Public Health Reports

Vol. 59 • NOVEMBER 10, 1944 • *No. 45*

THE PROPHYLACTIC EFFECT OF SULFADIAZINE AND SULFAGUANIDINE AGAINST MOSQUITO-BORNE *PLASMODIUM GALLINACEUM* INFECTION IN THE DOMESTIC FOWL (PRELIMINARY REPORT) [1]

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Recent work by numerous investigators has shown that several of the sulfonamide compounds possess antimalarial properties when employed therapeutically against human, simian, and bird malaria. Only one report has come to our attention, however, in which a drug of this group has been tested prophylactically. Sinton, Hutton, and Shute in 1939 (*1*), reporting on the use of para-benzylaminobenzenesulfonamide (proseptasine) in a small group of human subjects, state that this drug "appears to have a true causal prophylactic action" when employed against mosquito-borne infections of the Roumanian strain of *Plasmodium falciparum*.[2] The recent availability of *P. gallinaceum* Brumpt, which can readily be transmitted to the domestic fowl by *Aedes* mosquitoes, has given an opportunity to test two of these compounds, 2-(sulfanilamido)pyrimidine, (sulfadiazine), and para-aminophenylsulfonylguanidine monohydrate, (sulfaguanidine), prophylactically against experimental mosquito-borne malaria.

MATERIAL AND METHODS

A single strain of White Rock chicks was used throughout these studies. Chicks 3 to 7 days old were selected. For inoculation

[1] From the Division of Physiology, National Institute of Health. The work described in this paper was done under a transfer of funds, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the National Institute of Health. The manuscript was filed with the Committee on Medical Research on April 27, 1942, and released for publication on September 26, 1944.

[2] Since this paper was filed for publication, we have found that Coggeshall, Maier, and Best in 1941 (*2*) had noted that promin failed to prevent or delay the development of *P. cynomolgi* in monkeys when given prior to the intravenous inoculation of sporozoites.

with sporozoites, one *Aedes aegypti* mosquito, previously fed on a parasitized bird and permitted to incubate for a suitable interval, was allowed to bite each bird. After biting, the mosquito was immediately dissected; if sporozoites were found in the salivary glands, the bird was considered successfully inoculated. If the mosquito was found to be negative for the infection, the procedure was repeated until a potentially infective bite was obtained. Blood smears were made daily on all test birds, beginning on the 6th day after the mosquito bite, and stained with Giemsa. Parasite estimations were recorded in terms of parasitized cells per 10,000 red blood cells, but actual counts are omitted from this report. Drugs were given orally by capsule twice daily, at 8:30 a. m. and 4:30 p. m., exposure to mosquitoes occurring between the first and second doses of the drug in all treated birds. Dosages given and periods of administration are indicated in the individual experiments. In reckoning the time of events, the day following a mosquito bite or an inoculation is the first day counted. Brain smears were made of all birds dying during the experiments; these were stained with Giemsa and examined for the presence of exoerythrocytic forms.

EXPERIMENTS AND RESULTS

Experiment 1.—A group of 24 chicks, 7 days old, was divided into 3 series of 8 birds each. Series A was given sulfadiazine, 1.0 milligram per gram of body weight, twice daily for 8 days. Series B received corresponding treatment using sulfaguanidine. Series C served as the control. All birds were bitten by infected mosquitoes as outlined above.

One bird in series B died on the 3rd day of the experiment The other birds in series A and B showed no evidence of infection for 35 days following the mosquito bites. In the control series one bird died on the 7th day with no evidence of infection, and another remained negative to the 35th day; the other six birds of the series first showed parasites in the blood between the 7th and 12th days, and all died of infection between the 10th and 16th days.

To test for evidence of subpatent infection in the 15 birds of the 2 treated series and the 1 negative control, subinoculations were made on the 25th day. Seven hundredths (0.07) of a cc. of whole blood from each bird, mixed with 0.03 cc. of 2.5-percent sodium citrate solution, were given intravenously to each of 16 four-day-old chicks. None of these subinoculated birds became infected, as determined by daily smears continued for 30 days.

To test further for possible subpatent infection, each of the 16 original birds was inoculated intravenously with heavily parasitized blood on the 35th day after initial exposure, the dosage being adjusted to the weight of the bird. Smears made 5 minutes after each inoculation showed from 60 to 180 parasitized cells per 10,000 red blood cells. All birds developed heavy infections, 11 died on the 5th day after blood inoculation and all were dead by the 21st day. A bird of the same age that had survived an acute sporozoite-induced infection was inoculated intravenously at the same time; its parasite count 5 minutes after inoculation was 160 parasitized cells per 10,000 red blood cells, but on the following day no parasites could be found, and no significant alteration in the course of a typical chronic infection was detectable during subsequent observation for 21 days. This parallels

the findings of Ballif et al. in 1938 (*3*) and unpublished work of this laboratory on superinfection of birds having chronic infections with *P. gallinaceum*.

Experiment 2.—In an attempt to obtain confirmatory evidence of the definite prophylactic action shown by sulfadiazine when given as described in experiment 1, it was decided to repeat the work using a larger group of birds. Three-day-old birds were used instead of 7-day-old birds. The treated series and the control series consisted of 12 birds each. Drug administration and exposure to mosquitoes were as given in the former experiment.

Three of the treated birds died between the 7th and 9th days after being bitten without evidence of infection; the remaining nine have survived to this writing, for 36 days, without demonstrable parasitism. Among the controls, three are negative to date; the other nine first showed parasites in the blood between the 5th and 8th days; eight of these died of the infection between the 10th and 16th days, and one is alive after 36 days with a latent infection. Inoculation of the surviving birds with parasitized blood to test for subpatent infection was carried out on the 36th day; at this writing insufficient time has elapsed for reporting the results of these tests.

Experiment 3.—The prophylactic action of sulfadiazine was so definite in the preceding experiments that it was decided to set up another experiment in which only 0.5 milligram per gram of the drug would be given twice daily and for only 4 days. A group of 20 chicks, 3 days old, was divided into 2 series, 12 test birds and 8 controls. All 20 birds were bitten by infected mosquitoes.

One treated bird died on the 7th day without evidence of infection; the other 11 birds have survived 23 days to date without demonstrable parasitism. Of the control series, one died on the 7th day without evidence of infection, and one is still negative after 23 days. The other 6 controls first showed parasites in their blood between the 8th and 12th days, and all died of the infection between the 12th and 19th days of the experiment.

Experiment 4.—The strong presumptive evidence for prophylactic action by sulfaguanidine in experiment 1 prompted an attempt to repeat the experiment using 3-day-old chicks, with 12 treated and 6 control birds. Some difficulty was experienced in getting the mosquitoes to bite on this occasion with the result that 6 of the 12 treated and 4 of the 6 control birds had to be injected mechanically with sporozoites suspended in physiological saline solution.

One treated bird died on the 8th day without evidence of infection, and two became infected, parasites appearing in the blood of one on the 18th day and in the other on the 20th day after exposure; the remaining nine are negative at this writing, 29 days after exposure. The control birds all showed parasites in the peripheral blood between the 8th and 11th days, and all died of the infection between the 12th and 16th days.

Experiment 5.—This experiment was set up to parallel experiment 3 in age of chicks, dosage, and time; the drug used was sulfaguanidine. Twelve chicks were given the drug, 0.5 milligram per gram twice daily for 4 days; the control series was the same as that used for experiment 3.

Seven of the treated group are negative for the infection to date, after 23 days; the other five first showed parasites in their blood between the 11th and 18th days of the experiment; two have died, one on the 15th and the other on the 20th day of the experiment. Data on the controls are given under experiment 3.

Other experiments.—Further work is in progress, with special emphasis on sulfadiazine, to determine the minimum oral dosage that will result in definite prophylactic effect, the blood level necessary for this effect, and the stage in the life cycle of the parasite that is vulnerable to these drugs. Preliminary results indicate that the blood

levels reached at the dosages used in the above experiments are considerably higher than levels ordinarily obtained in routine use of these drugs in human subjects.

SUMMARY AND CONCLUSIONS

Sulfadiazine was given to 2 series of chicks at a dosage of 1.0 milligram per gram twice daily for 8 days and to one series at a dosage of 0.5 milligram per gram for 4 days, beginning just prior to bites by *A. aegypti* mosquitoes infected with *P. gallinaceum*. None of the treated birds developed malaria. Sulfaguanidine was given according to the same plan; 2 of 20 birds receiving the higher dosage and 5 of 12 birds receiving the lower dosage became infected. Of the 34 control birds, 27 developed typical infections.

These data lead us to believe that sulfadiazine has decided prophylactic action against mosquito-borne *P. gallinaceum* infection in the chick; sulfaguanidine at the same oral dosage is considerably less effective.

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THE RELATION OF PARTICLE SIZE TO THE EFFECTIVENESS OF PARIS GREEN USED IN AIRPLANE DUSTING FOR MOSQUITO CONTROL [1]

By R. L. Metcalf and A. D. Hess

The application of paris green dusts by airplane is at present the most economical means of larvicidal control of *Anopheles quadrimaculatus* in extensive breeding areas. Cost records for this type of work over a number of years in the reservoirs of the Tennessee Valley Authority have shown that approximately two-thirds of the total cost of the airplane dusting program is for paris green larvicide. Studies by Hinman, Crowell, and Hurlbut (*1*) and Krusé, Hess, and Metcalf (*2*) have shown that, under ideal airplane dusting conditions, only about 25 percent of the total amount of paris green released reaches the treatment area. The remainder is dissipated by winds and propeller torque. It is therefore evident that a means of increasing the percentage of larvicide reaching the water surface of

[1] From the Biology Section, Health and Safety Department, Tennessee Valley Authority, Wilson Dam, Ala. Submitted for publication March 16, 1944.

the treatment area could effect an appreciable saving in the cost of larvicidal operations.

The settling rate of very small particles of paris green in air, assumed to act in accordance with Stokes' law, indicates that a particle 20 microns in diameter settles 25 times as fast as one of 4 microns in diameter. If the dusting were carried out in absolutely still air, the rate of settling would be of no consequence, but even under conditions of very slight air movements the drift of small particles becomes significant. The average wind velocity recorded for 18 predawn dusting experiments was about 1.5 miles per hour. Assuming a 1-mile-per-hour wind, a particle 4 microns in diameter, released from the routine dusting height of 20 feet, would drift approximately 5,000 feet, while a particle 20 microns in diameter would drift only 200 feet. It should be emphasized that the settling action of the dust cloud immediately following its release from the plane is not entirely in accordance with these theoretical settling rates. The influence of the propeller torque gives it a spiral motion and largely neutralizes the wind action for several seconds following discharge. The dust cloud, however, quickly becomes subject to wind action and the relative rates of settling under field conditions appear to conform with the theoretical values outlined above.

From these considerations it appeared that a paris green dust with particles as large as were compatible with larvicidal requirements would be ideal for airplane dusting. However, the present manufacturing trends seem to be directed toward the production of paris green with particles of extreme fineness. Current specifications for paris green to be used as an anopheline larvicide provide a limit on the maximum particle size but set no limit on the minimum particle size. Correspondence with leading manufacturers indicates that the paris green which is currently being supplied for airplane dusting is of much finer particle size than required to meet larvicidal specifications. The standard paris greens of four different manufacturers range from 87 to 100 percent by weight below 20 microns in diameter, and in one case 78 percent is below 10 microns.

