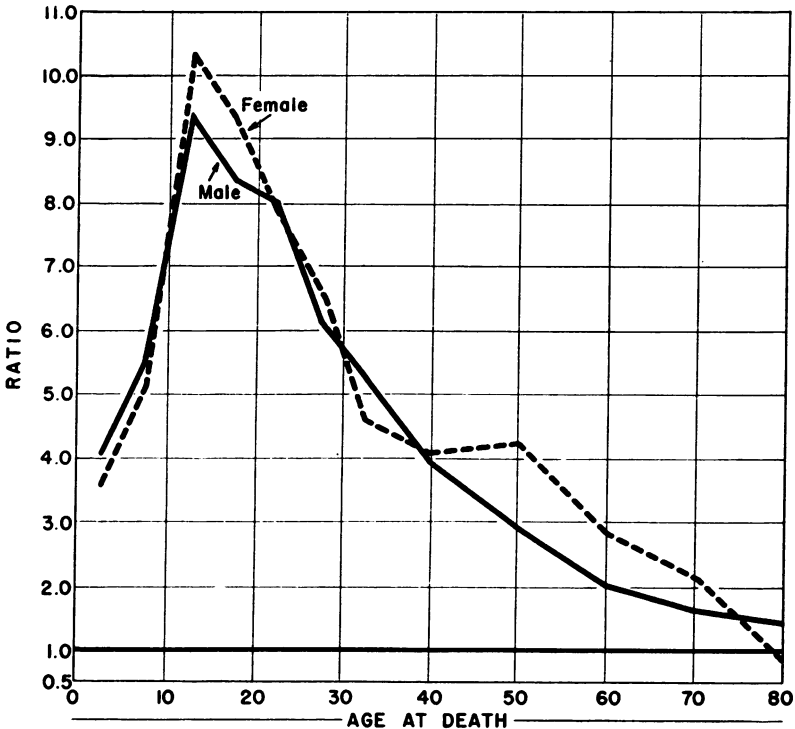


Figure 4. Ratio of tuberculosis death rates for nonwhites to death rates for whites, by age and sex: United States, 1947.

sex groups. Through the subsequent years, a gradual decline occurs which is interrupted once, in the age group 65-74.

While the general relations between the rates by race and sex are reflected by the absolute differences which are shown in figure 2, the relative differences are more easily discerned in the ratios presented in figures 3 and 4 and in table 6. As seen in table 6, the tuberculosis

Table 6. Ratios of death rates for tuberculosis (all forms) at each age, by race and sex: United States, 1947

Age at death	Ratio of death rate for males to death rate for females			Ratio of death rate for non-whites to death rate for whites		
	All races	White	Non-white	Both sexes	Male	Female
Under 5 years:	1.07	1.04	1.17	3.79	4.02	3.55
5-9.....	.85	.85	.92	5.33	5.55	5.08
10-14.....	.63	.68	.62	10.00	9.38	10.37
15-19.....	.60	.65	.58	9.04	8.37	9.38
20-24.....	.69	.69	.70	7.94	8.00	7.92
25-29.....	.81	.85	.79	6.37	6.10	6.56
30-34.....	1.09	1.06	1.22	4.92	5.29	4.60
35-44.....	1.85	1.90	1.85	3.96	3.97	4.08
45-54.....	3.41	3.77	2.63	3.19	2.94	4.22
55-64.....	3.88	4.09	2.90	2.21	2.03	2.86
65-74.....	2.61	2.66	2.06	1.85	1.67	2.15
75 and over.....	1.76	1.69	2.76	1.21	1.44	.88

death rates for males in 1947 are lower than those for females in the younger ages (except in the age group under 5), become somewhat higher in the age group 30-34, and then remain at least twice as high.

The ratios of the male-to-female rates for whites and nonwhites are very similar in the younger age groups (figure 3). In the age range 45-74 however, the sex differential is considerably greater in the white than in the nonwhite population. For persons 55-64 years, among whom the peak differential occurs, the mortality risk from tuberculosis is four times greater among white males than among white females, and three times greater among nonwhite males than among nonwhite females.

The race differential in tuberculosis mortality is even more striking. The 1947 rates for nonwhites are very much higher than those for whites at all ages except 75 years and over (figure 4). The ratios of the tuberculosis mortality rates for nonwhites to those for whites rise from 3.8 in the youngest age group to a very pronounced peak of 10.0 for the age group 10-14. From that point, the differences diminish gradually and are smallest in the oldest age group.

The data in table 5 afford a comparison of tuberculosis mortality in the two postwar years, 1946 and 1947, with the experience for the 3-year period immediately preceding the war. For almost all population groups, substantial decreases are seen. In general, relatively greater gains were made by females than by males, and by younger than by older persons.

The average annual death rate for males for the 1939-41 period was 53.5 as compared with a rate of 43.0 in 1947, a decline of 20 percent. The drop in the corresponding rates for females, from 38.0 to 24.2, was 36 percent, or almost twice as large. Among males, there is a substantial difference between the races in degree of decline—18 percent for whites and 26 percent for nonwhites. Among females, however, the relative decreases for whites and nonwhites were almost the same—37 and 35 percent, respectively.

The tuberculosis mortality rates for all races and both sexes declined in each age group from 1939-41 to 1947. In general, the degree of decrease varied inversely with age, being greatest in the youngest groups and becoming gradually smaller with increasing age. The proportionate changes in the rates between the prewar period and 1947 for the four race-sex groups are depicted in figure 5. From the lower end of the age scale through 34 years no important differences by race or sex appear. In the age groups between 35 and 64 years, however, the decreases become gradually smaller for both white and nonwhite males but are slightly greater for females of both racial groups.

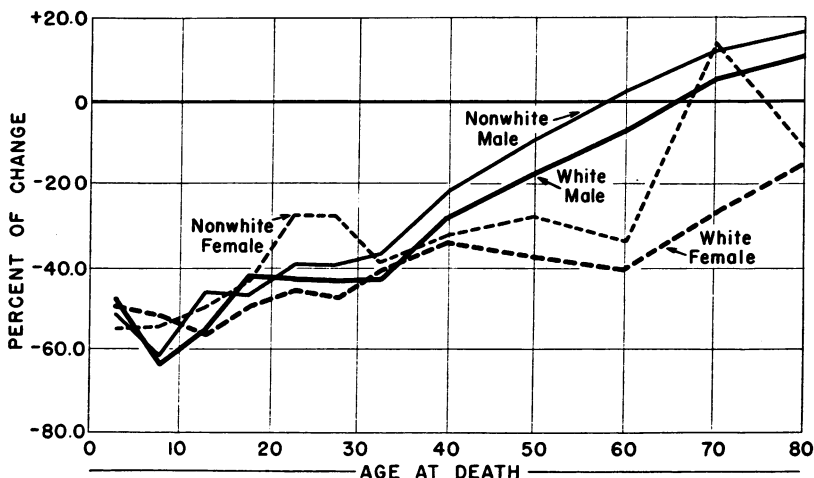


Figure 5. Percentage changes in tuberculosis mortality rates by age, race, and sex, 1939-41 average, 1947.

After age 64, consistent decreases are no longer seen. For white and nonwhite males in the two oldest age groups, and for nonwhite females 65-74 years of age, the 1947 rate exceeded that for the period 1939-41. Only for white females were the rates for 1947 well below those for the earlier period.

In the population groups for which increases have been noted, the differences between the 1947 and the average 1939-41 rates range between 5 and 17 percent. However, the series of annual rates for this period give no clear indication of an upward movement in mortality. For

the years 1939 through 1947, the death rates for both white and non-white males in the two oldest age groups have remained at a fairly constant level, varying within relatively narrow limits and exhibiting no definite upward or downward movement. The death rate for nonwhite females 65-74 years, while following a highly irregular course (having somewhat the shape of the letter "W") have likewise shown no definite trend.

