Public Health Reports

Vol. 60 • JULY 20, 1945 • *No. 29*

INFLUENZA AND PNEUMONIA EXCESS MORTALITY AT SPECIFIC AGES IN THE EPIDEMIC OF 1943–44, WITH COMPARATIVE DATA FOR PRECEDING EPIDEMICS [1]

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Twenty-four pandemics of influenza involving two or more continents have occurred in the 450 years since the discovery of America (*15*). North America was involved in 14 of these great epidemics but the other 10 were apparently confined to Europe and Asia. In many instances few details are known about these pandemics and only in recent years have specific studies been made of the smaller outbreaks which precede and follow the major peaks.

HISTORICAL REVIEW OF EPIDEMICS IN THE UNITED STATES

The epidemic of December–January 1943–44 was the sixteenth in the United States since the pandemic of 1918–19 (figs. 1 and 2). Although some of these outbreaks were very small, they all show considerable excess over the normal seasonal expectancy of influenza and pneumonia mortality in at least 3 of the 9 geographic sections of the country and were accompanied by large numbers of influenza cases reported to health departments or as recorded in family surveys (*2*, *3*) and among industrial employees. Since the beginning of 1920 these epidemics have caused an estimated total of nearly 400,000 deaths from influenza and penumonia in this country in excess of the normal expectancy, as compared with 550,000 excess deaths from those causes in 1918–19 (table 1).

From about 1910 to 1918 there was not much change in the level of mortality from influenza and penumonia during nonepidemic periods. After the pandemic of 1918–19 the general level of mortality in non-

[1] Received for publication February 1, 1945. From the Division of Public Health Methods. This is the first of two sections of a paper on influenza and pneumonia excess mortality. The second section will appear in an early issue of the PUBLIC HEALTH REPORTS. Data on age variation in mortality in the 10-percent sample of the United States for the 1943–44 epidemic were furnished to the Public Health Service by the Bureau of the Census prior to publication (*20*). For assistance in the preparation of this paper the author is indebted to Dr. Mary Gover and Mrs. Maryland Y. Pennell.

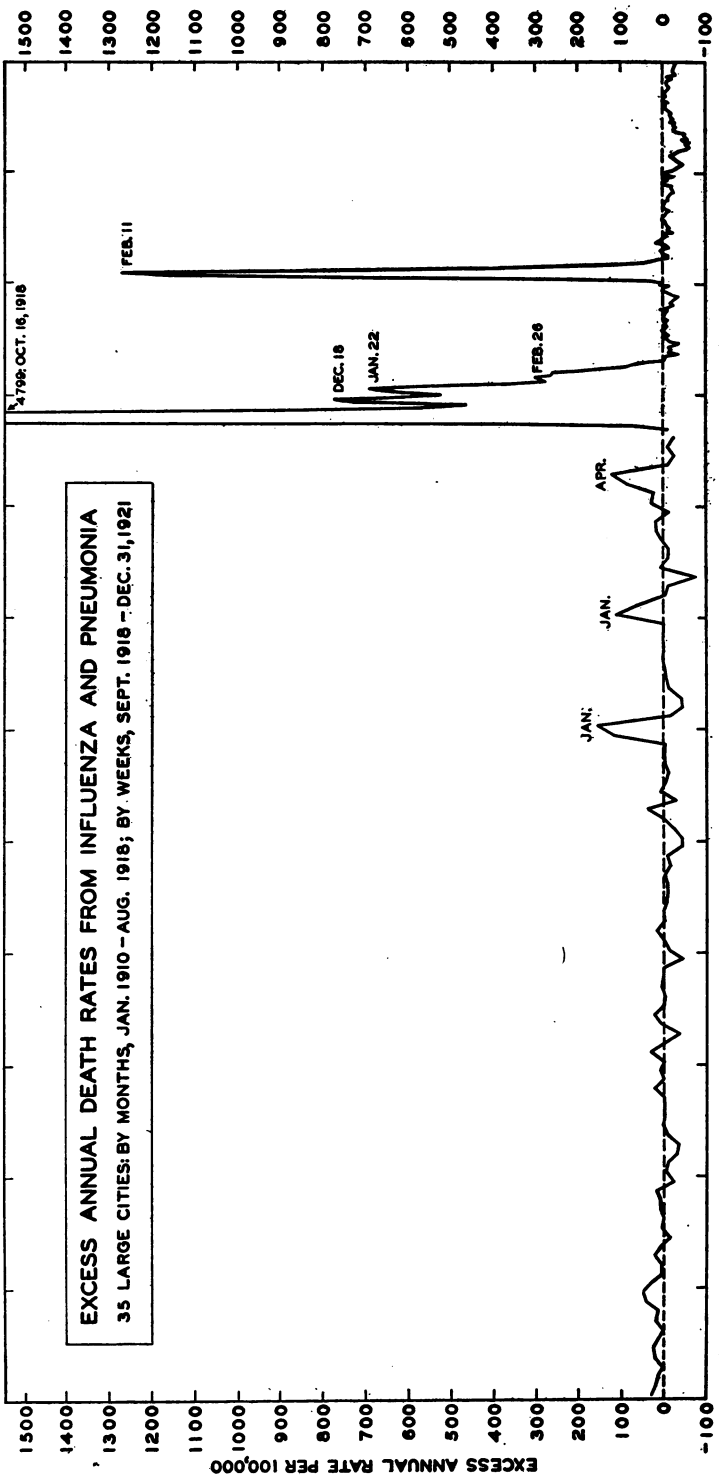

FIGURE 1.—Excess mortality from influenza and pneumonia in 35 large cities in the United States, 1910–21. (Dates on chart are middle, Wednesday, of peak weeks. Prior to July 1 1919, excess rates are deviations from smoothed median rate for corresponding month or week for period 1910–16; after that date they are deviations from smoothed median rate for corresponding week for period 1921–27. See reference 7 for tables of rates and table 1 for total excess for each epidemic.)

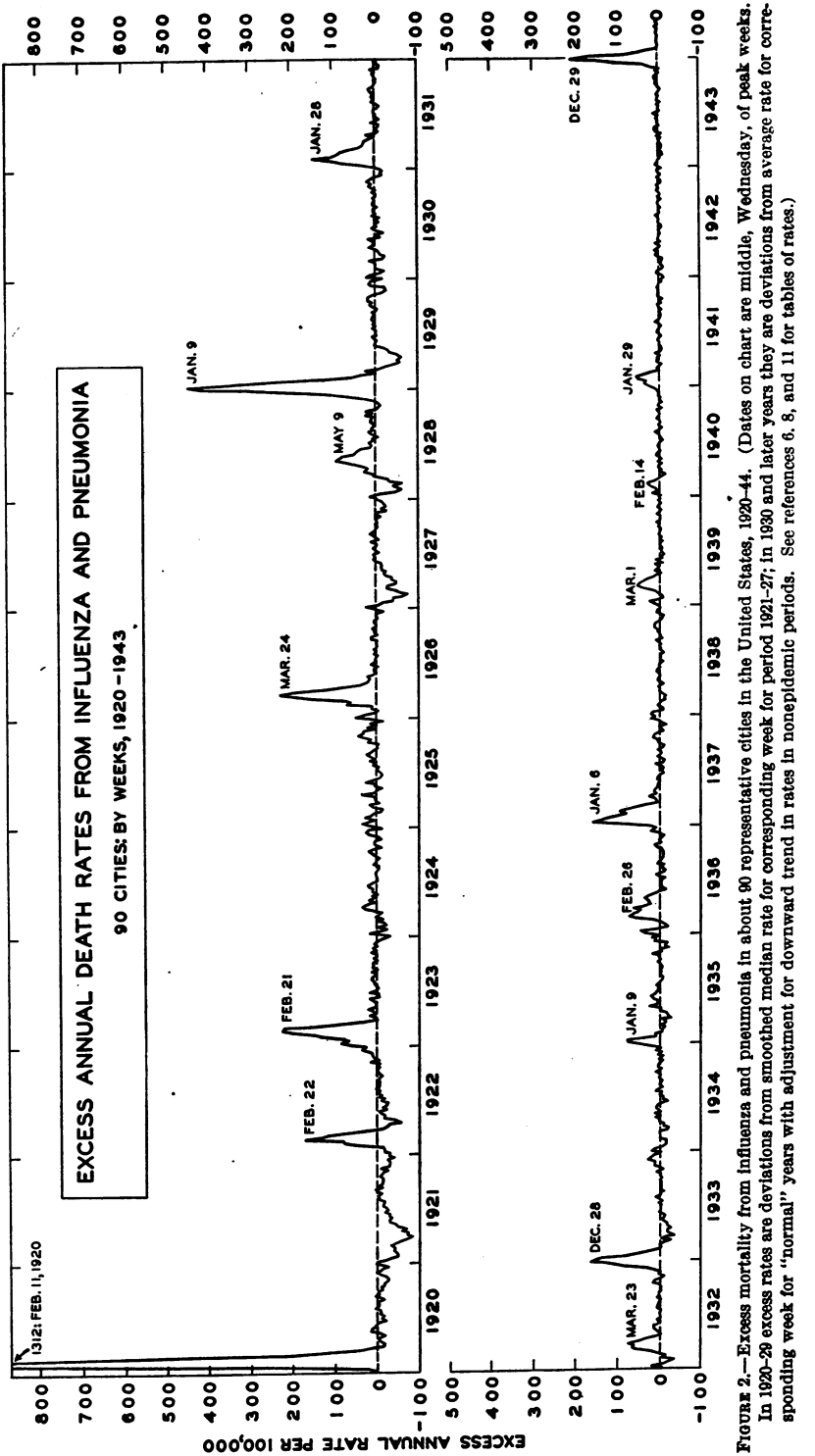

FIGURE 2.—Excess mortality from influenza and pneumonia in about 90 representative cities in the United States, 1920–44. (Dates on chart are middle, Wednesday, of peak weeks. In 1920–29 excess rates are deviations from smoothed median rate for corresponding week for period 1921–27; in 1930 and later years they are deviations from average rate for corresponding week for "normal" years with adjustment for downward trend in rates in nonepidemic periods. See references 6, 8, and 11 for tables of rates.)