This information seemed to indicate the desirability of developing specifications which would set a minimum, as well as a maximum, limit on the particle size composition of paris green to be used as an anopheline larvicide. Accordingly, the writers conducted a series of studies during the season of 1943 to determine the relation of particle size to larval toxicity and dust distribution in order that more appropriate specifications might be developed.

EXPERIMENTAL

Relative ingestibility of various sized particles.—The maximum size particle which an *Anopheles* larva can ingest will limit the particle

size composition of a larvicide. Shipitzina (*3*) has determined the maximum size of particles which can be ingested by *A. maculipennis*, but no records of this factor were available for *A. quadrimaculatus*. The following experiment was therefore conducted:

Finely ground Berkshire sand, with particles from 1 to 300 microns in diameter, was dusted upon the water surfaces of clean watch glasses containing insectary-reared *Anopheles quadrimaculatus* larvae. The larvae were allowed to feed for 1 hour and were removed and placed in distilled water. Twenty larvae of each of the four instars were then crudely dissected and the cross-sectional diameter of the largest particle found in the alimentary tract of each was measured with a calibrated ocular micrometer. The results are indicated in table 1, together with the ratio of particle ingestion to head diameter in the post-occipital region. The figures of 29, 51, 68, and 106 microns, representing the average maximum-ingestion diameters for each of the four instars, are in quite close agreement with Shipitzina's results for *A. maculipennis*. For practical purposes the average maximum-ingestion diameters may be taken as 25, 50, 75, and 100 microns for the first to fourth instars, respectively.

TABLE 1.—*Maximum size of particles ingested by larval instars of* Anopheles quadrimaculatus

Instar	Number of larvae	Diameter in microns of largest ingested particles		Ratio of diameter of largest ingested particle to head width at post-occiput
		Range	Average	
First	20	18- 37	[1] 29±1.2	.18
Second	20	42- 70	[1] 51±1.6	.19
Third	20	44- 99	[1] 68±2.6	.17
Fourth	20	88-131	[1] 106±3.0	.19

[1] Standard error of the mean.

Median lethal dosage of paris green to fourth instar Anopheles quadrimaculatus *larvae*.—An important consideration of the relationship of particle size to effectiveness is the minimum amount of paris green necessary to kill a single larva. This was determined by the individual feeding of larvae in the following manner. A number of vigorous fourth instar larvae from an insectary colony kept under constant conditions of temperature and humidity were isolated each morning before feeding and were placed in clean water. A single larva was placed in a small Syracuse dish which was then observed under a binocular microscope. An approximately spherical particle of crystalline paris green of appropriate size was measured by means of a calibrated ocular micrometer in a compound microscope and was lifted by adhesion on the tip of a dissecting needle and transferred to the surface film of the water in the Syracuse dish. By guidance with the needle point, the particle was moved into the current created by the mouth parts of the larva while feeding and was observed until it was

ingested. By using transmitted light, the particle could be observed after it had entered the gut of the larva. Thus, it was possible to determine that the particle of paris green was retained by the larva and not regurgitated. After feeding, the larvae were isolated in small dishes of clean water and observed for mortality over a 24-hour period. The results are shown in table 2. They indicate that particles of paris green approximately 40 microns in diameter will kill about one-half of the larvae feeding on them. The weight of a 40-micron particle was approximately 0.0001 mg. (calculated from the volume of a sphere), using 3.22 gm. per cc., the density of paris green as given by Goodhue and Gooden (*4*), and the average live weight of 30 fourth instar larvae was 0.0023 gm. From these figures, the median lethal dosage of paris green would be 0.05 mg. per gm. of body weight. For purposes of comparison the following determinations of median lethal dosages of paris green for other insects are quoted from Shepard (*5*): Cabbage worm, 0.04; grasshopper, 0.19; Colorado potato beetle, 0.1; and cotton leafworm, 0.01.

TABLE 2.—*Toxicity of individual particles of paris green to fourth instar* Anopheles quadrimaculatus *larvae*

Number larvae fed	Diameter of particle fed (microns)	Estimated particle weight (milligrams)	Percent mortality
4	110–118	0.0022–0.0027	100
4	87–100	0.0012–0.0017	100
5	60–75	0.0004–0.0007	100
5	50	0.0002	80
10	40	0.0001	40

Relation of particle size of paris green to toxicity.—In general, the toxicity of a stomach poison insecticide increases with a decrease in the size of its component particles (*6*). To determine this relationship for paris green larvicides, attempts were made to obtain pure size fractions of paris green by screening and by air classification. Equal quantities were compared in pan tests at a constant temperature of 85° F., the larvicide being dispersed on the water surface by means of a dust settling tower (figs. 1 and 2). The larvae used were insectary-reared under conditions of constant temperature and humidity. Table 3 presents the data obtained. With first instar larvae the finer-sized particles acted more quickly, but there was no significant difference in the final kill obtained at the end of 2 hours except with the 50–75-micron material. This 50–75-micron fraction theoretically could not be ingested by first instar larvae, but the mortality produced indicates that some smaller particles were present in spite of repeated screening, and this was confirmed by microscopic examination. The slower action of the No. 5 air-classified material can be explained by

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the complete absence of very small particles, as these were totally removed in the air classifier. None of the fractions showed an appreciable difference in the final mortality to fourth instar larvae at the end of 2 hours.

TABLE 3.—*Percent mortality of* Anopheles quadrimaculatus *larvae with various sized fractions of paris green*

Material	Approximate particle size (microns)	First instar percent mortality				Fourth instar percent mortality			
		Number of larvae	30 minutes	1 hour	2 hours	Number of larvae	30 minutes	1 hour	2 hours
Colloidal	<1	52	92	96	100	80	33	81	91
Air-classified	7–30	56	25	79	97	77	16	56	82
Through 325 mesh	1–50	50	56	96	98	45	36	69	87
325–200 mesh	50–75	50	0	30	38	78	58	81	91
Control	----------	40	0	0	7.5	40	0	0	0

The results of the above tests indicate that the particle size of paris green can be increased considerably without any significant reduction in its toxicity to anopheline larvae. It is thus apparent that the ideal paris green for airplane dusting should contain a higher percentage of large particles than the materials which are generally available commercially. Ideal particle size specifications were therefore drawn up, based on the ingestibility data. These specifications set a maximum allowance of 25 percent by weight for particles under 20 microns in diameter, and provided for the remainder to be approximately evenly distributed in two fractions of 20–50 and 50–100 microns, with a 5-percent allowance for particles over 100 microns in diameter. These specifications were submitted to four leading manufacturers to find out if they could be met on a practical basis. Little interest was shown in meeting these specifications, but one manufacturer submitted a paris green which represented a compromise between the specifications and practical manufacturing requirements. This material was produced at no increased cost merely by modifying the grinding process. A particle size analysis of this "coarse" paris green compared with the "regular" paris green supplied for airplane dusting is shown in table 4.

TABLE 4.—*Particle size composition of regular and coarse paris green*

	Particle diameters in microns							
	0–3		3–7		7–20		20–50	
	Percent by weight	Percent by number	Percent by weight	Percent by number	Percent by weight	Percent by number	Percent by weight	Percent by number
Regular paris green	1	54	8	26	41	18	50	2
Coarse paris green	1	54	2	21	9	15	88	10

FIGURE 1.—Constant temperature bath and larvicidal testing pans with bell jar used as dust settling tower.

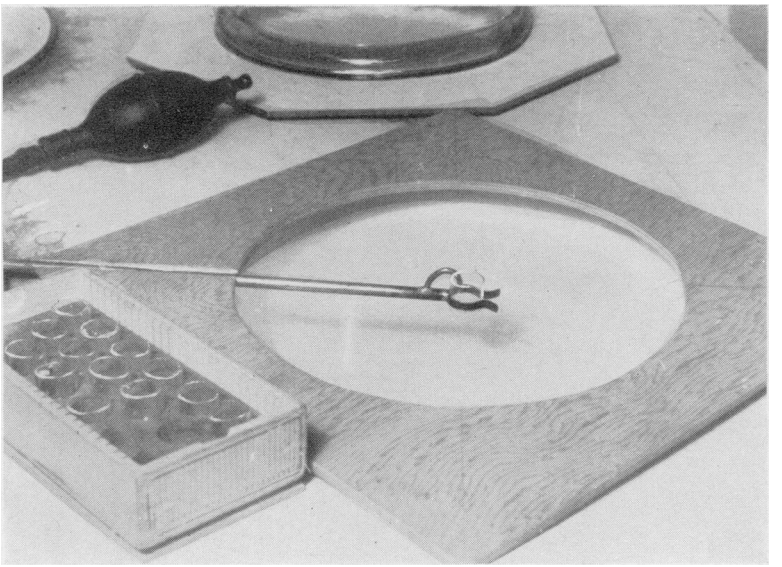

FIGURE 2.—View of dust distributing apparatus with bell jar removed.

It will be noted that, although there is a significantly greater amount of large-particle material in the coarse paris green, there are still a very large number of smaller particles present. When the percent by weight of each fraction is considered, the coarse paris green contains about 40 percent more material in the "20 microns and above" fraction, while the percent by weight in the "under 3 microns" fraction is almost identical for the two materials. The two materials were pan tested for comparative toxicities to first and fourth instar *Anopheles quadrimaculatus* larvae. Although there was some indication that the regular material had a more rapid effect, there was no significant difference in the final mortality obtained at the end of 3 hours as shown by the data presented in table 5.

TABLE 5.—*Comparative toxicity of regular and coarse paris green to* Anopheles quadrimaculatus *larvae*

	Percent mortality							
	30 minutes		1 hour		2 hours		3 hours	
	First instar	Fourth instar	First instar	Fourth instar	First instar	Fourth instar	First instar	Fourth instar
Regular	73±8	32±12	98±1	70±10	98±1	94±2	99±1	99±1
Coarse	72±5	19±7	92±4	54±10	94±4	85±4	97±2	96±2

Airplane dusting field tests.—A detailed comparison of the regular and coarse paris greens was made by studying the results of dust distribution by airplane. Both materials were diluted for application in the same way, i. e., as 22.2 percent paris green in soapstone.

The cross-sectional distribution of the dusts was determined by collection of the dust in petri dishes placed in groups of four at 20-foot intervals along two 200-foot transects. The flight was made approximately 20 feet above the center of the transects and at right angles to them. The dust in the petri dishes was analyzed chemically for arsenical content by the standard microbromate titration (*7*), four replicates being obtained at each sampling point. The results were expressed in recovery of paris green in pounds per acre. By comparing these with the total dust release (*2*), a figure was obtained for the percent recovery of dust at each sampling point along the 200-foot swath.