Death Rates by State

Tuberculosis death rates by State of residence showed wide variation in 1947 (table 7). The lowest rate recorded was 11.8 for residents of Iowa. The highest, 100.0 for Arizona, was over 8 times as great and very much greater than the next highest rate of 60.3 for New Mexico. When the extreme rates are excluded, however, most of the 1947 State rates are fairly similar, and those for almost half (21) of the States fall within the narrow range of 30 to 40 deaths per 100,000 population.

In general, the geographic distribution of tuberculosis mortality rates in 1947 is similar to that for previous years. As seen in figure 6, States in the lower quartile were generally located in the north central and northwestern areas, although Maine and New Hampshire were also in this group. States in the upper quartile formed a solid belt of relatively high tuberculosis mortality along the southernmost part of the country from Arizona on the west to Louisiana and Arkansas on the east, then northeast to Maryland and Delaware on the Atlantic coast.

Crude death rates (i. e., for the total population) are affected by demographic as well as other factors, which must be considered in evaluating the significance of State-to-State variations in the death rates. Such an evaluation is limited at present by the lack of State population statistics by characteristics such as age, race, and sex. Other factors to be considered are State-to-State differences in the accuracy and completeness with which tuberculosis deaths are reported, and certain statistical practices in the reallocation of deaths.

For example, the extremely high rate for Arizona may in large part have been due to the influx to this State of tuberculous patients from other parts of the country. Although deaths of nonresidents are assigned to their usual place of residence, persons who have remained in a State for 1 year or longer are classified as residents. Consequently, many deaths assigned to Arizona would probably have been allocated elsewhere if the patient's home State had been considered his residence.

The death rates for residents of almost all of the States showed a decrease between 1946 and 1947. Many of the decreases were

Table 7. Number of deaths from tuberculosis (all forms), death rates and percentage changes in rates: United States and each State, 1939-41 average, 1946, and 1947

[By place of residence. Exclusive of deaths among armed forces overseas. Rates per 100,000 estimated total midyear population present in area]

Area	Number			Rate			Percentage change in rate	
	1947	1946	1939-41 average	1947	1946	1939-41 average ¹	1946 to 1947	1939-41 to 1947
United States.....	48,064	50,911	60,429	33.5	36.4	45.8	-8.0	-26.9
Alabama.....	1,147	1,122	1,518	40.5	40.0	53.7	+1.3	-24.6
Arizona.....	644	727	724	100.0	122.0	141.9	-18.0	-29.5
Arkansas.....	802	699	1,009	41.9	37.1	51.7	+12.9	-19.0
California.....	3,455	3,959	3,838	35.2	41.8	54.5	-15.8	-35.4
Colorado.....	375	401	503	32.8	35.4	44.5	-7.4	-26.3
Connecticut.....	504	589	616	25.5	30.8	36.1	-17.2	-29.4
Delaware.....	132	133	152	45.4	47.3	56.7	-4.0	-19.9
District of Columbia.....	497	488	548	57.7	57.9	78.3	-3	-26.3
Florida.....	793	721	944	34.1	32.2	49.0	+5.9	-30.4
Georgia.....	1,054	1,070	1,510	33.6	34.2	48.0	-1.8	-30.0
Idaho.....	71	67	99	13.5	12.8	19.0	-5.5	-28.9
Illinois.....	2,842	3,014	3,663	33.8	37.7	46.5	-10.3	-27.3
Indiana.....	1,083	1,128	1,398	28.2	30.1	40.6	-6.3	-30.5
Iowa.....	307	329	450	11.8	12.8	17.8	-7.8	-33.7
Kansas.....	322	307	423	16.7	16.4	23.4	+1.8	-28.6
Kentucky.....	1,472	1,602	1,961	52.9	58.4	69.4	-9.4	-23.8
Louisiana.....	986	1,089	1,347	38.8	43.1	56.4	-10.0	-31.2
Maine.....	193	216	268	21.8	25.0	31.7	-12.8	-31.2
Maryland.....	1,172	1,186	1,268	54.8	55.9	68.7	-2.0	-20.2
Massachusetts.....	1,586	1,664	1,623	34.2	36.9	37.4	-7.3	-8.6
Michigan.....	1,675	1,891	1,828	27.6	32.2	34.8	-14.3	-20.7
Minnesota.....	579	585	758	20.0	20.7	27.2	-3.4	-26.5
Mississippi.....	729	741	1,074	34.8	36.0	48.5	-3.3	-28.2
Missouri.....	1,291	1,276	1,783	33.1	33.3	46.9	-6	-29.4
Montana.....	152	164	235	31.1	34.3	42.3	-9.3	-26.5
Nebraska.....	199	177	225	15.5	13.8	17.3	+12.3	-10.4
Nevada.....	44	73	70	31.7	54.9	62.2	-42.3	-49.0
New Hampshire.....	83	116	133	15.5	22.8	27.1	-32.0	-42.8
New Jersey.....	1,555	1,647	1,852	33.6	36.5	44.6	-7.9	-24.7
New Mexico.....	330	388	357	60.3	73.9	67.0	-18.4	-10.0
New York.....	5,286	5,601	6,244	37.3	40.5	46.5	-7.9	-19.8
North Carolina.....	1,128	1,182	1,598	30.5	32.2	44.4	-5.3	-31.3
North Dakota.....	88	96	127	16.3	17.9	20.1	-8.9	-18.9
Ohio.....	2,377	2,583	2,913	31.0	34.5	42.2	-10.1	-26.5
Oklahoma.....	701	708	1,104	30.7	30.8	49.3	-3	-37.7
Oregon.....	314	311	307	20.3	21.7	27.7	-6.5	-26.7
Pennsylvania.....	3,467	3,697	4,231	33.0	36.2	42.8	-8.8	-22.9
Rhode Island.....	233	232	265	31.3	31.3	37.5	0	-16.5
South Carolina.....	557	562	876	28.5	29.5	45.7	-3.4	-37.6
South Dakota.....	167	172	197	28.9	31.2	31.2	-7.4	-7.4
Tennessee.....	1,544	1,631	2,298	50.0	54.3	78.5	-7.9	-36.3
Texas.....	2,791	2,923	3,814	39.3	42.0	59.1	-6.4	-33.5
Utah.....	80	83	86	12.5	13.1	15.5	-4.6	-19.4
Vermont.....	119	129	144	32.5	36.8	40.4	-11.7	-19.6
Virginia.....	1,244	1,300	1,628	41.5	43.6	59.4	-4.8	-30.1
Washington.....	592	738	689	25.1	32.2	39.2	-22.0	-36.0
West Virginia.....	683	718	880	36.3	39.2	46.2	-7.4	-21.4
Wisconsin.....	585	648	806	18.0	20.5	25.8	-12.2	-30.2
Wyoming.....	34	28	45	12.8	10.6	17.5	+20.8	-26.9

¹ Based on average 1939-41 population.

relatively small and probably within the limits of chance variation. Decreases in rate of from 0.3 to 5 percent occurred for 11 States; from 6 to 10 percent for 18 States; from 12 to 15 percent for 4 States;

and 16 percent or greater for 7 States. The largest relative decreases were 22 percent for Washington, 32 percent for New Hampshire, and 42 percent for Nevada.

For two States, Rhode Island, Oklahoma, and for the District of Columbia, the rates were the same in both years or differed by less than 0.5 percent. Of the seven States which showed some increase in rates, only that for Arkansas was statistically significant. The rate rose from 37.1 to 41.9, an increase of 13 percent. However, this rise followed an even sharper decline of 17 percent from 1945 to 1946, and the 1947 rate was lower than that for 1944 (44.8).