TABLE 1.—*Summary of excess[1] mortality from influenza and pneumonia per 100,000 population during whole epidemics in groups of cities in the United States, 1910–44, and in Massachusetts, 1887–1915*

Area and epidemic	Excess rate per 100,000 during whole epidemic	Wednesday of peak week (or peak month)	Total period considered as above normal	
			Total time	Months or weeks included
90 representative cities:			*Weeks*	
1943–44	15.6	Dec. 29, 1943	11	Nov. 21, 1943–Feb. 5, 1944.
1940–41	5.4	Jan. 29, 1941	10	Dec. 15, 1940–Feb. 22, 1941.
Early 1940	1.9	Feb. 14, 1940	6	Jan. 21–Mar. 2, 1940.
Spring 1939	5.2	Mar. 1, 1939	9	Feb. 5–Apr. 8, 1939.
1936–37	18.4	Jan. 6, 1937	11	Dec. 20, 1936–Mar. 6, 1937.
Early 1936	12.5	Feb. 26, 1936	22	Dec. 22, 1935–May 23, 1936.
1934–35	5.4	Jan. 9, 1935	9	Dec. 2, 1934–Feb. 2, 1935.
1932–33	19.2	Dec. 28, 1932	11	Nov. 20, 1932–Feb. 4, 1933.
Spring 1932	7.4	Mar. 23, 1932	9	Feb. 14–Apr. 16, 1932.
Early 1931	16.4	Jan. 28, 1931	16	Dec. 28, 1930–Apr. 18, 1931.
1928–29	44.4	Jan. 9, 1929	12	Nov. 25, 1928–Feb. 16, 1929.
Spring 1928	11.6	May 9, 1928	19	Mar. 11–July 21, 1928.
Spring 1926	25.3	Mar. 24, 1926	17	Jan. 27–May 25, 1926.
1922–23	29.9	Feb. 21, 1923	17	Nov. 26, 1922–Mar. 24, 1923.
Early 1922	18.3	Feb. 22, 1922	12	Jan. 8–Apr. 1, 1922.
Early 1920	99.3	Feb. 11, 1920	12	Jan. 4–Mar. 27, 1920.
35 large cities:				
1918–19	550.5	Oct. 16, 1918	31	Sept. 15, 1918–Apr. 19, 1919.
			Months	
Spring 1918	21.1	April 1918	4	January–April 1918.
Early 1917	14.0	January 1917	2	January–February 1917.
1915–16	22.8	January 1916	2	December 1915–January 1916.
Massachusetts:				
Spring 1915	12.6	April 1915	2	March–April 1915.
1907–08	19.7	December 1907	3	December 1907–February 1908.
Early 1905	13.8	February 1905	3	January–March 1905.
Early 1901	17.1	February 1901	3	January–March 1901.
Spring 1900	47.8	March 1900	3	March–May 1900.
1898–99	34.7	January 1899	3	December 1898–February 1899.
Spring 1897	15.4	March 1897	2	February–March 1897.
Early 1895	31.0	February 1895	3	February–April 1895.
1893–94	33.0	December 1893	2	December 1893–January 1894.
Spring 1893	35.5	April 1893	4	March–June 1893.
1891–92	98.5	January 1892	3	December 1891–February 1892.
Spring 1891	23.9	May 1891	3	April–June 1891.
Early 1890	34.8	January 1890	1	January 1890.

[1] See figs. 1, 2, and 3 and text for norms and methods used in computing excess mortality. Total actual excesses for whole epidemics as listed in this table are computed from data plotted in those charts. For names of the 35 and 90 cities and details about methods of computation, see preceding publications (*6, 7, 8, 11*). Massachusetts data are computed from annual reports (*15*).

epidemic months dropped considerably, but during the next decade the downward trend was negligible. Between 1930 and 1937 the rates in nonepidemic periods declined gradually, but after that time the decrease was considerably accelerated (*11*).

Periods of excess over expected mortality from influenza and pneumonia in groups of cities in the United States since 1910 are shown[2] in figures 1 and 2, and the total excess[3] for each epidemic is

[2] All rates in figs. 1, 2, and 3 are on an annual basis, but the heights of the peaks in the monthly data are not comparable with those in the weekly data because a month represents an average of 4⅓ weeks which would frequently include low as well as high weeks of an influenza epidemic.

[3] During epidemics, in addition to the mortality credited as primarily due to influenza and penumonia as shown in figs. 1 and 2, considerable excess mortality credited to causes other than influenza and pneumonia occurs and unsually has a peak in the same week as influenza and pneumonia. The chronic degenerative diseases contribute heavily to this excess mortality from causes other than influenza and pneumonia. In the pandemic of 1918–19, about 92 percent of the total excess mortality was credited to influenza and pneumonia, but in the epidemic of 1928–29 only 63 percent of the excess was so credited. In smaller outbreaks only about one-half, and in the epidemic of 1943–44 only about one-third of the total excess mortality from all causes was credited to influenza and pneumonia (*4*).

listed in table 1. The normal or expected rates used in computing the excess for the period 1916–19 were based on the median rate for each month during the 7-year period 1910–16, with no adjustment for trend. Similarly, for the period 1920–29 the expectancy was based on the median for each week during the 7-year period 1921–27, with no adjustment for trend. Therefore, from 1910 to 1930 there are periods of several months to a year where the rate is below expectancy, as in 1921 (figs. 1 and 2). In the period 1930–35 the trend from year to year was taken into account in computing expectancy; after 1935 the trend from quarter to quarter was taken into account. Thus in the years after 1935 the deviations represent short-time fluctuations from levels immediately before and after epidemics, so the longer periods of generally low or generally high rates outside of epidemics are not shown.

Although the excess mortality shown in figures 1 and 2 is based on deaths credited to influenza or pneumonia with no differentiation as to etiology, it is interesting to note the findings of laboratory studies of the causative agents in the several epidemics. About the time of and following the 1918 influenza pandemic there was a tendency to attribute the disease to the Pfeiffer, or influenza, bacillus. After much work on various organisms found in the nose and throat of influenza patients, the affection has been classified as a virus disease and two or more specific viruses have been identified (*9*, *10*, *16*). Virus A has been identified in cases occurring during the 1943–44 outbreak (*17*, *19*) and also in the epidemics of the winters of 1932–33, 1934–35, 1936–37, of the early spring of 1939, and of the winter of 1940–41. However, virus B was also found in the epidemic of the early spring of 1939, and the epidemics of early 1936 and of early 1940 have been attributed to virus B (*9*, *10*). Both viruses have been found in the same epidemic and occasionally in the same patient (*9*); in all epidemics tests in many cases have failed to identify either A or B virus (*16*). There appears to be no way to tell whether the disease which has been called influenza or grippe in the numerous epidemics preceding the work on influenza viruses was etiologically the same or different in the several epidemics.

Prior to 1910 data on mortality during influenza epidemics are not available for population groups representing the United States as a whole. For the State of Massachusetts mortality statistics (*13*) are available by months for 60 or more years, including the decade 1890–99 with its several epidemics. Figure 3 shows the chronology of these outbreaks in terms of excess mortality from influenza and pneumonia. The highest peaks occurred in January 1890, January 1892, and March 1900, but there was a total of 10 epidemics in the 12 years 1890–1901 and 2 smaller outbreaks in the next few years. Although most of these epidemics were not large, the total excess

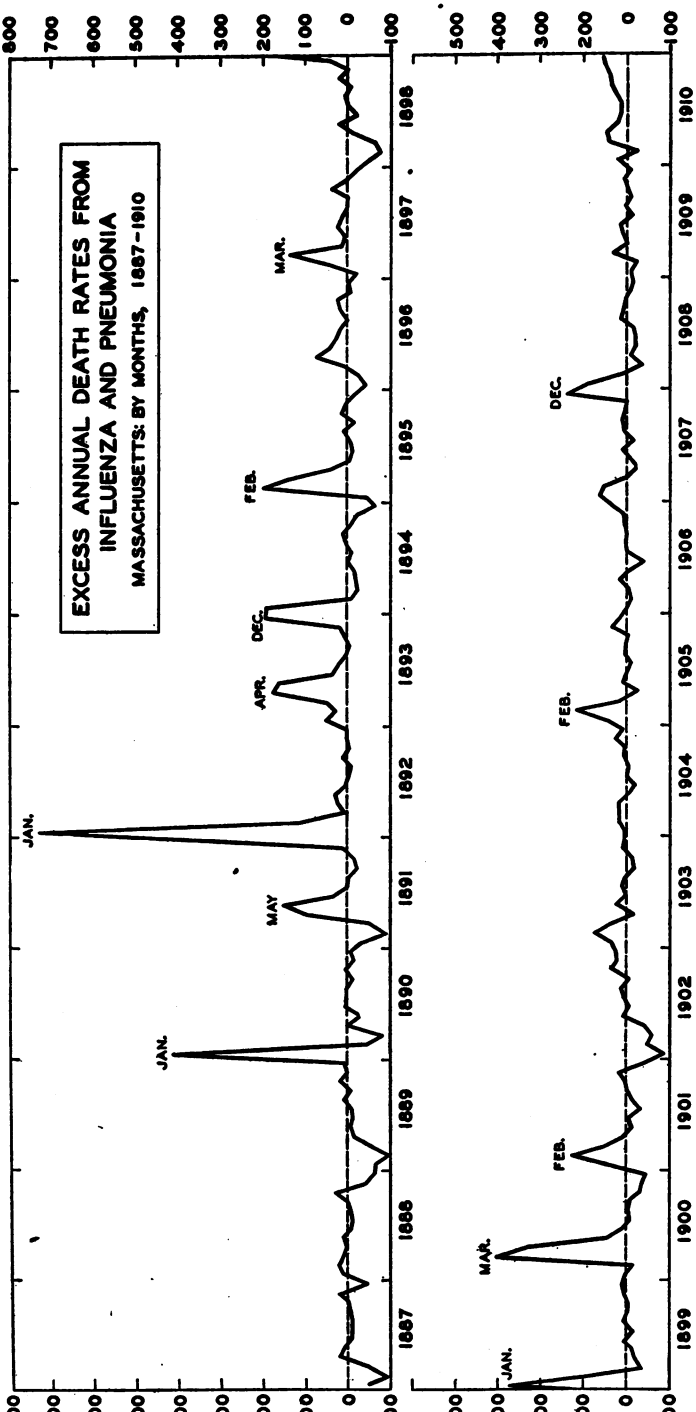

FIGURE 3.—Excess mortality from influenza and pneumonia in Massachusetts, 1887–1910. (Excess rates are deviations from median rate for corresponding month for period 1887–1917.)

mortality rate from influenza and pneumonia in Massachusetts during the epidemic of 1891–92 was of the order of magnitude of the epidemic of 1920, and other outbreaks approximated those of 1923, 1926, and 1928–29 in the groups of cities discussed above (table 1). In nearly every epidemic some sections of the country are more severely affected than others, so it is not possible to say whether the Massachusetts epidemics of 1889–1901 are typical of other regions. Whatever may have been the situation in the United States, the 1889–90 pandemic seems to have been very severe in other countries of the world (*15*).

THE EPIDEMIC OF 1943–44

General aspects.—In terms of excess deaths credited primarily to influenza and pneumonia the epidemic of 1943–44 was smaller than those of 1936–37 and 1932–33, which in turn were smaller than those of 1928–29 and 1926 (table 1). In addition to the 1943–44 mortality figures as reported to the United States Public Health Service by about 90 large and small representative cities and by 35 large cities of this group, data have been made available by the United States Bureau of the Census on a 10-percent mortality sample from nearly all States (*20*). Excess [4] rates during the whole epidemic are summarized below for the several groups:

Population group and source of data	Actual excess death rates per 100,000			
	Influenza and pneumonia		All causes	
	1943–44	1928–29	1943–44	1928–29
35 large cities (U. S. Public Health Service)	14.4	40.8	49.8	64.9
90 representative cities (U. S. Public Health Service)	15.6	44.4	----------	----------
10-percent Census sample, 1943–44, and U. S. Registration States, 1928–29	14.0	59.0	44.2	81.6
10 large surveyed cities (U. S. Public Health Service)	----------	63.4	----------	99.7

The 1943–44 Census sample shows in addition to the 14.0 excess rate credited to influenza and pneumonia another 7.2 per 100,000 representing deaths in which influenza or pneumonia was the most important contributory cause. The inclusion of such contributory causes raises the excess mortality from influenza and pneumonia from 32 percent of the total for all causes to 48 percent. In the epidemic of 1928–29 the data for the 10 large surveyed cities showed 64 percent of the excess deaths from all causes credited primarily to influenza

[4] Excess over some normal expectancy; data were not available for computing same type of norm for all groups. Norm for 35 cities in 1943–44 is based on same weeks of the 2 preceding years; for 1928–29 it is based on 7-year medians for same weeks (*4*). Norm for 90 cities is based on same weeks of several preceding years. (See fig. 2 and ref. 6, 8, and 11 for details). Norms for Census sample, registration States, and 10 surveyed cities are all based on the same weeks or months of the preceding year. Influenza and pneumonia deaths refer to those credited primarily to those causes.

and pneumonia, and 80 percent credited primarily or secondarily to these two diseases.