Five flights were made with each dust, giving a total of 10 cross sections with each material. The averages of these 10 sections for regular and for coarse paris green are plotted graphically in figure 3. The total percent recoveries over a 200-foot swath were 26.5 percent for the regular dust, and 42.8 percent for the coarse dust. Thus, the use of the coarse dust increased the amount of material reaching the treatment area by 60 percent. A few routine field tests were made

with the large-particle dust. In 2 of these tests where the larval population was measured before and after treatment 90 to 100 percent larval mortality was secured. Since the coarse material gave a 60-percent increase in recovery and equally satisfactory kills, its use is recommended in place of the regular material.

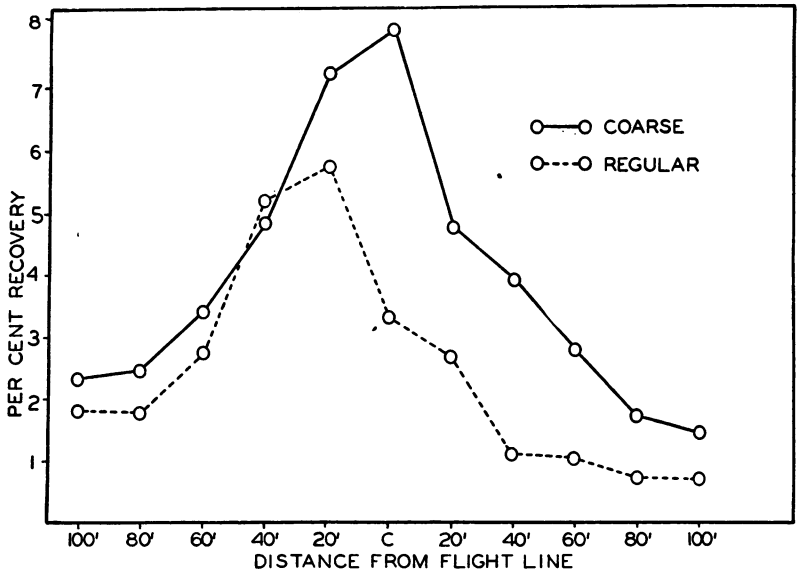

FIGURE 3.—Graph showing percent recoveries of coarse and regular paris greens at varying distances from the line of flight, each value representing the average of 10 measurements.

SUMMARY

Previous studies have shown that in airplane dusting operations for the control of *Anopheles quadrimaculatus* larvae an average of approximately 75 percent of the paris green dust drifts away from the treatment area due to its fine particle size. Studies were therefore undertaken to determine if the efficiency of the operation could be improved by increasing the particle size of the dust. Laboratory experiments showed that the average maximum diameter of particles ingested by first to fourth instar *Anopheles quadrimaculatus* larvae were 29, 51, 68, and 106 microns, respectively. The median lethal dose of paris green to fourth instar *A. quadrimaculatus* larvae was 0.05 mg. per gm. of body weight or the equivalent of a particle about 40 microns in diameter. Toxicity tests with fourth instar larvae showed no significant difference between paris green particles 1 micron or less in diameter and those 50 to 75 microns in diameter. A special paris green was purchased which had a particle size analysis of 84 percent by weight from 20 to 50 microns in diameter. This was compared by airplane dusting with standard paris green which had 48 percent by weight in this size range. The use of the coarse dust resulted in a 60 percent increase in the amount of dust reaching the treatment

area. Field tests with the coarse dust under average conditions gave a larval kill of 90 to 100 percent. Manufacturing costs for the large dust were no greater than for the standard product. It is therefore believed that specifications for paris green to be used in airplane dusting should be revised to encourage the production of a material with a more desirable particle size composition.

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PROVISIONAL MORTALITY RATES FOR THE FIRST QUARTER OF 1944

The mortality rates in this report are based upon preliminary data for 39 States, the District of Columbia, Alaska, Hawaii, and the Canal Zone. Comparative data for the first quarters of 1943 and 1942 are also presented for 33 States and the District of Columbia.

This report is made possible through a cooperative arrangement with the respective States, which furnish provisional quarterly tabulations of current births and deaths to the United States Public Health Service. Because of some lack of uniformity in the method of classifying deaths according to cause, as well as some delay in filing certificates, these data are preliminary and some deviation from the final figures may be expected, especially for specific causes of death for individual States. Nevertheless, it is believed that the trend in mortality within each State is reasonably accurate. Comparison of specific causes of death for different States, however, is subject to error because of the factors mentioned above.

Population estimates for the different States used in computing rates were as follows: 1942 and 1943 populations are Bureau of the Census estimates of the civilian population as of July 1 of each year; 1944 populations were obtained from these, that is, a 9-month change based on the 1942 and 1943 estimates was added to the 1943 estimates to give April 1, 1944, populations.

The crude mortality rate from all causes during the first 3 months of 1944 was 12.0 per 1,000 population (annual basis), as compared with

11.4 and 11.3 for the corresponding periods in 1943 and 1942, respectively. In connection with the increase in the crude mortality rate for all ages, the effect of recent changes in the age distribution of the population was discussed in the annual report of this series, appearing in the August 11 issue of the Public Health Reports. It was shown that an age adjustment of rates for 1943 to the 1940 age distribution of the population materially reduces the crude death rates. A summary of annual rates for all causes, 1941–43, both crude and adjusted to the 1940 age distribution of the population, is as follows:

Provisional mortality from all causes, 39 States

[Rate per 1,000]

Year	Crude	Adjusted to 1940 age distribution	Percentage excess of crude over adjusted rate
1943	10.87	10.32	5.3
1942	10.32	9.90	4.2
1941	10.43	10.18	2.5
1940	10.65	10.65	0.0

The last column of the above table shows the precentage excesses in the crude rates which are the result of an older age distribution of the population, that is, the rate for 1942 was raised approximately 4 percent, and that for 1943, 5 percent, by changes in the age distribution of the population brought about mainly by the removal of troops from the country. Since the effect of the withdrawal of troops from the population is cumulative, the crude rate for 1944 would be increased relatively more than 1943. In order to adjust for age the quarterly rates shown in detail in the following table, it would be necessary to know the number of deaths in each age group during the first quarter of 1940; these, however, are not published by the Bureau of the Census. We can, nevertheless, roughly appraise the observed increase in mortality from all causes for the first quarter, 1942–1944, as shown in the table. If adjustment for age makes approximately the same difference in quarterly as in annual rates then the crude quarterly rate for 1942 should be lowered by 4 percent, 1943 by 5 percent, and 1944 by an estimated 6 percent of the respective rates, to allow roughly for changes in age distribution. This process would give rates of 10.9, 10.9, and 11.3 per 1,000 for 1942, 1943, and 1944, respectively; or an increase of 4 percent in mortality for the first quarter, 1943 to 1944. It seems likely, therefore, that there has been some increase in mortality during the first quarter of 1944 over the first quarter of 1943, even when the age distribution of the population is taken into account. The increase in the crude death rate was widespread; 21 of the 34 States reporting had higher rates in 1944 than in 1943, in 11 States the rate was lower, and in 2 States the rate was the same in both

years. The death rate from all causes among persons insured in the Metropolitan Life Insurance Co. for the first 3 months of the year was 9.1 per 1,000 persons, as compared with 8.5 in 1943 and 8.1 in 1942. At least part of the observed increase in mortality from all causes is due to deaths from influenza and pneumonia during the epidemic of December 1943 and January 1944, mentioned later.

The increase in the total death rate resulted from some increase in all of the important diseases except nephritis and accidents other than automobile accidents. For nephritis the rate for 1944 was the same as in 1943 and was slightly below the rate in 1942. The total accident death rate also stood at the level of 1943. Deaths from automobile accidents, however, increased more than 20 percent; the rate was higher in 1944 than in 1943 in 24 of the reporting States. An outbreak of influenza reached its peak during January of 1944 and 32 of the 34 States reporting had a higher death rate in 1944 than in 1943; for the group of States the rate was higher than in either of the 2 preceding years. Fourteen of the States had higher pneumonia rates; 19 had lower rates than in 1943, and in 1 State the rate was the same. Higher tuberculosis death rates appeared in all sections of the country; 21 of the 34 States reported a higher rate than in 1943, and in 13 of the States the rate was lower. For cancer, diabetes mellitus, intracranial lesions of vascular origin, and diseases of the heart, from 21 to 24 of the 34 States reported increases over 1943 in the death rate from these diseases. Increases of 5 percent or more, seen, for example, in mortality from tuberculosis, cerebral hemorrhage, and heart disease in the first quarter of 1944 compared with the corresponding quarter of the preceding year, 1943, are probably not due entirely to changes in age distribution of the population. During past influenza epidemics other causes, particularly chronic diseases, have increased along with influenza and pneumonia. Measles was the only one of the four common childhood diseases to have a higher rate in 1944 than in 1943 or 1942.

The severe outbreak of meningococcus meningitis that started in the latter part of 1942 has continued on into 1944 and the severity of the outbreak has been reflected somewhat in the death rate. Twenty-four of the 34 reporting States contributed to the rate of 3.6 per 1,000 inhabitants for the first 3 months of 1944, as compared with a rate of 2.4 in 1943 and 0.6 in 1942.

Both the infant and maternal mortality rates continued to decline; 17 of the 33 States with available data reported a lower infant mortality rate in 1944 than in 1943 and 21 of the same group of States reported a lower maternal mortality rate.

The birth rate for the first 3 months of 1944 declined more than 5 percent from the 1943 rate, but it was still above the rate in 1942. Only 8 out of the 33 States reported an increase over 1943, 23 showed a decrease and in 2 States the rate was the same for both years.

Provisional mortality from certain causes in the first 3 months of 1944, with comparative data for the corresponding period in preceding years