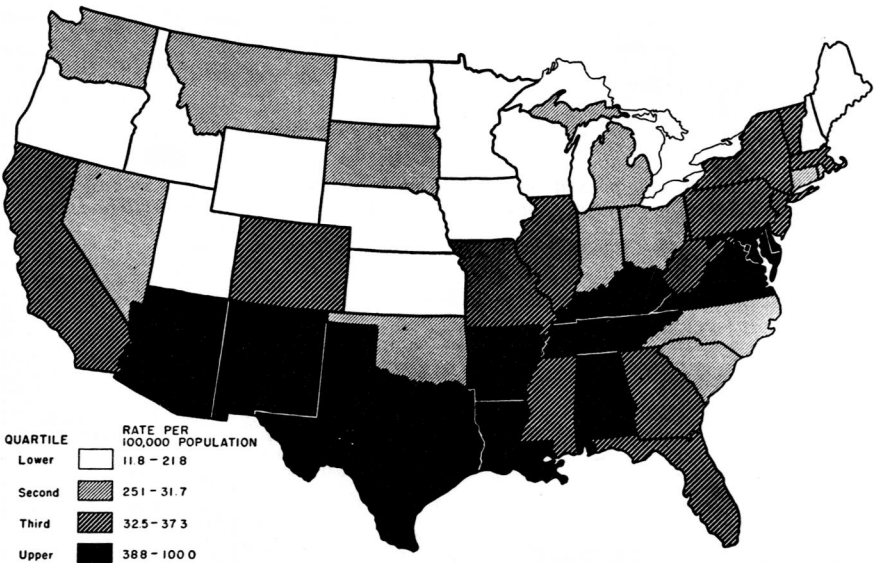


Figure 6. Death rates for tuberculosis (all forms) by State, 1947.

In all States, the tuberculosis death rate for 1947 was well below the prewar level. Only two States showed a decrease in rate of less than 10 percent between the 1939-41 average and 1947. These were South Dakota and Massachusetts, with declines of 7 percent and 9 percent, respectively. The reductions which occurred for residents of other areas ranged from 10 to 19 percent for 6 States, from 20 to 29 percent for 22 States and the District of Columbia, and from 30 to 38 percent for 16 States. The largest relative drops, over 40 percent, occurred for New Hampshire and Nevada residents.

The abrupt fall in the tuberculosis death rate for Nevada was concentrated almost entirely in the current year. As noted above, the Nevada rate fell 42 percent from 1946 to 1947, or almost as much as the total drop of 49 percent between the 1939-41 period and 1947. While the annual rates for Nevada have shown some fluctuation since

the 1939-41 period, the drop is much greater than any which has occurred in recent years and probably cannot be fully evaluated until data for subsequent years become available.

Deaths in Institutions

Since persons with active respiratory tuberculosis constitute the major source of tuberculous infection in the United States, a primary means of control is protection of the healthy community through early isolation of the infectious case. Although mortality statistics cannot measure how effectively this is being accomplished, the data on deaths which occur outside of institutions represent an index of the minimum reservoir for spread of the disease. Thus it is significant that as late as 1947, almost one-third of all persons who died of respiratory tuberculosis—14,294—died outside of hospitals and sanatoria (table 8). However, it is encouraging to note that the

Table 8. *Number and percent of deaths from respiratory tuberculosis in institutions, by type of service and type of control: United States, 1939-41 average, 1946 and 1947*

Type of service and type of control	Number			Percent		
	1947	1946	1939-41 average	1947	1946	1939-41 average
Total.....	44,462	46,939	55,444	100.0	100.0	100.0
Deaths not in institutions.....	14,294	15,439	24,519	32.1	32.9	44.2
Deaths in institutions.....	30,168	31,500	30,925	67.9	67.1	55.8
Type of service:						
General hospitals.....	11,451	11,888	12,450	25.8	25.3	22.5
Tuberculosis hospitals.....	13,721	14,290	13,041	30.9	30.4	23.5
Nervous and mental institutions.....	3,982	4,111	3,528	9.0	8.8	6.4
Other and unknown.....	1,014	1,211	1,906	2.3	2.6	3.4
Type of control:						
Federal.....	3,268	3,441	2,541	7.4	7.3	4.6
State.....	7,854	7,990		17.7	17.0	
County and city.....	14,254	14,690	21,871	32.1	31.3	39.4
Nonprofit.....	3,420	3,988	4,727	7.7	8.5	8.5
Proprietary and unknown.....	1,372	1,391	1,786	3.1	3.0	3.2

frequency of death in the home has become smaller in recent years. The proportion of deaths from respiratory tuberculosis which occurred outside of institutions in 1939-41 was 44.2 percent, in 1946 was 32.9 percent, and in 1947 was 32.1 percent.

Also encouraging is the fact that the increase in the proportion of respiratory tuberculosis deaths in tuberculosis institutions³ has been greater than that in general hospitals. Since patients who die in general hospitals have usually been admitted late in the course of the disease, most of them are a source of danger to others for some period before admission. In the prewar period 1939-41, almost the same

³ According to the classification used by the National Office of Vital Statistics, institutional deaths are classified according to the major type of service rendered. Thus, only those institutions devoted primarily to the care of tuberculous patients are considered tuberculosis institutions. Deaths occurring in a specialized tuberculosis section of a general hospital are allocated to general hospitals. The same procedure is followed for mental and other types of hospitals.

number of deaths from respiratory tuberculosis occurred in general hospitals, 22.5 percent, as in tuberculosis institutions, 23.5 percent. By 1947, the difference in these proportions was much greater: 25.8

Table 9. Number of deaths from respiratory tuberculosis in institutions, by type of service and type of control: United States and each State, 1947

[By place of residence. Exclusive of deaths among armed forces overseas]

Area	Total	Deaths not in institutions	Deaths in institutions	Type of service					Type of control				
				General hospital	Tuberculosis hospital	Nervous and mental hospitals	Other and unknown institutions		Federal	State	County and city	Non-profit	Proprietary and unknown
United States	44,462	14,294	30,168	11,451	13,721	3,982	1,014	3,268	7,854	14,254	3,420	1,372	
Alabama	1,055	653	402	142	185	60	15	90	75	141	77	19	
Arizona	595	209	386	241	102	21	22	187	27	91	47	34	
Arkansas	764	366	398	78	246	68	6	56	294	14	23	11	
California	3,175	537	2,638	1,582	750	214	92	314	219	1,820	149	136	
Colorado	341	90	251	146	74	21	10	46	21	52	98	34	
Connecticut	461	82	379	118	187	50	24	30	226	42	65	16	
Delaware	116	38	78	11	65		2	4	63	1	10		
Dist. of Columbia	455	44	411	243	142	24	2	95	2	301	8	5	
Florida	753	187	566	209	278	47	32	63	276	176	36	15	
Georgia	966	493	473	122	235	113	3	65	270	116	13	9	
Idaho	59	26	33	19	2	7	5	3	7	4	12	7	
Illinois	2,628	481	2,147	862	949	295	41	152	280	1,457	184	74	
Indiana	972	393	579	186	294	82	17	62	137	305	59	16	
Iowa	287	67	220	54	100	59	7	19	119	50	28	4	
Kansas	298	84	214	51	113	43	7	31	148	9	22	4	
Kentucky	1,346	893	453	126	204	111	12	94	106	174	40	39	
Louisiana	927	428	499	319	89	79	12	81	351	39	12	16	
Maine	174	60	114	27	60	23	4	8	78		23	5	
Maryland	1,108	344	764	322	361	61	20	77	382	207	87	11	
Massachusetts	1,481	224	1,257	294	716	202	45	134	305	674	104	40	
Michigan	1,518	206	1,312	401	726	98	87	41	198	694	277	102	
Minnesota	516	59	457	126	218	110	3	30	149	239	32	7	
Mississippi	682	471	211	90	75	42	4	58	86	19	37	11	
Missouri	1,212	385	827	292	436	75	24	86	189	464	74	14	
Montana	130	46	84	37	40	5	2	18	38	9	8	11	
Nebraska	187	36	151	63	59	27	2	11	84	31	16	9	
Nevada	38	7	31	28	2		1	6		19	4	2	
New Hampshire	76	27	49	14	24	10	1	4	21	4	7	13	
New Jersey	1,459	227	1,232	276	736	200	20	25	165	864	143	35	
New Mexico	289	124	165	85	68	7	5	81	38		36	10	
New York	4,972	710	4,262	1,869	1,793	452	148	252	566	2,679	669	96	
North Carolina	1,047	386	661	89	467	88	17	115	291	193	40	22	
North Dakota	77	17	60	12	33	15		6	47	1	4	2	
Ohio	2,160	603	1,557	559	747	210	41	124	219	966	110	138	
Oklahoma	656	353	303	76	161	62	4	66	192	5	15	25	
Oregon	284	66	218	55	112	37	14	25	91	67	23	12	
Pennsylvania	3,204	960	2,244	1,030	791	301	122	159	692	865	409	119	
Rhode Island	216	46	170	19	86	30	35	7	104	36	11	12	
South Carolina	507	145	362	57	236	67	2	28	224	84	19	7	
South Dakota	145	46	99	32	46	20	1	42	38	1	15	3	
Tennessee	1,430	942	488	165	226	78	19	61	82	228	92	25	
Texas	2,629	1,594	1,035	387	445	173	30	176	296	371	113	79	
Utah	76	18	58	28	27		3	11	25	11	6	5	
Vermont	114	44	70	7	44	18	1	2	59	1	5	3	
Virginia	1,159	598	561	175	263	95	28	67	229	147	67	51	
Washington	532	73	459	162	213	76	8	86	73	230	35	35	
West Virginia	618	308	310	62	166	77	5	24	234	14	23	15	
Wisconsin	539	92	447	90	32	25	9	40	27	336	32	12	
Wyoming	29	6	23	13	6	4		6	11	3	1	2	