Only 29 percent of the excess mortality in 1943–44 in the group of 35 large cities was credited primarily to influenza and pneumonia, as compared with 63 percent in the epidemic of 1928–29. Thus, in terms of excess mortality from all causes in this group of cities, the 1943–44 outbreak amounted to 77 percent of the rather important epidemic of 1928–29, but in terms of excess mortality credited primarily to influenza and pneumonia it amounted to only 35 percent of that epidemic. Weekly excess rates for the 35 cities, as shown in the middle section of figure 4, indicate that the peak of excess mortality from all causes in the outbreak of 1943–44 (week ending January 1) was actually above the peak of 1928–29 (week ending January 12), but at no time did the excess credited to influenza and pneumonia in these cities approach that of 1928–29 (left section of fig. 4). However, in all weeks except the peak and the preceding week the excess rates from all causes were well below those of 1928–29. The right section of figure 4 shows excess mortality credited to influenza and pneumonia in some recent epidemics for which data are not readily available for the 35 cities.

Since such a large percentage of the total excess mortality in the epidemic of 1943–44 was credited primarily to causes other than influenza and pneumonia, it is of interest to determine the larger of these other causes. Computations based on the Census Bureau's Current Mortality Analysis for December 1943 and January 1944 (*20*) indicate that of the excess mortality not credited primarily to influenza and pneumonia, 71 percent was credited primarily to cardiovascular-renal diseases, 11 percent to cancer, 6 percent to diabetes,

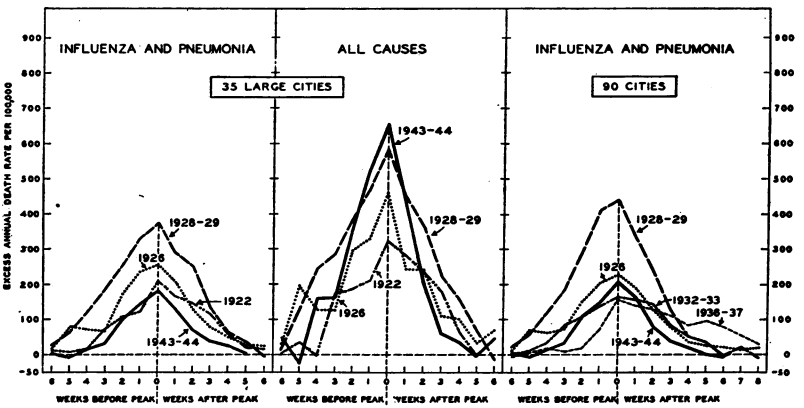

FIGURE 4.—Weekly excess mortality from influenza and pneumonia and from all causes in groups of cities in the epidemic of 1943–44, as compared with preceding epidemics, 1922–37. (Norms and data for all groups are as described in figure 2 except that in the 35 cities the excess rates for 1943–44 are over corresponding weeks of the preceding year. See references 4 and 7 for tables of rates for 35 cities; 1922 excesses are corrected for low rates immediately before and after the epidemic.)

and the other 12 percent to other causes. Thus in the 1943–44 outbreak, as in other epidemics since 1920 (*4*), the great majority of the excess deaths not credited to influenza and pneumonia refer to the chronic degenerative diseases which, at least in prior epidemics, showed a definite peak in the same week as influenza and pneumonia. While one would not expect an "epidemic" of these chronic diseases, it might frequently happen that a person long afflicted with such a malady would be a victim of an attack of influenza or pneumonia which was of such transient nature, as compared with the chronic disease, that it was not noted on the death certificate or if noted was not considered of primary importance. The influenza of 1943–44 was of a mild character and the sulfa drugs were available for the treatment of complicating pneumonia. Most of the deaths occurred in the older ages and probably among persons already suffering from chronic disease; this situation may have led to more than the usual confusion as to the primary cause of death.

Age curves of excess mortality.—In few localities is mortality routinely tabulated by month, age, and cause. Therefore, it is difficult to obtain data on influenza and pneumonia deaths by age for the specific period of an epidemic, particularly with similar data for a nonepidemic period covering the same season of the year (*14*). However, such data are available for the 2-month period of the 1943–44 epidemic in the 10-percent Census sample, and for the 3-month period of the 1928–29 epidemic in the survey of 10 large cities. The numbers of deaths from influenza and pneumonia in relatively small canvassed populations are usually too few to afford any reliable indication of the age curves of mortality from these causes during epidemic periods (*1*, *2*, *3*, *5*).

Actual age-specific death rates from influenza and pneumonia and from all other causes during the December-January 1943–44 epidemic and similar rates for the corresponding months of 1942–43 are given in table 2 and shown on a semilogarithmic chart in figure 5. The fact that the lines (right section of fig. 5) for causes other than influenza and pneumonia are so close together for the two periods indicates that the percentage excess for these causes was small, but it is seen in the middle section of the figure that the actual excesses for these other causes were larger than those for influenza and pneumonia among children 5 to 20 years [5] and among persons over 65 years of age. As already noted, the excess mortality at all ages credited primarily or secondarily to influenza and pneumonia amounted to only 48 percent of the excess mortality from all causes.

The age curve of influenza and pneumonia excess mortality in the 10-percent sample for the epidemic of 1943–44 is compared with that

[5] Irregularities at the younger ages in the excess rates for causes other than influenza and pneumonia are probably not significant. Rates at these ages are small and the small fluctuations appear large on a ratio chart.

TABLE 2.—*Excess mortality from influenza and pneumonia and from all causes during the 2 months December–January 1943–44 over December–January 1942–43, as derived from a 10-percent sample of death certificates in 43 States* [1]

Age (years)	Actual death rate [2] per 100,000 for 2 months, December–January								Excess death rate [2] per 100,000 for December–January 1943–44 over December–January 1942–43				
	1943–44				1942–43				Influenza and pneumonia				
	Influenza and pneumonia				Influenza and pneumonia								
	Sole or primary	Contributory	All other causes	All causes	Sole or primary	Contributory	All other causes	All causes	Sole or primary	Contributory	Sole, primary, or contributory	All other causes	All causes
All ages	28.6	13.7	189.4	231.7	14.6	6.5	166.4	187.5	14.0	7.2	21.2	23.0	44.2
Under 5	50.5	12.3	129.7	192.5	47.8	7.7	142.3	197.8	2.7	4.6	7.3	−12.6	−5.3
5–9	2.8	1.1	13.3	17.2	1.6	.3	9.2	11.1	1.2	.8	2.0	4.1	6.1
10–14	2.0	.4	11.6	14.0	.9	.5	10.6	12.0	1.1	—.1	1.0	1.0	2.0
15–24	3.6	.8	31.1	35.5	2.2	.9	25.5	28.6	1.4	—.1	1.3	5.6	6.9
25–34	4.7	2.2	42.5	49.4	3.4	1.1	40.2	44.7	1.3	1.1	2.4	2.3	4.7
35–44	9.9	4.4	76.8	91.1	5.8	2.5	72.5	80.8	4.1	1.9	6.0	4.3	10.3
45–54	22.9	8.4	176.6	207.9	11.8	5.4	166.0	183.2	11.1	3.0	14.1	10.6	24.7
55–64	38.9	22.4	377.2	438.5	21.3	12.9	359.7	393.9	17.6	9.5	27.1	17.5	44.6
65–74	98.5	68.1	864.6	1,031.2	42.1	30.5	765.0	837.6	56.4	37.6	94.0	99.6	193.6
75 and over	430.7	218.1	2,453.5	3,102.3	146.5	85.2	1,983.5	2,215.2	284.2	132.9	417.1	470.0	887.1
Total deaths,[3] all ages	3,336	1,596	22,140	27,072	1,714	764	19,482	21,960	1,622	832	2,454	2,658	5,112

[1] Data from U. S. Bureau of the Census (*20*). District of Columbia is included; States not included are Arkansas, Connecticut, Georgia, Minnesota, New Hampshire, and Texas. Data represent a retabulation of deaths occurring in December and January with delayed certificates included.

[2] Rates for December–January 1943–44 were based on estimated de facto populations for Jan. 1, 1944, and rates for December–January 1942–43 were based on estimated de facto populations for Jan. 1, 1943; excess rates represent differences between these two sets of rates. De facto populations include the armed forces within the continental United States but not those outside.

[3] Figures in this line in the excess rate section of the table are the actual numbers of excess deaths.

of 1928–29 in the group of 10 cities for which detailed data for the specific period of that epidemic are available (left section of fig. 5). Although the actual differences between the excesses in 1928–29 and 1943–44 are largest in the older ages, the relative differences are greater in the younger ages.

TWO METHODS OF COMPUTING AGE CURVES OF EXCESS MORTALITY

Since there are only a few places in which deaths are tabulated by cause, age, and month or week, data are not commonly available on the age curve of influenza and penumonia during the specific period of an outbreak. A rougher method of using data for calendar years may be feasible when applied with caution. A comparison of the two methods of computing age curves of excess mortality in one outbreak is given in detail in this section.

In connection with a study of the 1928–29 epidemic, deaths from influenza and pneumonia for the whole of 10 large surveyed cities (*3, 5*) were copied from the records of the city registrars for the year 1928

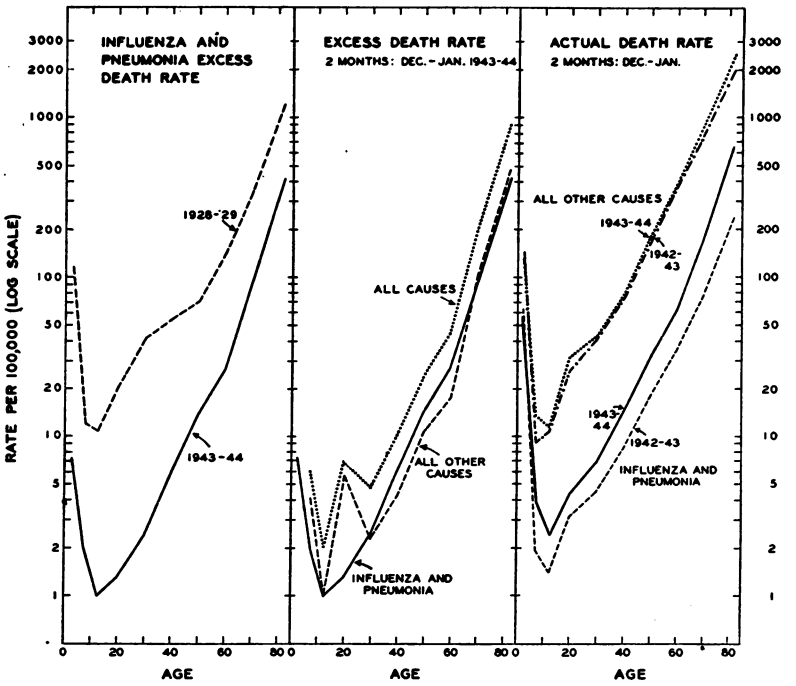

FIGURE 5.—Age-specific actual and excess mortality from influenza and pneumonia (sole, primary, and contributory) and from all other causes in the epidemic of 1943–44—10-percent Census sample (*20*) of the United States, 1943–44 (table 2); 10 cities, 1928–29 (table 3). (Excess over same months of preceding year.)

and to the end of the epidemic early in 1929. The data so copied include all certificates on which influenza or pneumonia of any form was recorded as a sole, primary, or contributory cause of death (table 3).