State and period	All causes, rate per 1,000 population (annual basis)	Births (exclusive of stillbirths) per 1,000 population (annual basis)	Rate per 1,000 live births		Death rate per 100,000 population (annual basis)																		
			Total infant mortality	Maternal mortality	Typhoid and paratyphoid fever (1–2)	Dysentery (27)	Diarrhea and enteritis under 2 years (119)	Scarlet fever (8)	Diphtheria (10)	Whooping cough (9)	Measles (35)	Cerebrospinal (meningococcus) meningitis (6)	Acute poliomyelitis and polioencephalitis (36)	Acute infectious encephalitis (lethargic) (37)	Tuberculosis, all forms (13–22)	Syphilis (30)	Influenza (grippe) (33)	Pneumonia, all forms (107–109)	Cancer, all forms (45–55)	Diabetes mellitus (61)	Intracranial lesions of vascular origin (83)	Diseases of the heart (90–95)	Nephritis, all forms (130–132)	All accidents, including automobile accidents (169–195)	Automobile accidents (170a, b, c)
34 States: [1]																									
1944	12.0	19.3	43	2.2	0.2	0.4	3.5	0.5	0.7	1.5	2.6	3.6	0.1	0.6	43.4	11.1	37.3	76	131	31.3	106	370	80	63	16.3
1943	11.4	20.5	44	2.3	.3	.4	3.8	.5	.8	2.3	1.2	2.4	.2	.5	41.1	11.8	15.4	72	122	29.7	101	350	80	63	13.3
1942	11.3	18.9	46	2.8	.3	.4	3.2	.5	.9	2.0	1.5	.6	.2	.4	43.2	12.2	14.9	70	126	29.4	101	333	82	67	22.5
Industrial policyholders: [2]																									
1944	9.1	-----	-----	-----	.2	-----	[3] 3.1	.6	.9	.7	1.4	-----	-----	-----	44.0	10.7	25.0	57	111	33.8	75	[4] 269	[5] 55	54	16.0
1943	8.5	-----	-----	-----	.1	-----	[3] 2.9	.4	.8	1.4	.5	-----	-----	-----	40.8	10.9	9.3	50	110	31.4	73	[4] 261	[5] 56	48	12.2
1942	8.1	-----	-----	-----	.1	-----	[3] 3.7	.6	.6	1.0	.6	-----	-----	-----	43.8	10.8	7.6	42	107	31.5	66	[4] 244	[5] 58	50	20.7
Alaska:																									
1944	22.4	21.4	137	(6)	(6)	(6)	(6)	(6)	5.2	103.1	61.8	(6)	(6)	(6)	401.9	(6)	97.9	170	67	5.2	103	206	26	448	20.6
1943	19.9	21.2	124	(6)	(6)	(6)	(6)	(6)	(6)	57.6	41.9	(6)	(6)	(6)	361.5	10.5	104.8	215	89	10.5	63	215	21	252	10.4
1942	16.2	26.5	107	2.0	(6)	(6)	10.7	(6)	5.3	16.0	5.3	(6)	(6)	(6)	239.8	(6)	26.6	112	91	16.0	59	213	37	256	10.7
Canal Zone:																									
1944	8.7	22.2	29	11.0	(6)	8.2	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	40.8	32.6	(6)	33	82	16.3	41	114	16	244	32.6
1943	10.5	20.8	49	3.8	(6)	(6)	7.8	(6)	(6)	(6)	(6)	(6)	(6)	(6)	62.6	7.8	(6)	24	39	23.5	63	78	39	344	31.3
Colorado:																									
1944	10.5	22.2	47	2.1	(6)	(6)	4.4	.3	3.4	4.0	5.1	3.4	1.0	.3	40.1	7.8	31.7	91	114	21.9	81	283	58	61	10.5
1943	11.5	20.5	49	2.4	(6)	(6)	2.8	1.0	1.7	1.0	3.5	5.9	(6)	.7	48.5	8.7	23.4	109	122	17.4	87	296	74	78	12.2
1942	12.8	19.6	62	2.8	.7	(6)	.4	1.5	1.5	4.4	1.8	.4	.7	.4	60.6	12.1	12.8	121	130	21.6	111	293	90	106	35.4
Connecticut:																									
1944	12.0	17.0	38	1.1	(6)	.2	.7	.2	(6)	(6)	.2	5.9	(6)	.2	37.4	7.5	13.2	63	163	37.9	107	411	71	59	13.5
1943	10.1	16.4	34	1.4	(6)	(6)	2.1	.2	(6)	.9	.2	1.6	(6)	.7	26.9	5.2	3.9	47	136	32.6	95	364	54	56	13.4
1942	9.4	14.4	32	3.0	(6)	(6)	3.0	(6)	(6)	.2	.2	.5	(6)	(6)	33.4	6.8	3.0	31	121	33.6	85	325	64	51	15.5
Delaware:																									
1944	12.6	22.9	45	.6	(6)	(6)	20.1	(6)	(6)	(6)	2.9	2.9	(6)	(6)	45.9	12.9	43.0	93	119	40.2	98	382	122	80	34.4
1943	14.0	19.7	48	4.3	(6)	(6)	4.3	(6)	(6)	8.5	(6)	14.2	(6)	(6)	49.8	17.1	17.1	115	134	39.8	124	469	152	64	18.5
1942	12.7	18.2	38	(6)	(6)	(6)	4.4	2.9	(6)	(6)	(6)	(6)	(6)	(6)	56.7	11.6	11.6	93	116	20.4	132	445	122	64	17.4

District of Columbia:																								
1944	11.2	25.7	38	1.9	(6)	(6)	8.9	1.3	(6)	(6)	1.3	3.1	(6)	(6)	70.5	23.7	5.4	84	120	30.4	66	328	95	50	11.6
1943	11.7	27.1	38	1.8	(6)	(6)	5.5	.9	(6)	4.1	.9	3.2	(6)	(6)	55.6	15.0	8.2	85	137	31.4	65	344	103	54	10.0
1942	10.8	23.8	41	2.2	(6)	(6)	9.8	(6)	(6)	4.7	(6)	1.4	(6)	(6)	56.7	21.1	6.1	80	121	24.8	76	296	99	66	20.2
Florida:																									
1944	11.0	18.4	46	3.0	.5	1.1	4.8	(6)	1.0	2.1	.8	2.7	(6)	(6)	33.3	16.8	44.8	65	88	21.2	95	278	78	109	23.8
1943	10.9	17.7	52	3.6	.3	1.0	6.8	.3	1.9	2.7	.7	3.1	.3	.5	33.6	19.3	28.6	57	92	20.0	102	268	78	103	20.9
1042	11.9	17.7	59	3.7	1.9	2.3	6.8	.2	2.5	1.5	4.9	1.1	(6)	.2	44.2	16.7	25.0	69	93	21.4	118	305	71	91	33.2
Georgia:																									
1944	8.0	19.9	46	3.2	.1	.4	2.3	(6)	.1	2.0	4.0	3.5	.1	.1	30.5	10.8	18.0	58	54	10.3	86	162	77	42	14.9
1943	8.1	21.2	50	3.3	.1	.6	3.9	.3	1.5	5.4	.4	1.8	(6)	.4	33.2	10.9	26.9	64	56	12.4	80	160	87	51	12.1
1942	8.6	18.8	67	3.2	.3	1.1	2.8	.1	1.5	1.9	4.4	.5	.3	.1	35.3	12.8	28.7	74	55	11.8	88	155	91	57	20.7
Hawaii:																									
1944	8.3	27.1	38	2.3	(6)	1.8	8.2	(6)	(6)	.9	(6)	2.7	(6)	(6)	62.6	19.1	2.7	42	84	11.8	52	163	45	116	27.2
1943	7.6	24.9	48	1.1	(6)	.9	13.7	(6)	.9	.9	(6)	1.8	(6)	(6)	56.6	14.6	3.6	37	76	17.3	47	132	51	101	15.5
1942	7.2	23.2	43	1.2	2.8	(6)	6.4	(6)	(6)	5.5	(6)	.9	(6)	(6)	41.3	7.3	4.6	61	77	12.8	32	142	66	72	19.3
Idaho:																									
1944	9.9	24.0	30	(6)	(6)	(6)	(6)	.8	(6)	(6)	.8	7.1	(6)	(6)	14.2	(6)	51.4	145	74	4.0	67	327	58	68	14.2
1943	9.7	24.9	36	2.6	.8	.8	(6)	.8	1.6	(6)	5.7	1.6	(6)	.8	19.5	4.1	17.9	55	104	17.1	85	288	73	73	14.7
1942	10.3	23.4	41	1.4	.8	(6)	(6)	(6)	.8	.8	.8	(6)	(6)	.8	18.7	2.5	14.4	59	77	19.5	109	300	66	84	19.5
Illinois:																									
1944	12.9	17.3	38	1.9	.1	.4	2.4	.5	.4	.6	2.6	4.0	(6)	.4	45.1	12.6	20.6	55	166	38.8	99	462	92	58	16.3
1943	12.3	19.1	38	2.1	.2	.3	3.1	.5	1.1	1.5	.4	1.3	.1	.6	43.4	12.0	8.4	56	154	34.1	101	437	97	63	15.1
1942	11.7	16.6	37	2.3	.2	.6	1.1	.6	1.0	1.2	.6	.2	.2	.1	41.2	12.5	8.7	53	149	35.7	96	390	97	67	24.5
Indiana:																									
1944	12.7	19.9	40	1.8	1.2	.1	4.3	.6	1.1	.7	3.3	4.7	.4	.7	35.8	10.0	66.5	89	133	14.6	162	322	90	67	18.4
1943	12.9	22.3	45	2.5	.2	.1	5.1	.7	.6	3.6	3.6	1.3	.2	.2	35.5	9.4	27.5	91	124	18.4	152	302	99	67	16.5
1942	11.5	18.2	38	3.7	.2	.2	2.3	.5	.7	1.2	.2	(6)	.3	.6	40.2	10.5	29.1	73	122	12.4	143	282	81	73	30.5
Iowa:																									
1944	12.6	18.7	41	2.3	(6)	(6)	2.0	1.3	.2	1.3	1.6	1.5	(6)	.7	18.3	7.6	64.5	67	150	29.9	138	392	74	69	14.3
1943	11.4	19.3	40	3.4	.2	.2	1.0	1.6	.5	.9	.9	1.2	(6)	(6)	15.4	7.7	15.4	57	141	31.5	137	358	70	69	11.4
1942	10.5	19.8	35	2.8	(6)	.2	2.2	.2	.2	1.5	1.3	(6)	.2	.5	14.7	6.3	14.5	54	143	25.4	120	313	62	67	18.2
Kansas:																									
1944	12.2	20.2	34	2.7	(6)	.2	2.3	1.4	1.1	.9	1.8	2.9	.5	1.8	19.1	11.3	60.3	64	136	35.6	116	353	96	75	14.9
1943	12.4	20.4	41	1.7	(6)	.2	1.6	1.8	.7	2.0	.5	1.8	.5	1.8	25.7	10.0	28.0	62	134	30.7	134	370	95	86	15.3
1942	11.6	18.7	39	2.0	(6)	(6)	3.0	.9	(6)	.5	1.4	.2	.2	1.4	25.2	10.6	30.8	52	131	32.4	131	339	99	75	22.2
Kentucky:																									
1944	11.0	19.7	63	2.0	.3	.9	3.9	.3	1.5	3.3	3.9	4.4	.2	1.1	70.2	9.3	71.1	97	88	19.1	106	270	75	60	14.9
1943	10.2	21.5	56	2.2	.6	.6	4.9	.3	1.0	4.3	6.1	3.0	.4	.6	60.4	10.7	29.8	95	83	14.5	102	258	79	56	10.1
1942	9.9	16.9	69	3.8	.8	1.5	3.3	1.4	2.4	4.8	1.4	1.2	.5	.1	59.2	8.5	29.9	88	77	14.4	92	239	80	73	16.0
Louisiana:																									
1944	10.1	21.1	52	3.2	.5	1.3	6.5	.2	3.3	2.5	3.5	3.0	.2	.2	48.0	18.4	52.6	64	87	16.5	75	261	71	74	19.8
1943	9.8	22.4	49	3.4	1.0	1.0	5.4	(6)	.5	3.5	1.0	1.3	.2	.2	53.1	17.5	21.1	69	82	17.1	75	252	73	52	12.1
1942	9.7	20.1	58	3.2	1.3	.8	6.4	(6)	2.5	1.8	1.4	1.1	.3	.5	46.9	22.1	24.7	68	85	17.3	68	245	75	56	17.5
Maine:																									
1944	14.5	21.0	53	.9	(6)	(6)	6.9	(6)	(6)	2.5	2.0	2.5	(6)	(6)	32.8	4.0	57.1	83	147	30.8	138	417	101	78	11.4
1943	15.1	23.2	63	1.5	(6)	(6)	6.9	.5	(6)	5.5	.5	11.4	1.0	(6)	30.7	11.9	26.3	106	160	29.3	156	484	121	83	13.9
1942	13.6	20.8	46	1.9	.5	(6)	6.4	1.0	(6)	1.0	3.9	1.5	(6)	1.0	29.9	8.8	19.1	66	154	37.2	145	397	89	71	23.5
Maryland:																									
1944	12.3	19.4	48	1.6	(6)	.2	7.1	.2	.7	2.2	3.7	3.2	.2	.4	74.6	16.3	22.7	81	121	35.4	94	372	123	66	14.4
1943	12.5	22.3	44	1.2	.6	(6)	7.0	(6)	.8	2.5	.6	6.4	(6)	.4	63.4	15.1	7.6	88	127	32.4	102	387	126	70	15.7
1942	12.1	17.6	50	2.2	.2	(6)	4.3	.4	.4	.6	1.2	2.6	(6)	.6	69.1	18.1	8.3	86	130	31.3	101	364	122	70	27.2

See footnotes at end of table.