percent occurred in general hospitals and 30.9 percent in tuberculosis institutions. The most rapid increase has occurred in the proportions of respiratory tuberculosis deaths in nervous and mental institutions. This proportion rose from 6.4 percent in the 1939-41 period to 9.0 percent in 1947.

Of the deaths from respiratory tuberculosis in 1947, 32.1 percent took place in county and city institutions, and 17.7 percent were cared for in State institutions. Almost the same numbers occurred in nonprofit as in Federal hospitals, 7.7 percent and 7.4 percent, respectively, and 2.7 percent occurred in private institutions.

The increase in the proportion of respiratory tuberculosis deaths occurring in institutions is entirely accounted for by the increased proportion of deaths in public hospitals. The percentage of deaths from respiratory tuberculosis occurring in State, county, and city institutions increased from 39.4 percent in 1939-41 to 49.7 percent in 1947. On the other hand, the percentage of deaths in nonprofit institutions declined from 8.5 percent in 1939-41 to 7.7 percent in 1947, and the proportion occurring in proprietary institutions has remained about the same.

Table 9 presents the distribution of respiratory tuberculosis deaths in institutions for residents of each State in 1947, by type of service and control. Among the States, the proportions of respiratory tuberculosis deaths in 1947 which occurred in institutions varied widely, ranging from 30.9 percent for residents of Mississippi to 88.6 percent for Minnesota. The percentage of institutionalized deaths for the District of Columbia, 90.3, exceeded that for any of the States.

Hospitalization at death in 1947 was lowest for residents of four contiguous southern States, Mississippi, Kentucky, Tennessee, and Alabama, and for the State of Texas. For these areas, over 60 percent of the deaths from respiratory tuberculosis occurred in the home. The largest relative numbers of deaths from respiratory tuberculosis in institutions (over 85 percent) were recorded for residents of the north central States, Michigan and Minnesota, as well as Washington and New York.

Summary

This paper, the sixth in a series of annual reports, presents statistics of tuberculosis mortality in the United States for 1947 and compares them with data for 1946 and for the prewar period 1939-41.

In 1947, there were 48,064 deaths from tuberculosis in the United States, a decrease of 6 percent from 1946. The death rate in 1947 was 33.5 per 100,000 population, 8 percent below the rate for 1946.

The decrease in the tuberculosis death rate between 1946 and 1947 continued the downward trend which has prevailed with few interruptions since 1910. The drop in the rate between 1910 and 1947

was smaller for white males (77 percent) than for white females (86 percent) and somewhat smaller for nonwhite males (79 percent) than for nonwhite females (81 percent).

Of the total deaths from tuberculosis in 1947, 92.5 percent were attributed to respiratory tuberculosis. For both respiratory and non-respiratory tuberculosis, mortality was substantially greater for nonwhites than for whites and for males than for females. The sex differential was considerably greater for respiratory than for nonrespiratory tuberculosis, whereas the race differential was greater for the nonrespiratory forms.

As a result of the method of classifying associated causes of death, the recorded frequency of death from nonrespiratory tuberculosis markedly understates the number of deaths with nonrespiratory involvement. The effect of this factor is indicated by a tabulation of deaths in 1940 by primary and secondary causes.

Death rates for tuberculosis in the white population and for non-white males were lower in the childhood and young adult years than in the older age groups, while for nonwhite females the highest rates occurred in the young adult group. Among children and young adults, the rates were higher for females than for males; among older persons, the rates were much higher for males. The rates for nonwhites were far above those for whites in all age groups except 75 years and over.

Death rates for tuberculosis (all forms) were lower in 1947 than in 1939-41 for almost all population groups. In general, greater gains were made by females than by males, and by younger than by older persons. The only increases in rate recorded were for males in the age groups over 55 years and for nonwhite females 65-74 years of age.

Tuberculosis death rates in 1947 by State of residence ranged from 11.8 for Iowa to 100.0 for Arizona. Between 1946 and 1947, decreases in rate occurred for 40 States, the rate for 1 State remained the same, and increases occurred for 7 States. Between 1939-41 and 1947, decreases in rate occurred for all States.

Of the deaths from respiratory tuberculosis in 1947, 14,294 or 32.1 percent occurred outside of institutions, and 30,168 or 67.9 percent occurred in institutions. Of the total respiratory tuberculosis deaths, 25.8 percent occurred in general hospitals, 30.9 percent in tuberculosis hospitals and sanatoria, and 9.0 percent in mental hospitals.

The distribution of deaths from respiratory tuberculosis by type of control of the institution was: county and city hospitals, 32.1 percent; State institutions, 17.7 percent; nonprofit institutions, 7.7 percent; Federal institutions, 7.4 percent; private institutions, 2.7 percent.

Among the States, the proportions of deaths from respiratory tuberculosis in 1947 which occurred in institutions varied widely

from 30.9 percent for residents of Mississippi to 88.6 percent for Minnesota, and 90.3 percent for the District of Columbia.

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A Collodion Agglutination Test for Histoplasmosis

By Capt. SAMUEL SASLAW, MC, AUS, and CHARLOTTE C. CAMPBELL*

Previous studies from this laboratory (1) have shown that sera from rabbits immunized with *Histoplasma capsulatum* agglutinated collodion particles sensitized with histoplasmin. These observations suggested the use of the collodion agglutination technique as an additional means of investigating certain immunologic aspects of human histoplasmosis.

Since the exact significance of the skin test reaction to histoplasmin is not known, the collodion agglutination test has been employed with human sera in this study as a medium for determining whether correlation between histoplasmin skin-sensitivity and humoral antibodies against histoplasmin can be demonstrated. An attempt has also been made to determine the potential value of the test as a diagnostic tool in histoplasmosis.