Actual death rates from influenza and pneumonia at specific ages for the 3 months December–February 1928–29, as compared with a similar period in 1927–28, are shown on a logarithmic vertical scale in the middle section of figure 6. The 1927–28 months were relatively free from influenza and give some idea of the age curve of mortality from influenza and pneumonia at this season of the year in a relatively normal period. It is seen that the relative age curve of mortality in this winter epidemic of 1928–29 is fairly similar to that for the normal winter period of 1927–28.

Death rates from influenza and penumonia for the whole of the calendar years 1928 and 1929 which shared the epidemic, and the whole of the adjacent calendar years 1927 and 1930 which were relatively free from epidemics, are plotted in the right section of figure 6. As might have been expected from the showing for the 3-month periods, these two age curves are also similar.

Two curves of excess death rates are shown in the left section of figure 6; one is based on the 3-month periods and the other on the 2-

TABLE 3.—*Excess mortality from influenza and pneumonia in the whole population of 10 cities* [1] *(a) during the 3 months December–February 1928–29 over December–February 1927–28, and (b) during the calendar years 1928 and 1929 over the calendar years 1927 and 1930*

Age (years)	Mortality in 3-month periods in whole population of 10 surveyed cities								Mortality for calendar years (sole or primary)			
	Actual death rate per 100,000 for 3 months December–February—				Excess rate per 100,000 for December–February 1928–29 over December–February 1927–28		Estimated population [4] in thousands on January 1—		10 surveyed cities [5]			Registration States [6]
	1928–29 [2]		1927–28 [3]						Actual death rate per 100,000			
	Sole or primary	Contributory	Sole or primary	Contributory	Sole or primary	Contributory	1929	1928	1928, 1929	1927, 1930	Excess rate per 100,000 for 1928+1929 over rate for 1927+1930	Excess rate per 100,000 for 1928+1929 over rate for 1927+1930
All ages	112.7	33.3	49.3	17.0	63.4	16.3	4,847.6	4,790.6	365.8	289.6	*76.2	84.3
Under 5	299.6	33.2	190.7	25.1	108.9	8.2	358.8	354.6	1,233.6	1,055.8	177.8	171.4
5–9	19.3	4.1	8.7	2.5	10.6	1.5	397.9	393.2	80.9	68.7	12.2	17.7
10–14	15.1	3.7	4.6	3.4	10.6	.3	379.1	374.7	48.9	39.8	9.1	13.5
15–24	31.3	5.7	13.4	2.7	17.9	3.0	850.9	840.8	97.9	66.3	31.6	28.7
25–34	51.3	10.4	16.0	4.5	35.4	5.9	863.2	853.1	146.6	111.4	35.2	38.6
35–44	78.6	15.9	29.7	10.1	48.9	5.7	785.6	776.4	242.1	192.3	49.8	60.7
45–54	106.2	30.9	48.4	17.9	57.8	12.9	589.9	582.9	352.4	284.2	68.2	72.7
55–64	186.8	71.8	78.3	36.0	108.5	35.8	366.7	362.4	606.8	477.3	129.5	103.8
65–74	414.9	193.4	176.8	91.9	238.1	101.6	189.3	187.1	1,224.2	910.3	313.9	289.0
75 and over	1,254.4	587.9	396.5	234.4	857.9	353.5	66.2	65.4	3,286.4	2,501.4	785.0	1,248.7

[1] The 10 cities were Baltimore, Boston, Cincinnati, Des Moines, Kansas City, Mo., New Orleans, Pittsburgh, San Francisco, Seattle, and Syracuse (*5*). Data on deaths by age (primary and contributory causes) were copied from city health department records and may differ somewhat from final totals later tabulated for all ages by the Census Bureau; no final figures are available by age and month.

[2] Deaths by age for influenza and pneumonia in the several cities were available only to a time shortly after the end of the epidemic of 1928–29. In 4 cities (San Francisco, Seattle, Kansas City, and Cincinnati) deaths from these causes were not available by age for the last few weeks of the period, but were available for all ages by weeks (*21*). The 421 deaths for the weeks not available by age in these 4 cities were assumed to be distributed by age like the 5,042 deaths of known ages in the 10 cities; deaths by age had been tabulated only for all cities combined. Similar figures for influenza and pneumonia as contributory causes of death are an estimate of 124 for the weeks not available by age in the 4 cities and 1,489 deaths of known ages in the 10 cities.

[3] Deaths by age for influenza and pneumonia were not available for December 1927. From another source deaths for all ages from these causes were available by weeks (*21*); the total (primary causes) for all ages for the 3 months December–February 1927–28 amounted to 1.432 times that for the 2 months January–February 1928. Death rates by age for January–February 1928 were multiplied by this factor to obtain estimated rates here given for December–February 1927–28. This process is equivalent to assuming that the 713 deaths (primary causes) in December 1927 were distributed by age like the 1,650 in January and February 1928. Similar figures for influenza and pneumonia as contributory causes of death are an estimate of 245 for December 1927, and 567 deaths of known ages for January and February 1928.

[4] Populations as of January 1 for the 10 cities are computed from Census Bureau intercensal estimates, distributed by age according to the 1930 census of the 10 cities.

[5] Populations for calendar year data for the 10 cities are Census Bureau intercensal estimates as of July 1 of 1927, 1928, and 1929, distributed by age according to the 1930 census; populations for 1930 are enumerated populations of April 1, 1930.

[6] Populations for specific ages in the registration States are from Vital Statistics Rates, 1900–40 (*18*); 10-year age groups in that volume are broken into 5-year groups in proportion to the 1930 census.

year periods. Although not identical, the two curves of excess mortality from influenza and pneumonia are generally similar.

There are, however, some definite limitations to the use of rates for whole calendar years to obtain approximations of age-specific excess rates:

1. The use of the method depends upon finding a nearby year with influenza and pneumonia death rates of approximately the same level as in nonepidemic months of the year which includes the epidemic. Since influenza and pneumonia

deaths for all ages are available by months in the annual mortality reports from the Bureau of the Census, this condition can be tested.

2. Since the calendar year includes various seasons with the possibility of varying age curves, the "calendar year norm" must be based on a sufficiently large area or on a sufficient number of years to average out some of the variations. It was found in the data for the 10 surveyed cities that deaths credited to bronchopneumonia, lobar pneumonia, and influenza were all somewhat different in age distribution.[6] It was also found that as judged by the chi-square (χ^2) test the age distributions for influenza and pneumonia of all forms combined were frequently different for the several seasons of the year, although the variation was sometimes minor.

[6] Deaths credited primarily to influenza and pneumonia were available by age for the whole of the 10 large cities surveyed in 1928–29 (5). The chi-square (χ^2) test was applied to the age distributions as follows:

1. The 10 months January–October 1928 (normal period) were divided into 2-month periods, January–February, March–April, May–June, July–August, September–October, and the age distributions of the deaths in each period from influenza and pneumonia (all forms) were tested against those of every other period. Thus a total of 10 pairs of distributions were tested with the following probabilities that the two distributions in the pair were from the same universe:

Influenza and pneumonia (all forms):

8 pairs different (P=0.038 or less).

2 pairs not different (January–February with March–April, P=0.114, and January–February with July–August, P=0.147).

2. The 10 months January–October 1928 (normal period) were divided into 3 periods, January–March, April–June, July–October, and the age distributions of the deaths in each period from influenza, from bronchopneumonia, and from lobar pneumonia were tested against those of every other period. Thus a total of 3 pairs of distributions for each diagnosis were tested with the following probabilities that the two distributions in the pair were from the same universe:

1928	Influenza	Bronchopneumonia	Labor pneumonia
January – March with April–June.	Not different (P=0.210).	Not different (P=0.831).	Different (P=0.010).
January – March with July–October.	Doubtful (P=0.078).	Different (P=0.000).	Not different (P=0.295).
April – June with July–October.	Not different (P=0.102).	Different (P=0.000).	Not different (P=0.573).

Summarizing 1 and 2, age distributions of deaths credited to influenza and pneumonia (all forms) and of those credited to bronchopneumonia tend to vary from season to season in this nonepidemic year, but age distributions of deaths credited to influenza and of those credited to lobar pneumonia tend to be more stable.

3. The age distributions of deaths from influenza and pneumonia (all forms) were tested as follows:

January 1928 with January 1929: different (P=0.000)

February 1928 with February 1929: not different (P=0.259)

March 1928 with March 1929: different (P=0.003)

4. The age distributions in the epidemic period November 1928–March 1929 were tested against the nonepidemic period January–March 1928 (November–December 1927 not available) for influenza, bronchopneumonia, and lobar pneumonia separately. Results for all three diagnoses indicated different distributions in the two periods (P=0.008 or less).

5. For the epidemic period November 1928 to March 1929 and for the nonepidemic period January to March 1928 (November–December 1927 not available) the age distributions were tested as follows: Influenza with bronchopneumonia, influenza with lobar pneumonia, and bronchopneumonia with lobar pneumonia. Results for all three tests in both periods indicated different distributions for the pairs of diagnoses (P=0.006 or less).

"Different" as used throughout this note means greater variation between the age distributions of the two groups tested than would be expected by chance in the numbers of deaths involved. Because the numbers are large, some of the differences may be too small to be of any practical importance even though "statistically significant."

In spite of these difficulties, the method of obtaining approximate age-specific excess rates from data for whole calendar years may be feasible when applied with caution.

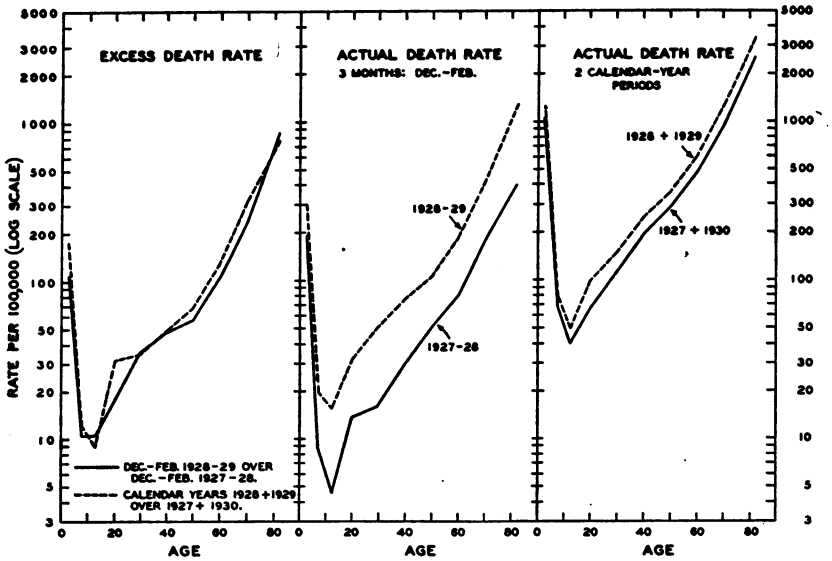

FIGURE 6.—Age-specific actual and excess mortality from influenza and pneumonia (sole or primary causes) in the epidemic of 1928–29 as computed from data for calendar years and from data for the 3-month period of the outbreak—whole population of 10 large surveyed cities. (See table 3 for details about norms and data.)

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(To be concluded)

AN OUTBREAK OF *SALMONELLA* INFECTION IN MAN FROM INFECTED CHICKEN EGGS[1]

By James Watt, *Surgeon, United States Public Health Service*

In January 1945, an American merchant vessel arrived at the port of New Orleans and reported an outbreak of acute diarrheal disease aboard ship which had begun approximately 12 hours before arrival. Investigation revealed the following facts.