Provisional mortality from certain causes in the first 3 months of 1944, with comparative data for the corresponding period in preceding years—Continued

State and period	All causes, rate per 1,000 population (annual basis)	Births (exclusive of stillbirths) per 1,000 population (annual basis)	Rate per 1,000 live births		Death rate per 100,000 population (annual basis)																	
			Total infant mortality	Maternal mortality	Typhoid and paratyphoid fever (1–2)	Dysentery (27)	Diarrhea and enteritis under 2 years (119)	Scarlet fever (8)	Diphtheria (10)	Whooping cough (9)	Measles (35)	Cerebrospinal (meningococcus) meningitis (6)	Acute poliomyelitis and polioencephalitis (36)	Acute infectious encephalitis (lethargic) (37)	Tuberculosis, all forms (13–22)	Syphilis (30)	Influenza (grippe) (33)	Pneumonia, all forms (107–109)	Cancer, all forms (45–55)	Diabetes mellitus (61)	Intracranial lesions of vascular origin (83)	Diseases of the heart (90–96)	Nephritis, all forms (130–132)	All accidents, including automobile accidents (169–195)	Automobile accidents (170a, b, c)
Massachusetts:																								
1944	14.1	(7)	(7)	(7)	.2	.2	2.5	.3	.1	.5	.1	3.3	(6)	.6	45.3	6.9	14.3	105	186	41.7	122	523	69	71	14.6
1943	14.1	(7)	(7)	(7)	.3	.1	5.8	1.0	.2	1.2	.6	2.9	.1	.1	43.7	7.0	5.2	102	172	40.7	125	535	73	73	10.1
1942	12.4	(7)	(7))	(7)	.2	(6)	2.1	.4	.1	.8	.5	.7	(6)	.2	36.0	6.5	4.2	78	175	39.7	125	435	70	68	17.0
Michigan:																								
1944	11.3	19.8	46	1.9	(6)	.5	4.5	.2	.4	.9	2.4	4.3	.1	.8	35.9	11.0	23.0	72	130	32.2	106	356	54	62	23.5
1943	11.2	22.6	45	2.3	.1	.1	5.4	.2	.4	1.7	.2	1.6	.1	.2	35.1	10.3	12.0	77	124	31.4	102	361	60	56	14.4
1942	10.0	20.1	42	2.3	.1	.5	2.9	1.1	.3	1.1	.1	.3	.1	.3	34.9	11.1	6.2	61	113	27.5	95	308	52	62	25.9
Minnesota:																								
1944	12.0	21.9	36	1.4	(6)	.3	3.2	1.6	.6	.6	7.7	2.7	(6)	.6	28.7	6.0	34.4	80	162	35.8	106	356	39	63	12.9
1943	11.1	23.4	35	1.8	(6)	(6)	1.6	.6	.9	1.4	.3	.8	(6)	.8	26.9	8.2	9.8	67	153	30.7	122	335	49	57	7.7
1942	9.9	20.2	31	1.1	.2	.3	4.3	.2	.3	.5	.8	.3	.3	.2	24.2	8.7	9.0	56	142	25.1	102	295	42	62	19.9
Missouri:																								
1944	13.6	19.4	38	1.9	.3	.1	2.3	.3	.9	2.5	3.1	4.2	.1	.5	50.9	15.4	55.1	110	152	30.8	119	407	117	65	17.0
1943	12.9	23.7	37	1.8	.4	.6	2.8	.9	2.4	.9	1.6	2.8	.5	.9	44.3	14.7	17.3	113	140	29.1	109	387	129	68	12.4
1942	13.4	20.2	41	3.2	.3	.2	2.6	.5	1.1	1.5	1.9	.5	.4	.7	46.3	16.7	19.0	112	157	28.4	119	362	131	75	23.4
Montana:																								
1944	13.1	22.7	42	3.5	(6)	(6)	5.3	(6)	4.4	.9	7.9	.9	.9	1.8	42.2	17.6	36.1	69	144	36.1	108	386	56	100	17.6
1943	12.1	23.4	50	1.1	.8	2.5	3.3	1.7	1.7	3.3	2.5	(6)	(6)	(6)	46.1	8.4	7.5	70	112	21.8	97	317	61	154	15.9
1942	10.9	20.2	49	3.1	(6)	(6)	2.4	.8	2.4	2.4	(6)	.8	(6)	.8	41.7	15.0	9.4	58	113	11.0	110	298	58	74	23.6
Nebraska:																								
1944	11.7	20.1	30	1.8	.3	(6)	2.3	1.3	1.0	2.0	.7	2.3	.7	1.0	21.0	9.7	61.0	64	123	34.3	117	338	83	74	15.7
1943	11.6	20.1	44	1.5	(6)	(6)	2.0	1.3	1.0	1.0	4.3	1.7	(6)	.3	17.8	7.6	23.1	64	136	38.0	105	348	88	55	9.9
1942	10.0	17.8	37	2.2	(6)	.3	1.0	.3	.7	1.0	.3	.3	.3	.7	13.1	9.1	18.6	42	136	29.7	96	291	69	58	14.7
Nevada:																								
1944	12.2	20.9	54	2.6	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	40.9	24.5	30.0	84	87	13.6	104	264	60	193	24.5
1943	12.4	20.9	62	2.7	(6)	(6)	(6)	(6)	(6)	5.7	(6)	2.8	(6)	(6)	56.6	25.5	5.7	139	88	14.2	54	311	54	150	34.0
1942	13.5	16.1	48	(6)	(6)	(6)	(6)	(6)	(6)	9.0	(6)	(6)	(6)	3.0	68.6	9.0	9.0	42	119	11.9	96	367	63	275	83.6

New Hampshire:																									
1944	14.9	19.0	45	1.9	(6)	(6)	2.7	1.8	(6)	2.7	(6)	4.6	.9	(6)	22.8	11.9	50.2	100	160	49.3	144	527	82	70	16.4
New Jersey:																									
1944	12.5	17.0	35	1.4	.1	(5)	3.7	.2	.1	.3	.5	4.4	.1	1.3	38.8	9.7	19.2	64	155	41.2	113	457	81	66	17.0
1943	12.4	20.5	36	1.8	.1	.2	4.2	.5	.5	.9	.9	4.3	.1	.6	43.9	10.9	6.4	63	142	38.6	111	454	79	62	16.9
1942	12.0	17.2	34	1.9	.1	.3	1.9	.3	(6)	.4	.1	.3	.1	.6	44.3	8.7	5.9	64	152	41.2	101	419	77	68	24.3
New Mexico:																									
1944	11.6	30.4	79	4.2	1.5	2.3	11.3	(6)	3.8	3.0	3.0	2.3	(6)	1.5	81.5	12.8	40.0	86	67	12.8	57	158	60	103	15.8
1943	11.5	29.0	83	6.0	1.5	3.0	19.0	(6)	1.5	6.1	9.9	.8	.8	(6)	79.7	12.2	20.5	90	87	15.9	43	136	43	147	26.6
1942	10.8	26.6	102	2.6	.8	4.6	11.5	(6)	2.3	13.8	11.5	.8	(6)	.8	64.4	13.0	29.9	113	49	7.7	39	156	55	72	33.7
New York:																									
1944	13.4	17.5	33	1.9	.2	.1	2.5	.3	.0	.5	.5	4.6	.1	1.2	51.6	12.3	11.1	73	178	48.6	90	516	68	53	13.8
1943	13.4	20.6	35	1.8	.1	.3	3.6	.3	.3	1.6	.9	3.1	0.	1.0	48.9	16.0	5.3	67	174	47.1	92	507	70	65	12.2
1942	12.3	17.1	34	2.2	.1	.1	3.1	.2	.2	.9	.1	.8	.1	.9	50.1	15.7	3.3	57	177	44.7	83	451	66	62	16.9
North Carolina:																									
1944	9.3	24.7	51	3.3	.2	.9	3.6	.5	.9	3.4	1.6	2.3	.3	.2	40.5	6.5	44.0	78	66	15.7	96	193	92	64	17.1
1943	8.5	26.5	48	3.3	.1	.9	4.5	.2	1.8	2.3	.4	1.7	.1	.1	40.1	7.1	17.3	69	60	12.7	95	177	77	58	17.4
1942	9.0	24.2	63	3.8	.3	.8	5.5	.6	1.1	5.1	3.6	.7	.1	.1	48.0	8.0	17.4	83	58	14.2	89	178	86	70	29.9
North Dakota:																									
1944	12.1	26.5	49	3.6	(6)	(6)	2.4	2.4	.8	.8	23.0	3.2	.8	1.6	16.7	6.3	46.8	71	129	37.3	121	309	63	64	20.6
1943	8.3	26.4	31	2.0	1.5	(6)	2.2	(6)	.7	(6)	.7	1.5	.7	1.5	23.9	5.2	9.0	42	96	22.4	88	244	54	40	4.5
1942	8.0	17.9	43	3.1	.7	.7	6.2	.7	(6)	2.1	2.1	(6)	(6)	1.4	22.9	2.1	6.2	28	83	18.7	78	171	35	27	9.0
Ohio:																									
1944	12.9	16.8	46	2.2	.4	.1	4.6	1.0	.4	1.1	5.1	4.5	.1	.6	42.4	12.5	49.5	76	142	35.5	129	375	76	70	21.3
1943	12.1	19.5	45	2.0	.1	.4	3.2	.5	.9	2.1	.5	1.2	.1	.4	38.9	14.3	18.0	70	138	36.3	125	373	76	75	17.1
1942	12.0	17.6	44	2.3	.2	.1	2.7	.4	.5	2.8	.8	.1	.1	.1	39.7	12.9	16.7	75	135	37.2	113	362	85	83	31.3
Oklahoma:																									
1944	10.1	22.3	41	2.6	.2	1.1	2.9	.6	1.7	2.5	1.3	.8	1.0	(6)	47.7	10.8	50.2	80	91	19.6	97	235	59	73	13.5
1943	9.3	17.7	58	2.7	.9	1.1	3.0	.2	2.2	3.4	.2	3.7	(6)	.4	40.2	9.5	24.3	69	86	18.1	97	202	57	63	12.3
1942	12.7	28.4	44	3.6	.7	1.1	2.2	.5	3.8	3.1	12.5	.9	1.1	.9	59.7	8.2	29.7	90	116	23.1	113	268	75	89	24.4
Oregon:																									
1944	11.1	18.9	38	2.1	.6	(6)	.9	2.1	.6	(6)	1.2	3.3	.9	(6)	24.2	12.1	31.8	67	130	23.6	107	308	78	81	18.8
Pennsylvania:																									
1944	13.1	19.0	42	1.9	.2	.3	4.5	.6	.3	.8	2.4	3.0	.1	.0	39.2	10.2	44.0	78	135	39.4	109	431	96	50	11.5
1943	12.8	22.3	40	1.8	.4	.2	3.6	.4	.2	2.6	1.1	2.1	.3	.0	41.3	12.9	14.0	70	131	41.3	107	420	98	54	12.6
1942	12.3	20.9	39	2.0	.3	.1	3.8	.5	.3	1.8	1.0	.3	.2	.0	40.9	11.0	11.6	61	131	37.7	98	398	98	47	18.1
South Carolina:																									
1944	8.1	20.5	60	3.6	.4	.4	1.1	(6)	.9	3.4	2.6	1.9	(6)	.4	29.0	11.4	42.6	68	50	13.4	80	156	79	65	15.6
1943	7.9	21.5	58	4.2	.4	.8	2.7	.2	1.2	1.9	.2	2.7	.8	.2	34.9	12.5	23.5	70	47	10.8	87	148	86	60	6.9
1942	10.3	23.4	76	5.4	.8	1.0	4.6	(6)	3.0	5.0	4.2	1.0	.2	(6)	39.8	13.5	34.8	95	57	13.9	103	200	108	71	28.4
South Dakota:																									
1944	11.2	25.9	32	1.1	(6)	(6)	2.8	.7	2.1	1.4	7.8	2.8	(6)	.7	38.5	7.8	37.7	66	121	19.2	94	321	45	78	19.9
1943	10.5	27.3	34	.8	(6)	.7	2.1	1.4	2.8	2.8	9.1	.7	(6)	.7	33.8	4.9	14.1	68	104	23.2	101	261	56	81	9.8
1942	9.7	20.9	41	1.7	1.4	(6)	2.1	(6)	6.2	7.6	(6)	2.8	(6)	(6)	26.3	5.5	10.4	69	113	16.6	99	244	65	62	21.4
Tennessee:																									
1944	9.8	20.3	49	3.5	.1	.4	2.3	.4	1.1	2.0	4.4	4.5	.1	.4	69.1	13.5	58.1	83	80	12.1	92	204	61	59	16.2
1943	9.1	21.7	45	3.7	.3	.4	2.2	.3	1.2	4.4	1.6	2.1	.1	.4	66.1	12.2	30.3	70	75	11.8	91	180	60	60	13.0
1942	9.7	17.4	64	3.6	.4	.4	1.7	.8	.7	2.2	1.9	.6	1.0	.4	71.6	12.8	32.1	88	73	16.1	86	193	64	65	19.0
Texas:																									
1944	9.5	(7)	(7)	(7)	.5	2.0	8.8	.3	2.1	.8	2.4	2.6	.5	.1	49.2	12.4	52.3	72	77	16.2	72	209	58	76	18.9
1943	9.1	(7)	(7)	(7)	.7	1.9	9.2	.3	2.9	4.5	.8	1.5	.5	.2	46.9	12.4	20.2	56	79	14.1	76	222	63	76	16.5
1942	9.3	21.0	49	3.0	.9	(7)	6.7	.4	2.8	2.5	3.0	.9	.5	.2	55.8	(7)	29.2	66	77	15.2	68	208	64	72	22.9