Materials and Methods

Test Subjects. Three categories of persons were studied. Group I consisted of healthy normal volunteers on whom histoplasmin skin test studies were done simultaneously with serum antibody titrations. Group II consisted of persons whose sera were selected at random from specimens submitted for routine Wasserman and Kahn tests; no skin sensitivity data were available for comparison to the antibody titrations against histoplasmin. Similar antibody determinations

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were made in group III which consisted of skin-test positive, proved cases of histoplasmosis.

Skin-testing. Each person in group I was injected intradermally on the anterior surface of the forearm with 0.1 cc. of a 1:1000 dilution of histoplasmin (lot H-40¹). Readings were made after 48 hours. Reactions showing induration or edema measuring 5 mm. or more in diameter were considered positive.

Serum. Blood from group I volunteers was obtained by venipuncture immediately prior to skin testing. The sera from these persons were tested for antibody content 24 hours after the specimens were obtained, whereas the serum samples in groups II and III were tested within 24 hours of receipt.

Collodion Agglutination Test. Collodion particles were prepared according to the method of Calvetti (2), and the test conducted exactly as described in the previous report (1). Human sera, however, were inactivated at 56° C. for 30 minutes instead of the 60° C. temperature required to eliminate certain nonspecific reactions encountered in our studies with rabbit serum. Agglutinations were recorded in decreasing gradations of 4+, 3+, 2+ and 1+. A reaction was considered 4+ when the agglutinated particles were flaky and 1-1½ mm. or more in diameter; 3+ when the suspending menstruum remained clear but the still flaky particles were slightly less than 1 mm. in diameter; 2+ when the particles appeared to be finely granular in a slightly cloudy suspending menstruum and 1+ when the exceedingly fine but still readily visible particles were suspended in a solution more cloudy than in a 2+ reaction.

Results

Group I. Volunteers for this study were obtained from the personnel of the Army Medical Department Research and Graduate School. This group was unique in that most of the members were not originally residents of the District of Columbia but represented a markedly heterogeneous geographical population. Only 13 of the 197 persons studied were native Washingtonians. The remaining subjects included representatives of 40 States as well as Canada, the Philippine Islands, Brazil and Turkey.

Skin Test Response. Positive skin tests were obtained in 71 of 197, or 36 percent of the persons studied. Negative reactions were recorded in 126. Since this number is obviously not great enough to be of statistical value when broken down State by State, no attempt will be made to evaluate such data in this report. It was interesting to note, however, that relatively few positive reactions were obtained in natives outside the area "endemic" for histoplasmosis.

¹ Furnished by Dr. Arden Howell, Jr., Public Health Service, Duke University, Durham, N. C.

Agglutination Reactions. Collodion particles sensitized with histoplasmin were agglutinated by the sera of 60 (30.4 percent) subjects in serum dilutions varying from 1:5 to 1:40. In none of these did the intensity of the reaction exceed 2+. Approximately 90 percent were no stronger than 1+. As noted in table 1, 13 (21.7 percent) of the 60 "positive" reactions occurred in 1:5 dilutions of serum, 29 (48.3 percent) in 1:10, 14 (23.3 percent) in 1:20 and only 4 (6.7 percent) in 1:40.

Table 1. *Classification of 197 normal volunteers according to histoplasmin sensitivity and agglutinative capacity of sera*

Number persons	Skin sensitivity to H-40	Number of sera causing weak agglutinations (1+ - 2+)					
		Dilutions					Total
		1:5	1:10	1:20	1:40	1:80	
71.....	Positive.....	5	9	9	2	0	25
126.....	Negative.....	8	20	5	2	0	35
Total 197.....		13	29	14	4	0	60

Twenty-five sera from the skin-test positive group of 71 and 35 sera from the skin-test negative group of 126 persons gave "positive" agglutinations. Thus, in normal persons the correlation between skin tests and serum-agglutination tests appears to be masked by non-specific reactions.

In accord with the results obtained in group III below, it can be assumed that the weak 1+ and 2+ reactions obtained in low serum dilutions can be termed as nonspecific and of no significance.

Group II. A total of 235 serum specimens which had been submitted for routine Wasserman and Kahn tests were selected at random and tested for antibodies against histoplasmin. No skin testing was done in this group. The results obtained in this study were essentially in accord with those noted in group I, in that 76 (32.3 percent) of the sera gave weak 1+ to 2+ reactions in low dilutions. Here again the reactions were predominantly only 1+ in intensity and were more frequent in the 1:5 and 1:10 dilutions of serum.

Group III. Serum was obtained from six persons known to have histoplasmosis. Three of this group were bed-patients in an acute phase of the disease while three were ambulatory chronic cases. All were skin-test positive.

CASE 1. Serum obtained from an acutely ill 8-year-old boy on the 15th day of his illness showed 4+ agglutination of sensitized collodion particles up through serum dilutions of 1:80 and a 3+ reaction at 1:160. The intensity of reaction and the high titer was considerably greater than anything observed in the "normal"

sera above. A second specimen was drawn on the 42d day when the patient was showing considerable improvement clinically but was still running a low-grade fever as compared to the previous stormy febrile course. As noted in table 2, his serum titer had dropped somewhat on the 42d day with 4+ reactions occurring only through 1:20 dilutions of serum; 3+ and 2+ reactions remained at 1:40 and 1:80, respectively. Another specimen obtained on the 78th day of illness showed a further slight decrease in agglutinating capacity as indicated by 4+ reactions through 1:10 and 3+, 2+ and 1+ reactions in serum dilutions of 1:20, 1:40 and 1:80, respectively.

CASE 2. Serum obtained on the 13th day of illness in an acutely sick 5-year-old boy yielded 3+ agglutinations in serum dilutions up to 1:10 and a 1+ reaction at 1:20. Only the intensity of reaction differed from results obtained in normal volunteers (1+ to 2+). A second specimen taken on the 40th day of the disease, however, caused 4+ agglutinations through serum dilutions of 1:20 and 2+ and 1+ reactions in 1:40 and 1:80, respectively.

Table 2. *Collodion agglutination tests, corresponding complement fixation titers and related data in six cases of histoplasmosis with positive skin tests*

Case number	Phase of disease	Serum specimen number	Interval between specimens (days)	Degree of agglutination serum dilutions							Corresponding complement fixation titers ¹
				1:5	1:10	1:20	1:40	1:80	1:160	1:320	
1	Acute.....	1	(²)	4+	4+	4+	4+	4+	3+	±	1:1280
		2	27	4+	4+	4+	3+	2+	±	-----	1:640
		3	36	4+	4+	3+	2+	1+	-----	-----	1:80
2	...do.....	1	(³)	3+	3+	1+	-----	-----	-----	-----	1:40
		2	27	4+	4+	4+	2+	1+	-----	-----	1:160
3	...do.....	1	-----	4+	4+	4+	3+	2+	1+	-----	1:160
4	Chronic.....	1	-----	2+	1+	±	±	-----	-----	-----	1:20
		2	30	2+	1+	±	-----	-----	-----	-----	1:20
5	...do.....	1	-----	2+	1+	±	-----	-----	-----	-----	1:20
		2	30	2+	1+	±	-----	-----	-----	-----	1:20
6	...do.....	1	-----	3+	2+	1+	-----	-----	-----	-----	⁴ AC

¹ For further description of complement fixation with yeast antigens (6).

² 15th day of illness.

³ 13th day of illness.

⁴ Anticomplementary.

CASE 3. A single specimen obtained from a white male adult in the acute phase of the disease showed 4+ agglutination through serum dilutions of 1:20 and 3+, 2+ and 1+ reactions in 1:40, 1:80 and 1:160 dilutions, respectively.

CASES 4, 5, 6. The sera of three ambulatory adults known to have had the disease from 2 to 5 years failed to show any 4+ reactions. In two of this set two separate serum specimens obtained approximately one month apart showed essentially the same results. As noted in table 2 the sera of cases 4 and 5 gave 2+ reactions in 1:5 dilutions and 1+ in 1:10. This was essentially the type of reaction observed in slightly less than one-third of the "normal" volunteers. The serum of case 6 caused a 3+ reaction at 1:5 the intensity of which was slightly but not significantly greater than "normal" levels; 2+ and 1+ reactions were obtained in 1:10 and 1:20 serum dilutions, respectively.