The first case began about 5 a. m. on January 14 and during the next 24 hours 15 more cases appeared. At the time of the inspection on January 15, a total of 18 men in the crew of 70 merchant seaman and naval armed guard reported gastrointestinal symptoms of varying degrees of severity. Six of the men were severely ill, with nausea, vomiting, fever, malaise, abdominal pain, and a profuse watery diarrhea without gross exudate. One of these men had loss of sphincter control for about 12 hours. The others had occasional involuntary bowel movements. All six were confined to their bunks for 24 to 36 hours. The remaining sick men were less severely ill, with abdominal pain the only constant finding. Diarrhea occurred in all but two cases. Symptoms in the milder cases lasted less than 24 hours and even the most severe ones were definitely improved by the end of the second day.

Stool cultures were obtained by the rectal swab technique, described

[1] From the Division of Infectious Diseases, National Institute of Health, and the Charity Hospital of Louisiana, at New Orleans.

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elsewhere (*1*), on 67 men. (The captain, purser, and a supercargo were ashore at the time.) The cultures were seeded on a single S. S. agar plate and the swab was then placed in a tube of tetrathionate broth. *Salmonella montevideo* was isolated from all individuals giving a history of illness during the period of the outbreak. In addition, 10 other crew members had a positive culture for the same *Salmonella* type. Of these 10 men, 2 were apparently incubatory carriers, since they developed gastroenteric symptoms a few hours after the cultures were obtained; 1 had reported an acute diarrhea 2 days before the main outbreak but was apparently well at the time the culture was made; and the other 7 gave no history of illness and must be classed as passive carriers.

The explosiveness of the outbreak indicated a single source of infection, probably food. The menus offered during the preceding week were obtained and the men were questioned about these meals. The evening meal of January 13 was found to be the most probable source of infection. The menu is listed below:

Grilled pork chops	Cold cuts, cheese
Veal pot pie	Egg and olive salad
Macaroni au gratin	Cake, loganberries
Baked potatoes	Coffee, tea

All but three of these foods were eliminated from further suspicion, since very few of the sick individuals had eaten any of them. The three foods eaten by most of the sick men were (1) pork chops, (2) egg salad, and (3) cake. Twenty-six of the twenty-eight men with positive stool cultures stated that they had eaten pork chops, 26 that they had eaten egg salad, and all said they had eaten cake. Of 30 men with negative cultures from whom a similarly exact history was obtained, 27 had eaten pork chops, none had eaten egg salad, and 29 had eaten cake.

These findings indicated that the egg salad was the food probably responsible for the outbreak. It consisted of hard-boiled eggs, olives, pickles, and mayonnaise. The latter was made aboard ship in the usual manner, with the yolks of raw eggs, salad oil, vinegar, lemon juice, mustard, and salt.

The mayonnaise and salad were made by the chief steward. His stool culture was positive for *S. montivideo*. It is believed that this was a result of contamination rather than the cause, since he ate a portion of salad at the evening meal and was one of the men who developed a clinical illness. If he had been a carrier of this infection it seems unlikely that ingestion of the contaminated salad would have resulted in illness. Only one other member of the steward's department had a positive culture and he too had eaten the salad and was clinically ill. All other members of this department denied eating any of the salad, and none had positive stool cultures.

None of the prepared foods used in the meal were left aboard but there were four cases of eggs and some pork loins still in storage. (Storage facilities were excellent and properly cared for, as evidenced by the following facts: (a) The meat was frozen, (b) cabbage and carrots were in good condition after 2½ months on board, (c) the eggs, on candling, showed only slight shrinkage or other signs of deterioration.) Samples of the pork and all the eggs were taken for culture purposes.

The pork was chopped and placed in tetrathionate broth. Cultures of this broth did not show any microbial growth.

As a preliminary step, one case of eggs (30 dozen) was broken out into sterile flasks, using chiefly the yolks, and incubated overnight.

The material in these flasks was subcultured to S. S. agar and tetrathionate broth. Both direct plating and the tetrathionate enrichment revealed *S. montevideo* in 11 of the 14 flasks.

No attempt was made in this particular case to distinguish between shell contamination and internal contamination of the eggs, the technique of breaking for culture being that used by a cook in the ordinary course of kitchen duties. Subsequently, eggs from the remaining cases were cultured. These eggs were first washed in physiological saline warmer than the eggs and then soaked in cresol solution, 4 percent, for one-half hour before they were cracked for culture. Several additional isolations of *S. montevideo* were made from one of the cases of eggs so treated. The saline wash water on culture showed coliform bacilli, pseudomonas, and cocci, but no salmonellae were isolated. No salmonellae were isolated from either the shell or the interior of eggs in the other two cases.

Although most of the culture work was done by pooling a number of eggs, those eggs which showed gross evidence of deterioration were cultured individually by placing a portion of the yolk in a tetrathionate broth tube. The majority of the spoilage was due to cracking or mold invasion. Occasionally black rot was found. Of 47 eggs examined in this manner, one yielded *S. montevideo;* the remainder either showed one or more of the common causes of egg rot or failed to show any growth on the media used.

The eggs, together with all other food supplies, had been obtained from a ship's chandler in Norfolk, Va., just prior to sailing. They were taken aboard on November 8, 1944. It was possible by checking the records of the Norfolk produce house to ascertain that these eggs were part of a carload shipment originating in southern Iowa on October 26, 1944. Three egg-grading plants had contributed to this particular shipment. An attempt was made to determine the actual farm or farms from which the eggs might have originated and, incidentally, to see how widespread the infection might be in the production area served by these plants. This work is still in progress.

Two methods of survey were employed:

(1) One hundred forty-three farms in the area were visited in February 1945, and cultures obtained from fresh chicken droppings in tetrathionate broth. Thirty to forty small samples were taken from each chicken house, placed in the broth, and, after incubation, subcultured to S. S. agar. *S. pullorum* was isolated from 12 of these farms and *S. derby* from 1. *S. montevideo* was not encountered.

(2) Samples of eggs were taken for culture from each batch sold to the candling plant. The samples were cultured in batches according to source. To date more than 5,000 eggs from approximately 850 farms have been cultured. *S. montevideo* has not been isolated from any of these samples. *S. pullorum* and *gallinarum* have been encountered frequently. Two other *Salmonella* types, *S. cholerae suis* (var. Kunzendorf), and *S. derby*, have been isolated from shell eggs in this manner.

DISCUSSION

Fowl have been recognized for many years as a reservoir of *Salmonella* infection. Edwards states that fowls are the greatest reservoir of paratyphoid infection in the United States and reported (*2*) in 1939 the results of typing 223 cultures obtained from fowl in this country, 54 from chickens. *S. montevideo* was one of the types obtained. In December 1944, the British Medical Journal (*3*) editorially discussed eggs and *Salmonella* infections, summarizing recent knowledge on this subject. They concluded that while a complete case had been made against ducks as a source of *Salmonella* in man, only a "nonproven" verdict could be returned against the chicken. Salmonellae have been isolated from chickens and from frozen dehydrated eggs. In the latter case particularly interesting work has been published in a series of articles (*4*) on dried whole egg powder in Canada. Gibbons and Moore (*5*) found a number of *Salmonella* types in dried egg powder but the source of the infection was not definitely established, i. e., whether from the interior, the exterior, or by some other means in the process of preparation. In spite of the findings quoted above and their definite implications, reports of outbreaks of salmonellosis in man traced to chickens or shell eggs have not been encountered in the literature on the subject.

SUMMARY

An outbreak of salmonellosis (*S. montevideo*) aboard a merchant vessel, affecting 28 individuals in a crew of 70, is reported.

Twenty-one individuals were known to have had symptoms of varying severity and from each *S. montevideo* was isolated. The same organism was isolated from seven additional members of the crew, none of whom reported any illness.

Epidemiological evidence indicated that infection resulted from the consumption of contaminated egg salad, the mayonnaise of which contained raw eggs.

The same *Salmonella* type, *S. montevideo*, was isolated from two cases of shell eggs obtained on the ship. Internal contamination of the eggs was demonstrated, since the shell washings before sterilization were free of *S. montevideo*, and egg meats obtained after sterilization of shells were found to contain this organism.

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THE SUSCEPTIBILITY OF THE GOLDEN HAMSTER (*CRICETUS AURATUS*) TO TULAREMIA [1]

By CARL L. LARSON, *Passed Assistant Surgeon, United States Public Health Service*

The golden hamster (*Cricetus auratus*) has not been subjected to experimentation to determine its relative susceptibility to inoculations of *Pasteurella tularensis*. Johnson (*1*) found hamsters to be susceptible to experimental infections with this organism. Sarchi (*2*) detected spontaneous infections of tularemia among hamsters (*C. C. frumentaris*) in the Ob River Basin, and Schmidt (*3*) states, "*Bacterium tularense* is carried to man by hares, rabbits, squirrels, mice, rats, water-rats, hamsters, etc., directly through contact, ——." Lillie and Francis (*4*) review the findings of Dvijkoff concerning the pathology of tularemia in a naturally infected hamster. Organisms microscopically identified as *P. tularensis* were observed in hamsters (*C. cricetus*) in the Ukraine by Schuller and Erdmann (*5*). It is thus apparent that hamsters are susceptible to such infections, but it appears desirable to define their degree of susceptibility to this disease as compared to that of mice, and to establish the pathologic picture in this species.

Preliminary studies had shown that golden hamsters were about as susceptible as white Swiss mice to tularemia. With these observations in mind it was determined to measure the degree of susceptibility of mice and hamsters to such infections. Mice weighing about 15 gm.

[1] From the Division of Infectious Diseases, National Institute of Health.

were selected and hamsters 5 to 6 weeks of age were used. All animals were bred and maintained at the National Institute of Health. A 10-percent suspension in 0.85-percent salt solution of liver and spleen tissue from a guinea pig dying in the second passage of material obtained from the sputum of an individual (S. A.) suffering from the ulcero-glandular type of tularemia was prepared. Serial tenfold dilutions of the original 10-percent guinea pig tissue suspension were made in salt solution to an end point of 10^{-12}. Dilutions were made into conical glasses containing 4.5 cc. of salt solution, and 0.5 cc. of material was transferred using a fresh pipette for each dilution. Groups of five mice and five hamsters each were inoculated intraperitoneally with 0.3 cc. of the respective dilutions from 10^{-1} to 10^{-12}. The animals were observed for 2 weeks before the experiment was terminated. The 50-percent lethal dose of organisms contained in this suspension was 2.4×10^{-8} for mice and 4.0×10^{-8} for hamsters.

Another experiment was designed to test quantitatively the susceptibility of mice and hamsters to intraperitoneal and subcutaneous introduction of organisms, to determine the susceptibility of hamsters to tularemia when inoculated by intranasal, intramuscular, or intracranial routes, and to determine the influence of human convalescent serum on the course of the infection.