See footnotes at end of table.

Provisional mortality from certain causes in the first 3 months of 1944, with comparative data for the corresponding period in preceding years—Continued

State and period	All causes, rate per 1,000 population (annual basis)	Births (exclusive of stillbirths) per 1,000 population (annual basis)	Rate per 1,000 live births		Death rate per 100,000 population (annual basis)																		
			Total infant mortality	Maternal mortality	Typhoid and paratyphoid fever (1–2)	Dysentery (27)	Diarrhea and enteritis under 2 years (119)	Scarlet fever (8)	Diphtheria (10)	Whooping cough (9)	Measles (35)	Cerebrospinal (meningococcus) meningitis (6)	Acute poliomyelitis and polioencephalitis (36)	Acute infectious encephalitis (lethargic) (37)	Tuberculosis, all forms (13–22)	Syphilis (30)	Influenza (grippe) (33)	Pneumonia, all forms (107–109)	Cancer, all forms (45–55)	Diabetes mellitus (61)	Intracranial lesions of vascular origin (83)	Diseases of the heart (90–95)	Nephritis, all forms (130–132)	All accidents, including automobile accidents (169–195)	Automobile accidents (170a, b, c)
Vermont:																									
1944	13.4	19.4	38	1.3	(6)	(6)	(6)	(6)	(6)	2.6	7.7	3.8	(6)	(6)	30.7	12.8	73.0	76	154	34.6	170	525	79	54	5.1
1943	14.6	20.0	56	2.5	(6)	(6)	5.0	(6)	(6)	5.0	9.9	1.2	(6)	(6)	43.4	5.0	27.3	95	161	31.0	143	442	77	43	6.2
1942	12.8	19.2	41	3.7	(6)	1.2	4.7	1.2	1.2	2.4	(6)	1.2	(6)	(6)	36.8	5.9	11.9	55	142	30.9	123	384	89	52	15.4
Virginia:																									
1944	10.1	18.4	57	3.1	.1	.5	4.0	.1	.5	4.8	3.3	4.7	.1	.5	43.6	10.7	51.1	71	74	20.4	107	250	84	63	16.9
1943	9.7	20.0	58	3.2	.4	.7	2.0	.7	1.3	3.4	.7	5.7	(6)	.7	48.4	14.0	19.0	79	73	18.6	103	232	77	62	15.6
1942	10.4	17.9	70	3.7	.4	.8	3.6	.5	1.6	4.0	1.3	2.1	.1	.5	53.4	16.9	20.0	86	74	18.4	105	248	86	71	26.0
Wisconsin:																									
1944	11.9	19.4	38	1.7	(6)	.1	2.4	1.1	.4	1.4	2.8	2.9	(6)	1.0	29.6	7.1	35.3	73	152	33.9	124	369	70	61	19.1
1943	11.2	21.0	41	2.4	.3	.4	2.3	.8	.5	.8	.5	.9	(6)	.8	25.1	5.8	11.7	60	145	33.3	116	357	66	60	9.4
1942	9.9	17.7	35	2.0	.1	(6)	2.6	1.2	.3	.8	.5	(6)	(6)	.5	24.8	5.2	7.8	49	132	30.5	99	319	57	55	19.9
Wyoming:																									
1944	9.8	21.0	35	.8	(6)	1.6	1.6	1.6	4.7	1.6	6.3	3.2	(6)	(6)	15.8	26.9	33.2	52	100	26.9	65	299	63	100	12.6
1943	8.6	19.5	47	2.5	(6)	(6)	(6)	(6)	(6)	1.6	4.8	1.6	1.6	4.8	4.8	14.3	19.1	64	73	14.3	51	236	83	83	15.9
1942	8.3	19.1	48	4.2	(6)	(6)	1.6	1.6	(6)	(6)	1.6	1.6	(6)	(6)	14.5	11.3	17.7	50	73	14.5	68	239	65	81	22.6

[1] Estimated population Apr. 1, 1944. 95,883,000. Includes all of the States listed below except Idaho, Minnesota, New Hampshire, New Jersey, Oregon, and Texas. The District of Columbia is included as a State.

[2] These data are taken from the April 1944 Statistical Bulletin published by the Metropolitan Life Insurance Co. The rates for 1943 are subject to correction as they are based on provisional estimates of lives exposed to risk. Data do not include all diseases reported to the Public Health Service.

[3] Classified as diarrhea and enteritis, age not specified.

[4] International List (1940) titles 92, 93 c, d, e, and 95 only.

[5] Chronic nephritis only.

[6] No deaths reported.

[7] Data not available.

INCIDENCE OF HOSPITALIZATION, SEPTEMBER 1944

Through the cooperation of the Hospital Service Plan Commission of the American Hospital Association, data on hospital admissions among members of Blue Cross Hospital Service Plans are presented monthly. These plans provide prepaid hospital service. The data cover hospital service plans scattered throughout the country, mostly in large cities.

Item	September	
	1943	1944
1. Number of plans supplying data	62	75
2. Number of persons eligible for hospital care	9,886,661	14,876,616
3. Number of persons admitted for hospital care	92,113	124,720
4. Incidence per 1,000 persons, annual rate, during current month (daily rate × 365)	113.4	102.2
5. Incidence per 1,000 persons, annual rate for the 12 months ending Sept. 30	105.6	103.7

DEATHS DURING WEEK ENDED OCTOBER 14, 1944

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

	Week ended Oct. 14, 1944	Corresponding week, 1943
Data from 93 large cities of the United States:		
Total deaths	8,412	8,692
Average for 3 prior years	8,272	
Total deaths, first 41 weeks of year	368,221	376,037
Deaths under 1 year of age	654	655
Average for 3 prior years	611	
Deaths under 1 year of age, first 41 weeks of year	25,387	27,226
Data from industrial insurance companies:		
Policies in force	66,782,661	65,934,354
Number of death claims	10,054	10,319
Death claims per 1,000 policies in force, annual rate	7.9	8.2
Death claims per 1,000 policies, first 41 weeks of year, annual rate	10.0	9.7

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 OCTOBER 21, 1944

Summary

The decline in the incidence of poliomyelitis since the peak week (September 2) has been somewhat less rapid than the rise preceding the peak. A slight break occurred during the current week in the downward trend of the past 6 weeks. A total of 721 cases was reported for the week—10 more than for the preceding week, and more than twice the median for the corresponding weeks of the past 5 years. Decreases were recorded only in the North Central and East South Central geographic divisions. Increases were reported in 10 of the 14 States reporting more than 13 cases each, as follows (last week's figures in parentheses): *Increases*—Massachusetts 32 (27), New York 259 (234), Michigan 23 (22), Wisconsin 15 (13), Minnesota 26 (25), Maryland 19 (16), Virginia 28 (21), West Virginia 15 (14), North Carolina 20 (10), California 15 (10); *decreases*—Pennsylvania 48 (60), Ohio 49 (60), Illinois 19 (36); *no change*—New Jersey 26 (26).

The total for the year to date is 16,856, as compared with 10,757 and 14,164 for the corresponding periods of last year and 1931, respectively, or approximately 86 percent and 90 percent of the respective totals reported for those years, the two prior years of highest incidence since 1916.

For the fourth consecutive week the incidence of meningococcus meningitis increased. A total of 175 cases for the week brings the total for the year to date to 14,329, as compared with a 5-year median of 1,673 and 15,178 for the corresponding period last year.