Comparable results were obtained with the sera in group III when yeast-phase antigens of *H. capsulatum* were employed in the complement fixation test previously described from this laboratory (3, 4). These studies will be described in a separate report (5). However, for comparative purposes, the complement-fixing titers of the respective sera in group III are included in table 2.

Discussion

Preliminary studies employing the collodion agglutination test for detecting antibodies against histoplasmin in human sera are described. Microscopic collodion particles sensitized with histoplasmin, lot H-40, were strongly agglutinated in the presence of serum obtained from patients in the acute phase of histoplasmosis. These reactions were similar to those obtained in the presence of immune rabbit serum (1). Since detailed studies in this laboratory have shown that six different lots of histoplasmin from several sources were equally adaptable to the test (6), this phenomenon cannot be attributed to the reactivity of this single isolated lot.

In contrast to the strong reactions observed in sera from patients acutely ill with histoplasmosis, the serum of persons with chronic histoplasmosis agglutinated the collodion particles only weakly in a manner similar to that noted in less than one-third of normal volunteers.

In a group of 197 normal healthy volunteers of which 36 percent were found to be skin-test positive, 30.4 percent of the total gave weak agglutinations. None of these latter sera showed agglutinations stronger than 2+ while approximately 90 percent of those reacting gave weak 1+ reactions in low titer. The fact that the sera of 25 of the 71 skin-test positives as well as 35 of the skin-test negative group of 126 gave similar weak reactions suggested that reactions of 2+ or less in low titer (1:5 to 1:20) were nonspecific. Thus the correlation was masked between the skin test reaction to histoplasmin and the reaction of humoral antibodies. Similarly, 32.3 percent of a random sampling of 235 serum specimens which had been submitted for routine Wasserman and Kahn tests showed weak 1+ to 2+ reactions in low titer.

The above results appear significant as witnessed by the marked contrast in the intensity of agglutination and the higher titers of sera from patients with acute histoplasmosis as compared to sera from chronic cases or normal persons. Although much more material will have to be examined before definite conclusions can be made, observations made on the sera of a patient in the acute phase (case 1) wherein the titer of the serum was appreciably decreased after 2 months of the disease in addition to the lack of significant circulating antibodies in three chronic cases (4, 5, 6) imply a transient type of antibody response to *H. capsulatum* following infection.

The greater simplicity of the collodion agglutination test as well as the correlative results obtained with the complement fixation test suggests that this technique is worthy of further trial and analysis as a possible adjunct in the diagnosis and perhaps prognosis of acute histoplasmosis.

Summary

In the use of the collodion agglutination test for the detection of antibodies in human sera it has been shown that:

1. Collodion particles sensitized with histoplasmin were agglutinated strongly (4+) in the presence of sera from all of three patients in the acute phase of histoplasmosis; the sera from three patients in the chronic stage of the disease gave no significant results.

2. Weak (possibly nonspecific) 1+ 'or 2+ agglutinations were observed in low dilutions in 30.4 percent of a group of 197 healthy volunteers. Of the 60 persons giving weak agglutinations, 25 were from the positive skin-test group of 71 persons, and 35 were from the negative skin-test group of 126 persons. Similarly, 32.3 percent of 235 serum specimens from persons not skin tested gave weak non-specific agglutinations. The correlation between skin tests and serum agglutination tests appears to be masked in normal persons by non-specific reactions.

3. The results obtained in the collodion agglutination test parallel those observed with yeast-phase antigens in the complement-fixation test.

4. It is suggested that the collodion agglutination test be given further trial and study as a possible adjunct in the diagnosis of acute histoplasmosis.

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Characteristics of Commercial X-ray Intensifying Screens and Films—IV

By WILLARD W. VAN ALLEN*

Of fundamental and practical importance in evaluating films, screens and developers used in roentgenography is the characteristic of speed. As in photography, the speed of a film is a measure of the quantity of radiation, or exposure, necessary to produce a given effect. For many years it was customary to describe the speed of a roentgenographic film or film-screen combination by comparison with an arbitrarily chosen combination as a "standard." This method is open to the obvious objections that the "standard" combination may not remain constant and that the standard used by one investigator may be different from that used by another. This is especially true since screen and film manufacturers are constantly striving to improve their products, with the result that a combination chosen as standard today may have quite different characteristics when the next purchase is made.

In order to obviate these difficulties and establish the sensitometry of roentgenographic materials on a quantitative basis, the Electronic Laboratory of the Division of Tuberculosis undertook investigation of the factors determining the speed of roentgenographic materials and established a tentative definition of speed and the standard conditions for its measurement.¹

In the course of this investigation it was found that the speed was dependent not only on the particular combination of film and screen involved, but also on the developer used. Rather than attempt to assign speed values to films, screens, and developers separately and invent a system for combining these separate numbers to describe adequately the speed of a given combination, it was felt to be more practical to evaluate directly the speed of each film-screen-developer combination as such.

As defined by this laboratory, the speed of a film-screen-developer combination is the reciprocal of the exposure, measured in deciroentgens, required to produce a density of 1.0 above base and fog. The following standard conditions are assumed:

1. Time of development to be that recommended by the manufacturer of the developer in question.

From the Rockville Laboratory, Division of Tuberculosis. For previous reports in this series see *PUB. HEALTH REP.* 61: 312 (1946), 61: 1324 (1946), and 63: 746 (1948).

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¹ A complete report of this study will appear in a forthcoming issue of *RADIOLOGY*.

2. Developer temperature to be 20° C.
3. Continuous mechanical agitation to be maintained during development.
4. Length of the exposure to be 1.0 second.
5. Exposing radiation to have a half-value-layer of 4 mm. of aluminum.
6. Temperature of film and screen during exposure to be 25° C.

Table 1. *Speed of fluoroscopic screens. Development: 8 minutes in Eastman X-ray developer (dry ingredients)*

Screen		Film			
Type	Date received	Eastman blue photofluore	Anseo	Fluorapid	Dupont fluorofilm
			a ¹	b ²	
D (uncoated).....	1945.....	60	70	-----	65
	Nov. 1947.....	130	130	155	130
	May 1948.....	100	115	-----	105
	Nov. 1948.....	115	120	150	115
DC (cleanable).....	July 1947.....	95	105	-----	100
	July 1947.....	110	115	140	110
	Nov. 1947.....	95	95	120	95
	May 1948.....	85	105	-----	95
666D.....	Dec. 1947.....	75	80	100	80
	Apr. 1948.....	100	100	125	100
	Apr. 1948.....	105	105	130	105
	Dec. 1948.....	100	100	125	100
		Eastman green photofluore			
B.....	1946.....	60	-----	-----	-----
	1946.....	70	-----	-----	-----
B-2.....	1947.....	95	-----	-----	-----
E-2.....	1947.....	140	-----	-----	-----
	1948.....	140	-----	-----	-----

¹ a=early sample (1948).

² b=recent sample (1948).

Having defined the speed and standard conditions as above, the laboratory is now engaged in determining the speed of film-screen-developer combinations of practical interest, and the results will be published in these pages from time to time, including additions and revisions as required.

It soon became apparent, however, that, at least in certain cases, notably in combinations involving fluoroscopic screens, such a wide variation exists in the speed of different samples of the same screen type that it is quite impossible to assign a speed number to such a combination. This variation in screens of the same type may be due to efforts toward improvement on the part of the manufacturer or to variations in the manufacturing process or both. This inconsistency is apparent from the results shown in table 1, where the speeds of eight different samples of D screens and four samples of 666D screens are shown in combination with three types of film and

one developer. It is equally obvious that any attempt to average the speed values would be misleading and therefore worthless. The table also serves to indicate the relative speeds of the three films when processed in Eastman X-ray developer.