A specimen of serum from a patient convalescent from tularemia and having an agglutination titre of 1:640 against *P. tularensis* was used. This was administered in 0.3-cc. doses intraperitoneally to 10 hamsters at the same time they received an infectious dose of organisms by the same route. The organisms employed were obtained from the sputum of a person suffering from the pulmonary type of tularemia (R. H. P.). Organisms grown for 48 hours on the slanted surface of a tube of glucose cystine blood agar were suspended in sufficient 0.85-percent NaCl solution to make a suspension having a density of T-500 on a Fuller's earth scale. This suspension was considered to be a 10^{-0} suspension of organisms. Serial tenfold dilutions were made in salt solution to an end point of 10^{-10}. The same types of animals used in the previous experiment were employed. These were inoculated as follows:

Groups of 6 mice each intraperitoneally or subcutaneously with doses of 0.3 cc. of each dilution from 10^{-1} to 10^{-10}, groups of 5 hamsters each intraperitoneally or subcutaneously with doses of 0.3 cc. of each dilution from 10^{-1} to 10^{-10}, groups of 5 hamsters with 0.3-cc. doses of 10^{-2} and 10^{-6} dilutions intramuscularly, groups of 5 hamsters each with 0.03-cc. doses at 10^{-2} and 10^{-6} dilutions intracranially or intranasally, a group of 10 hamsters simultaneously with 0.3-cc. of human convalescent serum and 0.3-cc. of a 10^{-6} dilution of organisms, and a lot of 20 hamsters with 0.3-cc. of a 10^{-6} dilution of organisms intra-

peritoneally. All animals were observed for 3 weeks before being discarded.

The results obtained indicated that immune serum as here employed had no influence upon the course of experimental tularemia in hamsters. All of the hamsters treated with serum died, eight within 4 days following inoculation. The other two died on the seventh and eleventh day, respectively, after exposure to infection. There were no survivors among the hamsters inoculated intracerebrally, intranasally, or intramuscularly with a 10^{-2} dilution of organisms. Among those hamsters inoculated with a 10^{-6} dilution of a suspension of *P. tularensis* intramuscularly all hamsters died, four of five inoculated intracerebrally succumbed, but no deaths were recorded among the five animals inoculated intranasally.

The titrations of organisms in mice and hamsters infected either intraperitoneally or subcutaneously illustrated that the degree of susceptibility of hamsters to experimental exposure to tularemia is as great as that of mice (table 1). Hamsters appeared to be equally susceptible to infection induced by either route of inoculation.

TABLE 1.—*The susceptibility of golden hamsters* (Cricetus auratus) *and white Swiss mice to intraperitoneal or subcutaneous inoculation of 0.3-cc. amounts of serial tenfold dilutions of a virulent strain (R. H. P.) of* P. tularensis

Species of animal inoculated	Route of inoculation	Number of animals inoculated with each dilution of culture	50-percent lethal end point
Hamster	Intraperitoneal	5	1.5×10^{-8}
Do	Subcutaneous	5	1.5×10^{-8}
Mouse	Intraperitoneal	6	1.8×10^{-7}
Do	Subcutaneous	6	3.2×10^{-7}

The gross and microscopic pathology, based on a series of 25 hamsters derived from the above groups, is being reported separately (*6*).

SUMMARY

The susceptibility of hamsters to tularemia approximates that of white mice. They are equally susceptible to subcutaneous and to intraperitoneal inoculation.

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COURT DECISION ON PUBLIC HEALTH

Local registrar of vital statistics—payment of fees to.—(Texas Court of Civil Appeals; *City of Taylor et al.* v. *Hodges et al.*, 183 S.W.2d 664; decided October 25, 1944, rehearing denied November 8, 1944.) For a period of a little more than two years the city of Taylor paid the statutory registration fees authorized under the Texas law to the local registrar for births and deaths. Such fees, amounting to $566.50, had been voluntarily paid by the city to the local registrar under a mistake of law, upon the assumption that the city owed them, and had been paid without the request, knowledge, or consent of the county. The city sued certain county officers in their official capacities to recover such statutory fees, and the conclusion reached by the court of civil appeals of the State was that the city could not recover from the county. It was pointed out by the court that no county officer did anything which could constitute fraud, imposition, or deception against the city and that the latter was charged with knowledge of the law prescribing the amount of the debt to the local registrar and by whom it should be paid. As there was no legal liability upon the city to pay the local registrar and as the city had paid him with knowledge of all the facts, "such payment must be deemed to have been wholly voluntary on the part of the city." Continued the court: "The uniform rule in such cases is that the city could not recover it back because paid under a mistake of law."

DEATHS DURING WEEK ENDED JUNE 23, 1945

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended June 23, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	9,111	8,557
Average for 3 prior years	8,532	
Total deaths, first 25 weeks of year	234,564	238,970
Deaths under 1 year of age	603	621
Average for 3 prior years	597	
Deaths under 1 year of age, first 25 weeks of year	15,347	15,653
Data from industrial insurance companies:		
Policies in force	67,379,078	66,635,780
Number of death claims	12,544	12,227
Death claims per 1,000 policies in force, annual rate	9.7	9.6
Death claims per 1,000 policies, first 25 weeks of year, annual rate	10.9	10.6

PREVALENCE 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 JUNE 30, 1945

Summary

Of the total of 155 cases of poliomyelitis reported for the current week, as compared with 116 for the preceding week, 220 for the corresponding week last year, and 79 for the 5-year (1940–44) median, 103 occurred in 6 States reporting more than 5 cases each, as follows (last week's figures in parentheses): New York 16 (16), South Carolina 8 (5), Tennessee 6 (2), Alabama 7 (8), Texas 54 (39), California 12 (9). The current week is the second successive week in which a smaller number of cases was reported than for the corresponding week last year. The difference is 65 for the current week as compared with 9 for the preceding week.

The total for the first 26 weeks of the year is 1,270, as compared with 1,002 for the same period last year, and a 5-year median of 776. Of the total to date this year, 873 cases have been reported since March 17, the week of lowest reported incidence to date this year, as compared with 739 for the corresponding period last year.

Following declines during the past 4 weeks, the incidence of meningococcus meningitis increased. A total of 143 cases was reported, as compared with 122 last week, 179 for the corresponding week last year, and a 5-year median of 52. States reporting the largest numbers are New York (17), Michigan (11), Alabama (10), and California and Texas (9 each). The total to date is 5,416 as compared with 11,839 for the corresponding period last year and a 5-year median of 2,019.

Sylvatic plague infection was reported in Cheyenne County, Kans., during the week. This is the first reported infection in the State, and the locality is the farthest east in which the infection has been reported in wild rodents or their ectoparasites.

A total of 8,747 deaths was reported in 93 large cities in the United States during the current week, as compared with 9,111 last week, a 3-year (1942–44) average of 8,558, and 8,476 for the corresponding week last year.

Telegraphic morbidity reports from State health officers for the week ended June 30 1945, and comparison with corresponding week of 1944, and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	June 30, 1945	July 1, 1944		June 30, 1945	July 1, 1944		June 30, 1945	July 1, 1944		June 30, 1945	July 1, 1944	
NEW ENGLAND												
Maine	1	0	0	------	------	------	2	111	111	0	1	1
New Hampshire	0	0	0	------	------	------	15	9	6	1	0	0
Vermont	0	0	0	------	------	------	22	1	55	0	0	0
Massachusetts	6	1	1	------	------	------	315	457	738	5	4	4
Rhode Island	0	0	0	25	------	------	6	20	53	1	0	0
Connecticut	2	0	0	1	------	------	54	141	141	1	7	2
MIDDLE ATLANTIC												
New York	13	7	13	[1] 1	[1] 3	[1] 3	152	609	686	17	27	9
New Jersey	2	2	3	1	4	4	48	344	714	3	5	3
Pennsylvania	3	4	7	------	------	------	407	182	260	8	6	3
EAST NORTH CENTRAL												
Ohio	9	4	6	1	3	3	35	35	90	6	6	1
Indiana	5	1	1	6	3	4	16	25	37	3	2	0
Illinois	0	3	12	3	2	11	373	81	185	7	6	0
Michigan [2]	11	7	5	4	------	------	181	259	692	11	12	1
Wisconsin	1	1	1	1	3	9	93	644	793	4	4	1
WEST NORTH CENTRAL												
Minnesota	2	11	4	------	------	------	9	67	66	1	5	1
Iowa	4	1	1	------	------	------	49	45	61	4	2	0
Missouri	2	1	1	2	1	------	36	23	31	3	5	1
North Dakota	7	0	0	2	------	------	1	0	9	0	0	0
South Dakota	2	0	0	------	------	------	15	1	3	1	0	0
Nebraska	1	1	1	1	------	------	7	20	20	0	1	1
Kansas	4	3	3	1	------	------	29	63	69	1	6	1
SOUTH ATLANTIC												
Delaware	0	0	0	------	------	------	2	0	4	0	1	0
Maryland [2]	5	4	2	------	------	1	9	42	65	6	8	5
District of Columbia	0	0	0	------	------	------	1	30	30	0	0	0
Virginia	2	5	5	74	56	44	21	134	134	4	5	4
West Virginia	2	2	2	9	2	2	4	50	38	0	2	1
North Carolina	7	4	4	------	------	1	46	122	122	5	3	2
South Carolina	9	6	6	53	106	80	19	144	34	3	2	0
Georgia	1	3	3	62	3	3	0	11	25	1	1	1
Florida	1	3	2	------	1	1	10	46	22	1	3	2
EAST SOUTH CENTRAL												
Kentucky	3	0	1	------	5	2	39	31	31	0	6	3
Tennessee	1	1	2	3	4	5	20	11	35	4	1	1
Alabama	3	2	6	6	16	3	1	16	62	10	3	1
Mississippi [2] *	8	3	2	------	------	------	------	------	------	2	1	0
WEST SOUTH CENTRAL												
Arkansas	2	1	2	2	27	1	27	33	28	5	0	0
Louisiana	4	7	4	------	4	2	27	8	8	1	1	1
Oklahoma	3	0	0	9	12	9	14	45	39	0	2	1
Texas	28	30	15	338	249	249	208	442	196	9	11	3
MOUNTAIN												
Montana	0	5	0	------	------	------	4	15	31	1	1	1
Idaho	1	0	0	------	------	------	3	4	10	0	1	0
Wyoming	0	0	0	------	------	------	4	14	14	0	0	0
Colorado	5	2	7	12	45	9	8	69	61	1	1	1
New Mexico	6	3	2	1	1	------	6	12	12	0	0	0
Arizona	0	0	0	38	28	30	0	14	25	1	0	0
Utah [2]	1	1	0	------	------	------	205	41	50	1	1	0
Nevada	0	0	0	------	------	------	1	2	2	0	0	0
PACIFIC												
Washington	10	2	4	2	1	------	185	137	133	2	4	1
Oregon	10	1	2	1	1	3	33	53	48	0	0	0
California	18	27	11	13	12	36	667	1,371	362	9	22	9
Total	205	159	143	672	592	592	3,429	6,034	6,619	143	179	52
26 weeks	6,738	5,578	6,314	66,474	335523	166,672	91,224	576,549	509,829	5,418	11,839	2,019

*Report for current week not received.

[1] New York City only.