The incidence of scarlet fever increased during the week from 1,565 to 2,041. The 5-year median, however, is 2,089, and for the corresponding week last year the figure was 2,510. The current week's total of influenza cases, 1,277, while slightly above the median, is below the total for the week last year. While showing slight increases, the current reports of diphtheria, typhoid fever, and whooping cough are below the corresponding 5-year medians.

A total of 8,982 deaths was recorded in 92 large cities of the United States, as compared with 8,347 last week and a 3-year (1941–43) average of 8,371. The cumulative total to date is 375,295, as compared with 382,837 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Oct. 21, 1944, and comparison with corresponding week of 1943 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 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1944	
NEW ENGLAND												
Maine	0	1	0	-	-	-	1	43	31	0	4	1
New Hampshire	0	0	0	-	5	-	32	1	1	0	1	0
Vermont	0	0	0	-	-	-	1	20	10	0	1	0
Massachusetts	7	5	5	-	-	-	70	96	96	3	9	2
Rhode Island	2	0	1	12	-	-	0	23	3	1	8	1
Connecticut	0	0	0	1	2	1	12	6	6	5	4	0
MIDDLE ATLANTIC												
New York	10	8	15	[1] 2	[1] 6	[1] 6	17	125	125	23	38	2
New Jersey	4	1	3	1	3	5	5	125	24	16	12	0
Pennsylvania	7	9	11	5	2	-	19	66	105	12	13	6
EAST NORTH CENTRAL												
Ohio	8	6	21	8	1	3	6	167	22	19	12	1
Indiana	12	9	14	-	3	3	4	52	8	2	6	0
Illinois	6	7	18	27	6	6	17	16	16	11	8	3
Michigan [2]	11	12	10	-	-	-	12	25	35	10	12	0
Wisconsin	0	13	1	3	2	16	11	250	51	3	2	2
WEST NORTH CENTRAL												
Minnesota	18	10	4	1	1	1	1	228	10	3	4	0
Iowa	4	1	2	-	-	1	4	6	12	0	0	0
Missouri	2	1	10	1	2	-	1	4	4	8	7	0
North Dakota	1	4	1	-	2	2	0	155	1	1	1	0
South Dakota	1	9	7	-	-	-	3	2	4	0	0	0
Nebraska	0	0	1	-	1	-	5	3	4	2	0	0
Kansas	0	4	4	5	1	2	4	6	6	3	0	0
SOUTH ATLANTIC												
Delaware	0	0	1	-	-	-	0	3	0	1	1	0
Maryland [2]	5	6	6	-	2	2	6	5	4	2	7	3
District of Columbia	0	0	2	1	-	-	3	1	1	0	4	0
Virginia	17	22	33	103	155	104	3	78	20	2	10	1
West Virginia	3	9	9	3	5	10	1	18	3	1	3	1
North Carolina	39	29	83	-	4	2	3	15	15	1	6	0
South Carolina	30	28	32	237	303	209	9	52	3	2	2	0
Georgia	17	30	30	20	14	22	2	6	1	3	1	1
Florida	10	7	8	-	10	3	0	4	4	1	0	0
EAST SOUTH CENTRAL												
Kentucky	3	16	16	-	-	3	2	13	13	2	4	1
Tennessee	14	25	25	7	11	11	4	6	7	3	7	1
Alabama	25	32	29	20	51	39	2	5	3	3	5	1
Mississippi [2]	23	7	16	-	-	-	-	-	-	3	1	1
WEST SOUTH CENTRAL												
Arkansas	15	11	15	20	22	18	4	38	3	0	0	0
Louisiana	17	4	19	-	-	2	0	1	1	0	2	0
Oklahoma	18	6	9	41	12	26	4	1	2	1	4	0
Texas	58	49	49	664	734	414	24	35	17	12	3	1
MOUNTAIN												
Montana	2	0	1	3	-	2	4	55	13	1	0	0
Idaho	0	1	0	-	-	-	3	1	1	0	0	0
Wyoming	1	0	0	6	2	2	0	5	5	0	1	0
Colorado	8	4	9	7	10	10	6	11	19	0	0	0
New Mexico	14	0	0	-	1	1	2	3	7	0	1	0
Arizona	0	1	2	52	50	51	3	0	7	0	1	0
Utah [2]	0	0	0	2	-	3	10	4	4	1	0	0
Nevada	0	0	0	-	-	-	0	3	0	0	0	0
PACIFIC												
Washington	19	14	5	-	-	-	12	22	22	3	2	1
Oregon	0	1	1	7	11	11	34	15	15	1	5	0
California	21	36	22	18	13	18	147	45	48	10	12	2
Total	452	438	656	1,277	1,447	1,131	513	2,096	1,201	175	224	37
42 weeks	9,697	10,303	11,359	346,018	89,808	156,030	595,404	548,387	473,050	14,329	15,178	1,673

[1] New York City only.

[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended Oct. 21, 1944, and comparison with corresponding week of of 1943 and 5-year median—Continued

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1943		Oct. 21, 1944	Oct. 23, 1943	
NEW ENGLAND												
Maine	0	0	0	27	22	11	0	0	0	0	2	0
New Hampshire	2	1	1	9	4	6	0	0		0	0	0
Vermont	4	3	1	11	6	4	0	0	0	0	1	0
Massachusetts	32	17	4	119	163	94	0	0	0	4	5	2
Rhode Island	1	4	1	8	7	4	0	0	0	0	0	0
Connecticut	12	8	1	22	33	23	0	0	0	0	1	1
MIDDLE ATLANTIC												
New York	259	39	39	131	191	123	0	0	0	6	11	11
New Jersey	26	0	9	34	97	54	0	0	0	1	5	3
Pennsylvania	48	7	7	112	147	122	0	0	0	9	2	10
EAST NORTH CENTRAL												
Ohio	49	13	13	125	266	156	1	0	0	3	10	10
Indiana	7	5	4	38	78	78	1	0	0	0	0	4
Illinois	19	57	20	131	97	148	0	0	1	2	6	6
Michigan [2]	23	11	11	101	126	126	0	0	0	3	3	3
Wisconsin	15	16	7	36	114	97	0	0	0	0	1	1
WEST NORTH CENTRAL												
Minnesota	26	7	11	39	74	57	0	0	0	0	0	0
Iowa	13	4	4	31	58	52	0	0	0	1	0	3
Missouri	13	1	1	33	39	56	0	0	1	3	1	3
North Dakota	0	1	1	9	10	10	0	0	0	0	2	2
South Dakota	0	1	1	4	10	12	0	0	0	0	0	0
Nebraska	3	2	2	33	11	11	0	0	1	1	0	0
Kansas	1	22	8	69	77	62	0	0	0	0	2	3
SOUTH ATLANTIC												
Delaware	3	0	0	3	5	5	0	0	0	1	0	1
Maryland [2]	19	0	1	51	25	35	0	0	0	2	1	6
District of Columbia	9	0	0	9	15	14	0	0	0	0	0	0
Virginia	28	2	2	63	42	42	0	0	0	4	6	8
West Virginia	15	1	3	105	104	64	0	0	0	2	1	7
North Carolina	20	0	5	70	146	93	0	0	0	2	1	5
South Carolina	1	0	0	10	13	13	0	0	0	3	0	3
Georgia	6	2	1	24	33	35	0	1	0	3	4	6
Florida	1	1	1	10	1	6	0	0	0	2	1	1
EAST SOUTH CENTRAL												
Kentucky	11	3	5	19	47	48	0	0	0	4	0	10
Tennessee	2	0	1	81	57	62	0	0	0	4	3	11
Alabama	0	0	2	30	24	47	1	0	0	0	1	2
Mississippi [2]	1	0	0	15	8	14	0	0	0	7	1	2
WEST SOUTH CENTRAL												
Arkansas	1	2	2	17	7	12	0	0	0	5	1	8
Louisiana	3	1	1	12	9	8	0	0	0	3	4	5
Oklahoma	2	9	2	21	8	20	0	0	0	1	4	5
Texas	3	16	11	47	47	40	0	0	0	14	15	15
MOUNTAIN												
Montana	1	0	0	8	20	14	1	0	0	0	0	1
Idaho	2	0	0	31	7	7	0	0	0	2	0	0
Wyoming	0	5	1	3	4	4	0	0	0	0	0	0
Colorado	0	17	6	38	14	22	1	0	0	2	4	3
New Mexico	3	3	2	13	8	8	0	0	0	3	10	6
Arizona	2	0	0	8	10	2	0	0	0	2	0	0
Utah [2]	0	13	2	10	14	9	0	0	0	0	1	0
Nevada	0	0	0	0	1	0	0	0	0	0	0	0
PACIFIC												
Washington	10	24	2	46	67	25	0	0	0	2	1	2
Oregon	11	36	4	18	28	13	0	0	0	1	1	1
California	15	84	19	157	116	89	0	0	0	5	9	9
Total	722	438	334	2,041	2,510	2,089	5	1	15	107	121	227
42 weeks	16,856	10,757	7,591	158,104	111,119	111,119	329	645	1,230	4,685	4,739	7,241

[1] Period ended earlier than Saturday.

[3] Including paratyphoid fever cases reported separately as follows: Massachusetts, 3; New York, 1; Michigan, 1; Iowa, 1; Florida, 1; Texas, 3; California ,2.