It should be borne in mind that the speeds of fluoroscopic film-screen combinations were determined with the screen and film in direct contact and therefore do not represent the over-all speeds of these combinations in photofluorographic apparatus where the additional

Table 2. *Speed of the intensifying screens. Development: 4½ minutes in Eastman X-ray developer (dry ingredients)*

Screen	Film	
	Eastman blue brand	Dupont 508
Buck:		
Extra speed	85	55
Midspeed	70	50
Definition	60	40
Eastman:		
Ultraspeed	140	90
Fine Grain	110	70
Definition	80	50
Patterson:		
High speed	120	80
Parspeed	90	55
Detail	25	20

Table 3. *Fog and Gamma. Development: Eastman X-ray developer (dry ingredients) in open tank*

Film	Use	Fog	Gamma	Time (minutes)
Anscu fluorapid	Photofluorographic	0.19	2.1	8
Du Pont fluorofilm	do	.21	1.9	8
Eastman blue photofluore	do	.07	1.8	
Eastman green photofluore	do	.17	2.0	8
Du Pont 508	Roentgenographic	.11	2.8	4½
Eastman blue brand	do	.18	2.6	4½

effects of separation and lens result in speeds less than those shown in the table. For this reason they should be interpreted as relative speeds only. The speed of these film-screen combinations with other developers will be reported in later issues.

Table 2 gives the speeds, determined as above, of intensifying screens in combination with two films and Eastman X-ray Developer. As for fluoroscopic screens, this table will also be enlarged in subsequent issues to include other films and developers.

Table 3 shows the average values of fog and gamma (contrast) observed for the films reported above. It should be noted that these values are for development in an open tank with continuous mechanical agitation at 68° F. for the times listed.

INCIDENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED MARCH 12, 1949

Summary

A total of 28,520 cases of measles was reported during the current week, as compared with 27,727 last week and a 5-year median of 20,408. Increases totaling 2,131 cases, the largest in the Middle Atlantic and South Atlantic areas, occurred in 5 of the 9 geographic divisions, partly offset by a net decline of 1,338 cases in the New England, West North Central, and South Central areas. The 6 States showing increases of more than 147 cases (last week's figures in parentheses), are as follows: New York, 2,316 (2,042); Pennsylvania, 2,777 (2,474); Virginia, 1,197 (615); North Carolina, 827 (598); Alabama, 847 (611); and California, 2,017 (1,559). In past years for which data are available, the peak of weekly incidence of measles has infrequently been reported before the end of March.

The incidence of influenza declined during the week from a total of 4,609 cases last week to 3,948 currently. Only 6 States reported more than 87 cases, only 2 of which (Virginia, 387—last week 367; and Arkansas, 193—last week 180) showed increases. The total to date is 45,307, same period last year (also the 5-year median) 107,067.

Of 64 cases of poliomyelities, 13 occurred in California (last week 7), 7 in Texas (last week 5), 6 in Mississippi (last week 1), and 4 each in Michigan and Washington. No other State reported more than 3 cases.

Of 8 cases of smallpox reported (the largest number for any week since May 17, 1947), 4 occurred in Texas, 2 in South Dakota (last week 1), and 1 each in Ohio and Kansas.

A total of 9,829 deaths was recorded during the week in 94 large cities in the United States, as compared with 9,801 last week, 9,829 and 10,365, respectively, for the corresponding weeks of 1948 and 1947, and a 3-year (1946–47) median of 9,829. The total for the year to date is 98,877, corresponding period last year, 103,363. Infant deaths for the week totaled 682, last week 634, 3-year median 639. The cumulative figure is 6,725, same period last year 7,040.

Telegraphic case reports from State health officers for week ended Mar. 12, 1949

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Polio-myelitis	Rocky Mt. spotted fever	Scarlet fever	Small-pox	Tularemia	Typhoid and paratyphoid fever ^d	Whooping cough	Rabies in animals
NEW ENGLAND														
Maine.....	1	—	—	412	—	8	—	—	7	—	—	—	5	—
New Hampshire.....	—	—	1	338	1	1	—	—	3	—	—	—	—	—
Vermont.....	—	—	—	333	—	—	1	—	4	—	—	1	3	—
Massachusetts.....	9	2	—	1,364	1	—	—	—	263	—	—	—	64	—
Rhode Island.....	—	—	—	363	—	5	—	—	4	—	—	—	10	—
Connecticut.....	—	—	19	507	1	65	—	—	56	—	—	—	10	—
MIDDLE ATLANTIC														
New York.....	9	—	(b) 4	2,310	5	369	—	—	331	—	—	3	109	6
New Jersey.....	3	—	—	1,138	2	73	—	—	174	—	—	2	64	1
Pennsylvania.....	8	—	(b)	2,777	6	—	—	—	305	—	—	3	60	1
EAST NORTH CENTRAL														
Ohio.....	5	—	—	275	9	33	1	—	387	1	—	1	51	16
Indiana.....	13	—	2	128	—	12	—	—	112	—	—	—	16	27
Illinois.....	—	1	13	111	5	151	—	—	204	—	1	2	28	1
Michigan.....	1	—	21	785	1	52	4	—	439	—	—	2	53	2
Wisconsin.....	1	—	81	940	3	14	—	—	71	—	—	—	29	—
WEST NORTH CENTRAL														
Minnesota.....	2	—	—	111	1	12	2	—	36	—	—	—	2	8
Iowa.....	—	—	—	34	1	2	—	—	24	—	—	—	5	—
Missouri.....	—	—	6	559	2	25	1	—	22	—	—	—	7	—
North Dakota.....	—	—	13	36	1	—	—	—	3	—	—	—	6	—
South Dakota.....	—	—	—	21	—	1	—	—	6	2	—	—	—	—
Nebraska.....	—	—	4	28	—	2	1	—	13	—	—	—	—	—
Kansas.....	1	—	4	1,291	—	11	—	—	34	1	—	—	7	—
SOUTH ATLANTIC														
Delaware.....	—	—	—	16	—	—	—	—	14	—	—	—	—	—
Maryland.....	4	—	2	1,519	1	53	—	—	47	—	—	1	13	—
District of Columbia.....	3	—	—	82	9	—	—	—	8	—	—	—	—	—
Virginia.....	4	—	387	1,197	2	165	—	—	22	—	1	—	37	2
West Virginia.....	4	—	78	61	—	—	3	—	31	—	—	—	22	—
North Carolina.....	6	—	—	827	2	—	—	—	20	—	2	—	22	—
South Carolina.....	4	1	549	293	1	174	3	—	5	—	—	—	25	4
Georgia.....	1	—	—	407	—	26	—	—	8	—	—	3	—	12
Florida.....	3	—	10	137	8	8	2	—	4	—	1	1	—	3