[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended June 30, 1945, and comparison with corresponding week of 1943 and 5-year median—Continued

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	June 30, 1945	July 1, 1944		June 30, 1945	July 1, 1944		June 30, 1945	July 1, 1944		June 30, 1944	July 1, 1944	
NEW ENGLAND												
Maine	0	0	0	28	5	6	0	0	0	1	1	1
New Hampshire	0	1	0	2	0	1	0	0	0	0	0	0
Vermont	0	0	0	6	3	3	0	0	0	0	0	0
Massachusetts	2	0	0	104	153	147	0	0	0	4	5	4
Rhode Island	0	0	0	2	1	5	0	0	0	0	1	1
Connecticut	1	0	0	20	23	23	0	0	0	1	0	0
MIDDLE ATLANTIC												
New York	16	25	4	309	176	176	0	0	0	3	3	6
New Jersey	5	2	0	32	60	60	0	0	0	0	1	2
Pennsylvania	1	6	1	161	113	113	0	0	0	3	4	10
EAST NORTH CENTRAL												
Ohio	5	6	1	126	95	82	0	0	0	4	2	8
Indiana	3	0	0	29	20	20	0	0	0	3	1	1
Illinois	2	2	2	114	59	62	0	0	2	2	3	3
Michigan [2]	0	0	1	104	64	85	0	0	0	2	4	3
Wisconsin	0	2	0	82	68	60	1	0	0	0	1	0
WEST NORTH CENTRAL												
Minnesota	1	5	1	42	38	25	0	0	0	0	0	0
Iowa	1	0	0	21	17	13	0	0	0	0	1	1
Missouri	2	1	1	15	12	12	0	0	0	1	2	5
North Dakota	0	0	0	9	8	3	2	3	0	0	0	0
South Dakota	0	0	0	1	8	4	0	0	0	1	0	0
Nebraska	0	0	0	10	9	8	0	0	0	0	0	0
Kansas	1	1	1	41	17	17	0	0	0	0	3	3
SOUTH ATLANTIC												
Delaware	1	0	0	1	1	2	0	0	0	0	0	1
Maryland [2]	1	1	0	31	24	20	0	0	0	0	1	1
District of Columbia	3	0	0	13	17	7	0	0	0	2	0	0
Virginia	5	6	1	45	16	12	0	0	0	15	3	4
West Virginia	2	1	0	26	21	13	0	0	0	3	0	2
North Carolina	5	83	1	32	12	11	0	0	0	4	0	4
South Carolina	8	2	2	2	2	2	0	0	0	9	5	5
Georgia	1	2	1	1	7	7	0	0	0	6	9	13
Florida	1	6	1	4	4	3	0	0	0	18	4	2
EAST SOUTH CENTRAL												
Kentucky	3	29	0	19	10	19	0	0	0	3	5	8
Tennessee	6	1	1	13	8	18	0	0	0	10	2	11
Alabama	7	1	1	5	5	5	0	0	0	9	1	3
Mississippi [2*]	0	3	2	2	7	3	0	0	0	4	2	6
WEST SOUTH CENTRAL												
Arkansas	1	4	3	7	3	2	0	0	0	3	7	8
Louisiana	1	4	2	5	4	5	0	0	0	2	2	12
Oklahoma	3	2	1	18	3	4	1	0	0	1	2	2
Texas	54	5	4	48	34	25	0	0	0	15	21	17
MOUNTAIN												
Montana	0	0	0	2	17	6	0	0	0	1	1	0
Idaho	0	0	0	0	4	2	0	0	0	1	1	1
Wyoming	0	0	0	5	3	4	1	0	0	1	0	0
Colorado	0	1	1	17	23	15	0	0	0	1	3	1
New Mexico	0	0	0	5	2	2	0	0	0	1	2	2
Arizona	0	0	0	10	8	4	0	0	0	2	0	0
Utah [2]	0	0	0	10	19	5	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	0	0	0	21	45	13	0	0	0	0	1	1
Oregon	1	5	0	17	23	4	0	1	0	0	1	1
California	12	13	13	188	202	75	0	0	0	0	6	4
Total	155	220	79	1,805	1,473	1,415	5	4	14	136	111	166
37 weeks	1,270	1,002	776	127,915	141,393	92,168	245	267	576	1,733	2,115	2,378

*Report for current week not received.
[2] Period ended earlier than Saturday.
[3] Including paratyphoid fever reported separately as follows: Massachusetts 3; New York 1; Ohio 1; Virginia 2; North Carolina 1; Georgia 1; Tennessee 1; Texas 1.

Telegraphic morbidity reports from State health officers for the week ended June 30, 1945, and comparison with corresponding week of 1944 and 5-year median—Continued.

Division and State	Whooping cough			Week ended June 30, 1945								
	Week ended—		Median 1940–44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever	Undulant fever
	June 30, 1945	July 1, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	100	11	19	0	0	0	0	0	0	0	1
New Hampshire	0	0	0	0	0	0	0	0	0	0	0
Vermont	11	20	20	0	0	0	0	0	0	0	2
Massachusetts	107	52	144	0	1	0	0	0	0	0	1
Rhode Island	28	10	13	0	0	0	0	0	0	0	0
Connecticut	53	33	33	0	0	0	0	0	0	0	1
MIDDLE ATLANTIC											
New York	258	142	270	2	3	0	0	1	0	0	4
New Jersey	174	70	118	0	0	0	0	0	0	0	2
Pennsylvania	214	66	287	0	0	0	0	1	0	0	
EAST NORTH CENTRAL											
Ohio	127	227	236	0	1	0	0	0	0	0	
Indiana	33	30	30	0	0	1	0	2	0	0	
Illinois	81	62	117	1	0	0	1	0	2	0	
Michigan [2]	44	66	179	1	0	0	0	0	0	0	
Wisconsin	48	71	129	0	0	0	0	0	0	0	
WEST NORTH CENTRAL											
Minnesota	7	9	34	5	0	0	0	0	0	0	
Iowa	1	12	32	0	0	0	0	0	0	0	0
Missouri	23	29	29	0	0	0	0	0	0	0	0
North Dakota	0	5	6	0	0	0	0	0	0	0	1
South Dakota	4	0	7	0	0	0	0	0	0	0	1
Nebraska	2	13	13	0	0	0	0	0	0	0	0
Kansas	17	52	54	0	0	0	0	0	0	0	5
SOUTH ATLANTIC											
Delaware	0	1	4	0	0	0	0	0	0	0	0
Maryland [2]	70	83	83	0	0	0	1	2	0	0	1
District of Columbia	22	3	9	0	0	0	0	0	0	0	0
Virginia	67	50	67	1	0	122	0	4	1	0	0
West Virginia	24	14	57	0	0	0	0	1	0	0	0
North Carolina	287	190	190	0	0	0	2	4	0	1	2
South Carolina	96	123	50	1	62	0	0	0	0	2	0
Georgia	19	18	17	2	11	1	0	2	0	28	
Florida	3	33	11	0	0	0	0	0	0	9	
EAST SOUTH CENTRAL											
Kentucky	44	93	69	0	0	0	0	1	0	0	0
Tennessee	30	25	58	1	0	7	1	0	2	0	1
Alabama	21	30	30	3	0	0	0	2	0	9	1
Mississippi [2] *				0	0	0	0	0	1	2	3
WEST SOUTH CENTRAL											
Arkansas	10	23	22	0	7	0	1	0	8	0	0
Louisiana	3	0	10	1	1	0	0	0	0	13	2
Oklahoma	22	7	16	0	1	0	0	0	1	0	1
Texas	264	254	274	18	605	58	0	0	0	63	36
MOUNTAIN											
Montana	4	8	13	0	0	0	0	0	0	0	0
Idaho	9	4	4	0	0	0	0	1	0	0	1
Wyoming	0	2	5	1	0	0	0	0	0	0	0
Colorado	28	31	24	0	0	0	0	3	0	0	1
New Mexico	8	2	17	1	0	0	0	0	0	0	0
Arizona	11	12	19	0	0	21	0	0	0	0	2
Utah [2]	31	63	70	0	0	0	0	1	0	0	5
Nevada	0	0	0	0	0	0	0	1	0	0	0
PACIFIC											
Washington	11	19	61	0	0	0	0	0	0	0	1
Oregon	17	9	23	0	0	0	0	0	0	0	0
California	240	93	203	2	4	0	0	0	0	0	4
Total	2,673	2,170	3,370	40	696	210	6	26	15	127	116
Same week 1944	2,170	------	------	79	823	474	10	26	20	118	95
Average, 1942–44	3,151	------	------	49	600	316	10	[4] 18	16	[4] 53	------
25 weeks: 1945	65,092	------	------	833	11,677	3,307	180	153	405	1,598	2,425
1944	47,504	------	------	755	8,856	2,900	284	172	300	1,410	1,792
Average, 1942–44	84,011	------	[4] 98,514	743	6,134	2,163	265	[4] 184	426	[4] 1,007	------

*Report for current week not received.
[2] Period ended earlier than Saturday.
[4] 5-year median, 1940–44. *Leprosy:* California, 1 case. *Weil's disease:* Maryland, 2 cases.

WEEKLY REPORTS FROM CITIES

City reports for week ended June 23, 1945

This table lists the reports from 89 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	2	0	------	0	0	0	3	0	2	0	0	9
New Hampshire:												
Concord	0	0	------	0	0	0	0	0	4	0	0	0
Vermont:												
Barre	0	0	------	0	24	0	0	0	0	0	0	0
Massachusetts:												
Boston	0	0	------	0	138	2	3	0	32	0	0	17
Fall River	0	0	------	0	0	0	0	1	3	0	0	4
Springfield	0	0	------	0	1	0	0	0	16	0	0	0
Worcester	0	0	------	0	47	0	7	0	7	0	0	4
Rhode Island:												
Providence	0	0	------	0	17	0	2	0	5	0	0	18
Connecticut:												
Bridgeport	0	0	------	0	0	0	0	0	3	0	0	0
Hartford	0	0	------	0	20	0	1	0	3	0	0	0
New Haven	0	0	------	0	0	0	1	0	1	0	0	13
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	1	1	4	1	10	0	1	0
New York	10	0	4	0	107	7	59	7	139	0	1	73
Rochester	0	0	------	0	2	1	6	0	15	0	0	7
Syracuse	0	0	------	0	1	1	1	0	11	0	0	47
New Jersey:												
Camden	0	0	------	0	17	0	3	0	0	0	0	1
Newark	0	0	------	0	1	1	6	2	7	0	0	14
Trenton	1	0	------	0	10	0	3	0	0	0	0	0
Pennsylvania:												
Philadelphia	3	0	------	0	551	4	25	0	30	0	0	103
Pittsburgh	0	0	------	0	0	0	4	1	18	0	0	4
Reading	0	0	------	0	2	0	2	0	4	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	------	0	5	2	7	0	8	0	0	15
Cleveland	1	0	1	0	10	1	7	1	22	0	0	24
Columbus	0	0	------	0	0	0	0	0	5	0	0	5
Indiana:												
Fort Wayne	0	0	------	0	1	0	1	0	1	1	0	0
Indianapolis	4	0	------	0	5	0	6	0	8	0	0	0
South Bend	0	0	------	0	0	0	0	0	2	0	0	0
Terre Haute	0	0	------	0	0	0	0	0	1	0	0	0
Illinois:												
Chicago	0	0	2	0	245	6	17	1	52	0	0	22
Springfield	0	0	------	1	0	0	0	0	3	0	0	0
Michigan:												
Detroit	4	1	1	0	150	3	11	0	59	0	2	22
Flint	0	0	------	0	1	0	1	0	5	0	0	1
Grand Rapids	0	0	------	0	3	0	1	0	5	0	0	1
Wisconsin:												
Kenosha	0	0	------	0	17	0	0	0	2	0	0	0
Milwaukee	0	0	------	0	28	0	2	0	33	0	0	1
Racine	0	0	------	0	2	0	0	0	2	0	0	8
Superior	0	0	------	0	14	0	0	0	0	0	0	6
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	1	0	2	0	4	0	0	1
Minneapolis	0	0	------	0	0	0	4	0	19	0	0	1
St. Paul	0	0	------	2	3	0	3	0	6	0	0	5
Missouri:												
Kansas City	2	0	------	1	5	0	4	0	2	0	0	0
St. Joseph	0	0	------	0	1	0	0	0	2	0	0	0
St. Louis	0	0	3	1	2	3	6	0	8	0	2	11