EAST SOUTH CENTRAL									
Kentucky.....	9	371	108	---	---	47	---	---	25
Tennessee.....	2	420	50	1	---	23	---	2	9
Alabama.....	5	117	45	1	---	16	---	1	15
Mississippi.....	8	96	33	1	6	4	---	3	2
WEST SOUTH CENTRAL									
Arkansas.....	3	541	48	---	---	2	---	2	9
Louisiana.....	6	43	99	1	---	9	---	4	13
Oklahoma.....	2	77	40	1	---	6	---	1	1
Texas.....	19	3,750	586	9	7	49	4	---	123
MOUNTAIN									
Montana.....	1	70	16	1	---	24	---	---	1
Idaho.....	6	129	7	---	---	e 31	---	---	1
Wyoming.....	---	17	16	---	---	7	---	---	---
Colorado.....	5	36	24	2	---	13	---	2	6
New Mexico.....	7	238	42	1	---	24	---	2	19
Arizona.....	6	151	29	1	1	16	---	1	18
Utah.....	---	58	3	---	3	10	---	---	16
Nevada.....	---	---	---	---	---	---	---	---	---
PACIFIC									
Washington.....	1	518	9	1	4	56	---	---	14
Oregon.....	1	411	33	1	---	12	---	---	8
California.....	12	2,017	48	5	13	e 147	---	5	67
Total.....	167	3,948	28,520	73	64	3,123	8	18	50
Median, 1944-48.....	261	5,532	20,408	202	33	4,171	9	14	1,003
Year to date, 10 weeks.....	1,802	45,307	189,750	870	872	28,232	20	300	10,440
Median, 1944-48.....	2,972	107,067	122,429	2,047	373	32,501	72	208	22,390
Seasonal low week ends.....	27th	(30th)	(35th)	(37th)	(11th)	(32nd)	(35th)	(11th)	437
Since seasonal low week.....	July 10.	July 31.	Sept. 4.	Sept. 18.	Mar. 20	Aug. 14.	Sept. 4.	Mar. 20	3,533
Median, 1943-48.....	10,538	81,577	242,143	1,714	28,199	50,930	35	4,674	20,473
		150,025	148,553	3,551	13,780	71,072	148		47,091

^a Period ended earlier than Saturday.

^b New York City and Philadelphia only, respectively.

^c Including cases reported as streptococcal infection and septic sore throat.

^d Including paratyphoid fever, reported separately, as follows: Vermont 1; New York 1; Georgia 3; Louisiana 3; Texas 2; Colorado 2; Arizona 1; California 2; salmonella infections, not included, were reported separately as follows: Massachusetts 1; New York 2; Maryland 1.

Alaska: Influenza 15; measles 4; pneumonia 1; streptococcal sore throat 3.

Territory of Hawaii: Influenza 740; measles 194; poliomyelitis 2; 702 delayed influenza reports for January and February included.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended February 26, 1949.—During the week ended February 26, 1949, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox.....		44	1	325	780	30	86	66	374	1,706
Diphtheria.....				12	1	1	1	2	1	18
Dysentery, bacillary.....				2						2
Encephalitis, infectious.....					1					1
German measles.....				199	38		17	6	12	272
Influenza.....		15			43	4			3	65
Measles.....		238	8	453	422	231	316	328	152	2,148
Meningitis, meningococcal.....		1	1			1	1		1	5
Mumps.....		23	1	136	217	39	49	22	115	602
Scarlet fever.....		1	3	134	91	5	2	22	16	274
Tuberculosis (all forms).....		9	13	109	47	20	15	64	29	306
Typhoid and paratyphoid fever.....			1	7						8
Undulant fever.....					2	1				3
Venereal diseases:										
Gonorrhea.....	1	5	15	78	48	25	20	33	90	315
Syphilis.....	3	7	13	110	37	7	8	6	24	215
Other forms.....									2	2
Whooping cough.....		1		143	30	12	11	3	7	207

COLOMBIA

Medellin—Typhoid fever.—Information dated March 8, 1949, states that typhoid fever has been declared epidemic in Medellin, Colombia, and vicinity. The water and milk supply are reported to be contaminated.

CUBA

Habana—Communicable diseases—4 weeks ended January 29, 1949.—During the 4 weeks ended January 29, 1949, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chickenpox.....	3		Poliomyelitis.....	3	
Diphtheria.....	10		Scarlet fever.....	1	
Malaria.....	3		Tuberculosis.....	16	
Measles.....	6		Typhoid fever.....	4	

Provinces—Notifiable diseases—4 weeks ended January 29, 1949.—During the 4 weeks ended January 29, 1949, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana ¹	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer.....	6	16	12	22		16	72
Chickenpox.....		2		3	2		7
Diphtheria.....	1	24	4	1	2	3	35
Hookworm disease.....		1					1
Leprosy.....		2				1	3
Malaria.....	1	12		4	5	254	276
Measles.....		3					3
Polioomyelitis.....		5				2	7
Scarlet fever.....		1					1
Tuberculosis.....	6	30	13	14	14	23	100
Typhoid fever.....		8	2	6	8	35	59
Whooping cough.....		2					2
Yaws.....						1	1

¹ Includes the city of Habana.

GOLD COAST

Cerebrospinal meningitis.—An outbreak of cerebrospinal meningitis which is considered epidemic is reported in the Northern Territories, Gold Coast. Since January 1, 1949, a total of 3,659 cases with 293 deaths is stated to have occurred. About 50 percent of the new cases and 30 percent of the deaths were reported during the week February 24–March 1.

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

Note.—The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Plague

India—Cawnpore.—During the week ended March 5, 1949, 14 cases of plague were reported in Cawnpore, India.

Peru.—During the period November 1–30, 1948, 21 cases of plague with 2 deaths were reported in Peru, distributed as follows: Ancash Department, Huauri Province, Yurayaco 4 cases, 2 deaths, Acopara 2 cases; Lima Department, Chancay Province, Chambara Farm 1 case, Huaura Valley, Vilcahuaura Farm 1 case, Huarmey 2 cases; Piura Department, Huancabamba Province, Huaricanchi 1 case, Lauche 3 cases, Quispe 3 cases, Sondor 4 cases.

The 9 cases of plague reported in December 1948 (see Public Health Reports for February 25, 1949, p. 254) were distributed as follows: Cajamarca Department, Chota Province, Saramba 2 cases; Lambayeque Department, Chiclayo Province, Carbonera 1 case, 1 death, Fundo San Jose 1 case, Chaloque Farm 1 case, Monsefu 1

case; Lima Department, Huacho Province, St. Maria, Tambo Blanco, 1 case; Piura Department, Huancabamba Province, Lauche 1 case (not yet confirmed), Matara 1 case.

Smallpox

Arabia—Aden Protectorate.—Smallpox has been reported in the port of Makalla, Aden Protectorate, Arabia, as follows: For the period February 22–28, 1949, 14 cases; February 28–March 5, 4 cases.

China.—Smallpox has been reported in China as follows: During the period February 1–10, 1949, Canton, 28 cases; February 11–20, Amoy, 26 cases; week ended February 26, Shanghai, 18 cases.

India.—Smallpox has been reported in cities in India as follows: Week ended February 19, 1949, Ahmedabad, 46 cases, 18 deaths; week ended February 26, Bombay, 75 cases, 23 deaths, Madras, 43 cases, 4 deaths; week ended March 5, Bombay, 77 cases; Madras, 44 cases.

Indochina (French).—During the week ended February 26, 1949, 695 cases of smallpox with 315 deaths were reported in French Indochina, including 622 cases, 305 deaths, in Luang-Prabang Province, Laos State, and 55 cases, 3 deaths, in Tonkin State.

Netherlands Indies—Java—Batavia.—During the week ended February 19, 1949, 31 cases of smallpox were reported in Batavia, Java.

Pakistan—Chittagong.—For the week ended March 5, 1949, 17 cases of smallpox with 6 deaths were reported in Chittagong, Pakistan.

DEATHS DURING WEEK ENDED MAR. 5, 1949

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Mar. 5, 1949	Correspond- ing week, 1948
Data for 94 large cities of the United States:		
Total deaths	9, 801	9, 832
Median for 3 prior years	9, 829	—
Total deaths, first 9 weeks of year	89, 048	93, 534
Deaths under 1 year of age	634	675
Median for 3 prior years	671	—
Deaths under 1 year of age, first 9 weeks of year	6, 043	6, 400
Data from industrial insurance companies:		
Policies in force	70, 565, 749	71, 199, 020
Number of death claims	13, 645	15, 519
Death claims per 1,000 policies in force, annual rate	10. 1	11. 4
Death claims per 1,000 policies, first 9 weeks of year, annual rate	9. 6	10. 6