City reports for week ended June 23, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	0	0	------	0	4	0	3	0	8	0	0	0
Kansas:												
Topeka	0	0	------	0	0	0	0	0	6	0	0	3
Wichita	0	0	------	0	3	1	1	0	5	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	4	0	1	0	0	1
Maryland:												
Baltimore	5	0	1	0	5	1	9	1	13	0	0	67
Cumberland	0	0	------	0	0	0	1	0	1	0	0	0
Frederick	0	0	------	0	1	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	0	4	0	9	0	18	0	1	8
Virginia:												
Lynchburg	0	0	------	0	1	0	0	0	0	0	0	0
Richmond	0	0	------	0	6	0	1	0	4	0	1	0
Roanoke	1	0	------	0	0	0	0	0	0	0	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	0	0	0	4
Wheeling	0	0	------	0	2	0	1	0	1	0	0	1
North Carolina:												
Raleigh	0	0	------	0	1	0	2	0	0	0	0	5
Wilmington	0	0	------	0	1	0	0	0	1	0	0	9
Winston-Salem	0	0	------	0	0	0	2	0	5	0	0	15
South Carolina:												
Charleston	1	0	------	0	0	0	2	0	1	0	0	0
Georgia:												
Atlanta	0	0	1	1	1	0	0	1	3	0	0	1
Brunswick	0	0	------	0	0	0	0	0	0	0	0	0
Savannah	0	0	------	0	1	0	2	0	0	0	0	0
Florida:												
Tampa	0	0	------	0	0	0	2	0	0	0	0	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	19	1	5	0	2	0	0	5
Nashville	0	0	------	2	0	0	3	0	2	0	0	1
Alabama:												
Birmingham	0	0	------	0	0	1	2	4	0	0	1	3
Mobile	0	0	------	0	0	0	1	1	1	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	0	0	0	0	0	0	0	2
Louisiana:												
New Orleans	3	0	6	0	13	2	10	0	4	0	2	2
Shreveport	0	0	------	0	0	0	4	0	0	0	0	0
Texas:												
Dallas	1	0	------	0	3	0	1	1	2	0	0	2
Galveston	0	0	------	0	0	0	1	4	0	0	0	0
Houston	0	0	------	0	1	1	6	5	1	0	1	0
San Antonio	4	0	1	0	0	0	3	1	0	0	0	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	1	0	2	0	0	0	0	0
Great Falls	0	0	------	1	0	0	0	0	1	0	0	0
Helena	0	0	------	0	0	0	0	0	1	0	0	0
Missoula	0	0	------	0	0	0	0	0	0	0	1	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	0	0	5	0	3	0	5	2	4	0	0	11
Pueblo	0	0	------	0	0	0	0	0	2	0	0	3
Utah:												
Salt Lake City	0	0	------	0	63	0	0	0	3	0	0	13

City reports for week ended June 23, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	1	0	------	0	34	1	2	0	15	0	0	0
Spokane	3	0	4	0	5	0	1	0	1	0	0	0
Tacoma	0	0	------	0	36	0	0	0	3	0	1	0
California:												
Los Angeles	2	0	1	0	85	1	4	1	44	0	0	33
Sacramento	8	0	------	0	9	1	2	0	13	0	0	4
San Francisco	2	0	------	0	169	2	5	1	26	0	0	15
Total	58	1	30	9	1,903	44	298	36	751	1	14	648
Corresponding week, 1944	64	------	11	8	1,685	-----	241	------	619	0	20	482
Average, 1940–44	53	------	30	[1] 9	[2] 3,170	-----	[1] 257	------	661	0	22	1,041

[1] 3-year average, 1942–44. [2] 5-year median, 1940–44.

Dysentery, amebic.—Cases: New Haven, 1; New York, 2; Los Angeles, 1; San Francisco, 1.
Dysentery, bacillary.—Cases: Providence, 1; New York, 3; Chicago, 2; Charleston, S. C., 10; Los Angeles, 2.
Dysentery, unspecified.—Cases: San Antonio, 14.
Leprosy.—Cases; Seattle, 1.
Rocky Mountain spotted fever.—Cases: St. Louis, 1; Lynchburg, 1.
Tularemia.—Cases: St. Louis, 1.
Typhus fever, endemic.—Cases: Savannah, 1; Birmingham, 2; New Orleans, 2; Galveston, 1; Houston, 3; San Antonio, 3; Los Angeles, 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 89 cities in the preceding table (estimated population, 1943, 34,366,400)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	5.2	0.0	0.0	0.0	646	5.2	44.4	2.6	199	0.0	0.0	170
Middle Atlantic	6.5	0.0	1.9	0.0	320	6.9	52.3	5.1	108	0.0	0.9	116
East North Central	5.4	0.6	2.4	0.6	292	7.3	32.2	1.2	126	0.6	1.2	64
West North Central	4.0	0.0	6.0	8.0	38	8.0	46.3	0.0	121	0.0	4.0	44
South Atlantic	11.4	0.0	3.3	1.6	38	1.6	57.2	3.3	78	0.0	3.3	181
East South Central	0.0	0.0	0.0	11.8	112	11.8	64.9	29.5	30	0.0	5.9	53
West South Central	23.0	0.0	20.1	0.0	49	8.6	71.7	31.6	20	0.0	8.6	20
Mountain	0.0	0.0	39.7	7.9	532	0.0	55.6	15.9	87	0.0	7.9	214
Pacific	25.3	0.0	7.9	0.0	535	7.9	22.1	3.2	161	0.0	1.6	82
Total	8.8	0.2	4.6	1.4	290	6.7	45.3	5.5	114	0.2	2.1	99

PLAGUE INFECTION IN CHEYENNE COUNTY, KANS., AND SAN BENITO COUNTY, CALIF.

Plague infection has been reported proved in a pool of 105 fleas from white-footed mice (*Peromyscus*, sp.), meadow mice (*Microtus*, sp.), and harvest mice (*Reithrodontomys*, sp.), all taken on June 2 from a location on an unmarked road in Cheyenne County, Kans., 5 miles east of a point on Highway No. 61, 5 miles south of Benkleman, Nebr.

This is the first reported instance of plague infection in Kansas, and the locality is the farthest east in which the infection has been found in wild rodents or their ectoparasites in the United States. The farthest east that such infection had previously been reported was Cimmaron County, Okla., where plague infection was found in 1944 in fleas from wood rats and white-footed mice collected 20 miles southwest of Boise City.

Plague infection was also reported proved on June 22, 1945, in 4 specimens of fleas and ticks from ground squirrels (*C. beecheyi*) in San Benito County, Calif., at locations distant from Tres Pinos, as follows: 192 fleas from 57 ground squirrels, 7 miles east and 3 miles south; 400 fleas from 62 ground squirrels, 13 miles southeast; 400 fleas and 9 ticks from 37 ground squirrels, 7 miles east and 5 miles south; 200 fleas from 23 ground squirrels, 8 miles east and 5 miles south.

TERRITORIES AND POSSESSIONS

Puerto Rico

Notifiable diseases—4 weeks ended June 16, 1945.—During the 4 weeks ended June 16, 1945, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Bilharziasis	6	Poliomyelitis	2
Chickenpox	112	Puerperal fever	1
Diphtheria	31	Syphilis	271
Dysentery	23	Tetanus	13
Filariasis	5	Tetanus, infantile	2
Gonorrhea	235	Tuberculosis (all forms)	590
Influenza	105	Typhoid fever	32
Leprosy	1	Typhus fever (murine)	16
Malaria	304	Whooping cough	87
Measles	75		

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended June 9, 1945.—During the week ended June 9, 1945, 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	20	28	2	168	375	67	38	54	83	835
Diphtheria	1	1	2	19	1	1	1			26
Dysentery, bacillary				3					1	4
Encephalitis, infectious					1	1		1		3
German measles		6		10	47		11	50	38	162
Influenza		13			41	4			6	64
Measles	2	9		173	125	24	31	94	242	700
Meningitis, meningococcus			2	2	1	1			1	7
Mumps		6		192	233	60	34	93	24	642
Poliomyelitis								1	1	2
Scarlet fever			8	57	85	15	11	14	23	213
Tuberculosis (all forms)		4	3	134	42	17	16	34	64	314
Typhoid and paratyphoid fever				10	5		1	2		18
Undulant fever				4	3			2	2	11
Venereal diseases:										
Gonorrhea	1	34	13	89	151	62	24	34	59	467
Syphilis		22	2	127	90	9	6	10	28	294
Whooping cough	2		1	135	30	5	1	18	20	212

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

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during the current year. 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.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Cholera

China—Chungking.—During the week ended June 30, 1945, cholera was said to be still spreading in Chungking, China.

Plague

Canada—Alberta Province.—During the week ended June 23, 1945, plague infection was reported in 1 squirrel and in fleas from squirrels found near Pollockville, and in fleas from squirrels found near Carolside, Alberta Province, Canada.

France—Corsica—Ajaccio.—For the week ended June 23, 1945, 1 case of plague was reported in Ajaccio, Corsica, France, making a total of 5 cases reported since the beginning of the outbreak.

Great Britian—Malta.—For the week ended June 30, 1945, 4 cases of plague were reported in Malta.

Portugal—Azores.—For the week ended June 2, 1945, 1 case of plague was reported in the Azores, Portugal.

Smallpox

Belgian Congo.—Smallpox has been reported in Belgian Congo as follows: Weeks ended—May 12, 1945, 193 cases, 3 deaths; May 19, 1945, 701 cases, 4 deaths; May 26, 1945, 64 cases, 2 deaths.

British East Africa—Tanganyika.—For the week ended May 26, 1945, 136 cases of smallpox were reported in Tanganyika, British East Africa.

Sudan (French).—For the period June 1–10, 1945, 78 cases of smallpox were reported in French Sudan.

Typhus Fever

Algeria.—For the period May 11–20, 1945, 44 cases of typhus fever were reported in Algeria, including 5 cases reported in Algiers and 1 case in Oran.

Egypt.—For the week ended May 26, 1945, 782 cases of typhus fever with 111 deaths were reported in Egypt. For the week ended May 12, 1945, 77 cases of typhus fever with 23 deaths were reported in Cairo, 4 cases were reported in Port Said, 6 cases were reported in Ismailiya, and 1 case in Damietta. For the week ended April 28, 1945, 1 case of typhus fever was reported in Suez.

Germany.—A report received June 23, 1945, stated that 12,000 cases of typhus fever had been reported from 200 towns in various parts of Germany.

Guatemala.—For the month of May 1945, 143 cases of typhus fever with 14 deaths were reported in Guatemala. Departments reporting the highest incidence are: Alta Verapaz, 38 cases, 4 deaths; Quezaltenango, 30 cases, 4 deaths; San Marcos, 20 cases, 3 deaths.

Nigeria—Jos.—During the week ended June 23, 1945, typhus fever was reported to be prevalent in Jos, northern Nigeria.

Turkey.—For the week ended June 23, 1945, 42 cases of typhus fever were reported in Turkey, including 1 case in Istanbul, 2 cases in Kocaeli, 1 case in Trabzon, and 1 case in Zonguldak.

Yellow Fever

Gold Coast—Nsawam.—On June 13, 1945, 1 fatal case of yellow fever was reported in Nsawam, Gold Coast.

Sierra Leone—Moyamba.—On June 13, 1945, 1 case of suspected yellow fever was reported in Moyamba, Sierra Leone.

Venezuela—Tachira State—Morotuto.—For the week ended June 30, 1945, 1 confirmed case of yellow fever was reported in Morotuto, near La Grita, Tachira State, Venezuela.

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