Telegraphic morbidity reports from State health officers for the week ended Oct. 21, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Whooping cough			Week ended October 21, 1944								
	Week ended—		Median 1939–43	Anthrax	Dysentery			Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Oct. 21, 1944	Oct. 23, 1943			Amebic-	Bacillary	Unspecified					
NEW ENGLAND												
Maine	4	12	12	0	0	0	0	0	0	0	0	0
New Hampshire	0	12	1	0	0	0	0	0	0	0	0	0
Vermont	19	27	27	0	0	0	0	0	0	0	0	0
Massachusetts	88	78	94	0	0	6	0	0	0	0	0	0
Rhode Island	8	31	19	0	0	0	0	0	0	0	0	0
Connecticut	56	37	55	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	177	234	287	0	2	129	0	2	0	0	0	0
New Jersey	44	104	123	0	0	0	0	0	0	0	0	0
Pennsylvania	76	126	297	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL												
Ohio	92	143	165	0	0	0	0	0	0	0	0	0
Indiana	12	19	19	0	0	0	0	0	0	0	0	0
Illinois	83	105	149	0	9	11	0	0	0	0	0	0
Michigan [2]	49	212	231	0	0	9	0	0	0	0	0	0
Wisconsin	64	167	161	0	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	54	38	42	0	4	0	0	0	0	0	0	0
Iowa	6	35	16	0	0	0	0	0	0	0	0	0
Missouri	12	14	14	0	0	0	8	0	0	0	1	0
North Dakota	3	11	11	0	0	0	0	1	0	0	0	0
South Dakota	2	2	2	0	0	0	0	0	0	0	0	0
Nebraska	4	13	7	0	0	0	0	0	0	0	0	0
Kansas	13	33	33	0	0	0	0	1	0	0	0	0
SOUTH ATLANTIC												
Delaware	2	0	3	0	0	0	0	0	0	0	0	0
Maryland [2]	66	44	44	0	0	0	0	0	0	0	0	0
District of Columbia	10	2	4	0	0	0	0	0	0	0	0	0
Virginia	6	106	31	0	0	0	162	0	0	0	1	1
West Virginia	14	22	22	0	0	0	0	0	0	0	0	0
North Carolina	48	113	99	0	0	0	0	0	0	0	0	3
South Carolina	26	50	25	0	0	18	0	0	0	0	0	3
Georgia	0	11	18	0	2	7	0	0	0	0	0	24
Florida	4	16	6	0	2	0	0	1	0	0	0	2
EAST SOUTH CENTRAL												
Kentucky	12	47	40	0	0	0	0	0	0	0	0	0
Tennessee	11	32	32	0	1	0	2	0	0	1	0	2
Alabama	10	16	16	0	0	0	0	0	0	0	0	17
Mississippi	----	----	----	0	0	0	0	0	0	0	0	1
WEST SOUTH CENTRAL												
Arkansas	3	18	18	0	1	15	0	0	0	0	0	0
Louisiana	2	0	3	0	1	0	0	0	0	0	0	3
Oklahoma	4	2	7	0	0	0	7	0	0	0	0	0
Texas	150	97	97	0	33	620	28	1	1	0	3	30
MOUNTAIN												
Montana	17	14	14	0	0	0	0	0	0	0	0	0
Idaho	1	9	4	0	0	0	0	0	0	0	0	0
Wyoming	13	4	3	0	0	0	0	0	0	0	0	0
Colorado	12	50	19	0	0	0	0	0	0	0	0	0
New Mexico	2	6	17	0	0	3	3	0	0	0	0	0
Arizona	20	7	7	0	0	0	16	0	0	0	0	0
Utah [2]	7	23	23	0	0	0	0	0	0	0	0	0
Nevada	0	11	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	6	47	43	0	0	0	0	0	0	0	0	0
Oregon	7	19	13	0	0	0	0	0	0	0	0	0
California	88	110	181	0	0	16	0	3	0	0	0	1
Total	1,407	2,329	2,780	0	55	835	226	9	1	1	5	87
Same week 1943	----	----	----	2	39	299	124	17	1	1	4	130
Same week 1942	----	----	----	0	29	281	101	9	1	1	4	123
42 weeks 1944	77,889	----	----	37	1,484	19,126	7,493	552	25	440	464	4,131
42 weeks 1943	154,651	----	----	53	1,746	13,705	6,591	586	23	420	681	3,479
42 weeks 1942	147,130	----	[4] 147,861	68	997	10,632	5,830	466	39	[4] 441	741	[4] 2,309

[2] Period ended earlier than Saturday.

[4] 5-year median 1939–43.

WEEKLY REPORTS FROM CITIES

City reports for week ended Oct. 14, 1944

This table lists the reports from 86 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	0	1	-----	0	0	1	1	1	3	0	0	1
New Hampshire:												
Concord	0	0	-----	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston	0	0	-----	1	53	2	12	10	30	0	0	13
Fall River	0	0	-----	0	0	0	0	0	0	0	0	1
Springfield	0	0	-----	0	0	0	0	3	11	0	1	1
Worcester	0	0	-----	0	0	0	9	2	15	0	0	3
Rhode Island:												
Providence	0	0	1	0	0	0	1	0	3	0	0	18
Connecticut:												
Bridgeport	0	0	-----	0	0	1	0	0	2	0	0	0
Hartford	0	0	-----	0	0	0	0	0	5	0	0	0
New Haven	0	0	1	0	0	1	1	0	1	0	0	12
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	-----	0	0	0	5	10	1	0	1	1
New York	9	0	2	1	10	11	41	88	58	0	3	72
Rochester	0	0	-----	0	4	1	4	15	1	0	0	7
Syracuse	0	0	-----	0	0	0	2	2	0	0	0	10
New Jersey:												
Camden	2	0	-----	0	0	0	3	4	1	0	0	0
Newark	0	0	-----	0	1	0	5	1	4	0	0	4
Trenton	0	0	-----	0	0	0	3	4	1	0	0	0
Pennsylvania:												
Philadelphia	3	1	2	2	3	1	18	11	24	0	2	18
Pittsburgh	0	0	-----	0	0	3	9	4	6	0	0	3
Reading	0	0	-----	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	-----	0	1	3	9	10	19	0	0	1
Cleveland	0	0	2	1	1	3	11	10	12	0	0	21
Columbus	0	0	1	1	0	0	4	1	5	0	0	11
Indiana:												
Fort Wayne	0	0	-----	0	0	0	0	0	3	0	0	0
Indianapolis	2	0	-----	0	1	0	6	0	4	0	0	5
Terre Haute	0	0	-----	0	1	0	1	0	1	0	0	0
Illinois:												
Chicago	1	0	1	1	11	16	19	13	23	0	0	29
Springfield	0	0	-----	0	2	0	0	1	2	0	0	0
Michigan:												
Detroit	7	6	-----	1	3	1	11	5	18	0	0	29
Flint	1	0	-----	0	0	0	3	0	5	0	0	4
Grand Rapids	0	0	-----	0	0	0	1	0	6	0	0	0
Wisconsin:												
Kenosha	0	0	-----	0	0	0	0	0	1	0	0	5
Milwaukee	0	0	-----	0	5	1	7	0	6	0	0	15
Racine	0	0	-----	0	0	0	0	0	1	0	0	2
Superior	0	0	-----	0	0	0	0	0	3	0	0	0
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	-----	0	0	0	1	4	1	0	0	2
Minneapolis	16	0	-----	0	2	3	2	7	6	0	0	3
St. Paul	0	0	-----	0	0	2	3	2	2	0	0	19
Missouri:												
Kansas City	2	0	-----	2	0	3	7	0	3	0	0	1
St. Joseph	0	0	-----	0	0	0	0	0	4	0	0	0
St. Louis	0	0	1	0	0	3	8	10	2	0	0	4
Nebraska:												
Omaha	1	0	-----	0	1	0	2	0	3	0	0	0

City reports for week ended Oct. 14, 1944—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												
Kansas:												
Topeka	0	0	------	0	5	0	0	0	2	0	0	2
Wichita	0	0	------	0	4	0	1	0	3	0	0	0
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	3	2	0	0	0	0
Maryland:												
Baltimore	6	1	1	1	1	2	9	4	10	0	0	61
Cumberland	0	0	------	0	0	0	0	0	0	0	0	0
Frederick	0	0	------	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	0	0	1	7	13	4	0	0	4
Virginia:												
Lynchburg	0	0	------	0	0	0	0	7	2	0	1	0
Richmond	2	0	------	0	1	1	0	5	6	0	0	6
Roanoke	1	0	------	0	0	0	1	0	0	0	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	1	0	0	0
Wheeling	0	0	------	0	0	0	2	1	1	0	0	0
North Carolina:												
Raleigh	0	0	------	0	0	0	0	0	0	0	0	2
Wilmington	6	0	------	0	0	0	0	0	2	0	0	1
Winston-Salem	0	0	------	0	0	0	0	0	6	0	0	1
South Carolina:												
Charleston	0	0	------	0	0	1	1	0	0	0	0	0
Georgia:												
Atlanta	0	0	8	0	0	0	2	0	4	0	0	0
Savannah	0	0	------	0	0	0	2	0	0	0	0	0
Florida:												
Tampa	1	0	------	0	0	0	2	0	1	0	0	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	2	0	------	0	0	0	9	0	1	0	0	2
Nashville	0	0	------	0	0	0	4	0	2	0	0	0
Alabama:												
Birmingham	0	0	------	0	0	0	5	0	3	0	0	1
Mobile	4	0	------	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	1	0	------	0	0	0	0	1	0	0	0	0
Louisiana:												
New Orleans	2	0	1	1	1	0	3	1	5	0	1	0
Shreveport	2	0	------	0	0	0	0	0	0	0	2	0
Texas:												
Dallas	8	0	1	1	0	0	3	0	1	0	0	0
Galveston	0	0	------	0	0	0	2	0	0	0	0	0
Houston	1	0	------	0	0	1	2	0	4	0	0	0
San Antonio	1	0	------	0	0	0	0	1	1	0	0	2
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	3	0	0	0	0	2
Great Falls	0	0	------	0	0	0	0	0	2	0	0	0
Helena	0	0	------	0	0	0	0	0	1	0	0	3
Missoula	0	0	------	0	0	0	0	0	0	0	0	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	2	0	3	1	6	1	11	1	7	0	0	4
Pueblo	0	0	------	0	0	0	1	0	2	0	0	1
Utah:												
Salt Lake City	0	0	------	0	1	0	2	0	4	0	0	0
PACIFIC												
Washington:												
Seattle	1	0	------	0	0	1	1	0	5	0	0	1
Spokane	0	0	------	0	3	0	0	1	1	0	0	0
Tacoma	0	0	------	1	0	0	2	0	3	0	0	2

City reports for week ended Oct. 14, 1944—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—continued												
California:												
Los Angeles	4	0	5	1	6	2	3	1	30	0	0	6
Sacramento	1	3	------	0	3	1	0	1	4	0	0	4
San Francisco	0	0	------	0	10	2	5	2	5	0	1	1
Total	89	12	30	16	140	69	296	259	419	0	12	416
Corresponding week, 1943	65	------	36	17	345	------	285	------	620	0	20	759
Average, 1939–43	81	------	57	[1] 15	[2] 254	------	[1] 290	------	464	0	30	933

[1] 3-year average 1941–43.
[2] 5-year median 1939–43.

Anthrax.—Cases: New York, 1; Philadelphia, 1.
Dysentery, amebic.—Cases: Boston, 2; Buffalo, 1; New York, 1; Chicago, 4; Atlanta, 1; Los Angeles, 1.
Dysentery, bacillary.—Cases: Buffalo, 88; New York, 14; Rochester, 1; Syracuse, 2; Chicago, 2; Detroit, 7; St. Paul, 5; St. Louis, 1; Charleston, S. C., 5; Atlanta, 3; Los Angeles, 6; San Francisco, 1.
Dysentery, unspecified.—Cases: Richmond, 1.
Leprosy.—Cases: New Orleans, 1.
Tularemia.—Cases: Missoula, 1.
Typhus fever, endemic.—Cases: Wilmington, N. C., 1; Charleston, S. C., 1; Atlanta, 1; Savannah, 2; Tampa, 1; Nashville, 1; Birmingham, 2; Mobile, 5; New Orleans, 2; Houston, 6; San Antonio, 3.

Rates (annual basis) per 100,000 population, by geographic groups, for the 86 cities in the preceding table (estimated population, 1943, 34,221,000)

	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	0.0	2.6	5.3	2.6	139	13.1	63.0	42.0	184	0.0	2.6	116
Middle Atlantic	6.5	0.5	1.9	1.4	8	7.4	41.7	64.3	44	0.0	2.8	53
East North Central	6.8	3.7	2.5	2.5	15	14.8	44.3	24.6	67	0.0	0.0	75
West North Central	38.2	0.0	2.0	4.0	24	22.1	48.3	46.3	52	0.0	0.0	62
South Atlantic	26.4	1.6	14.8	1.6	3	8.2	47.8	52.8	61	0.0	1.6	124
East South Central	35.4	0.0	------	0.0	0	0.0	112.1	0.0	35	0.0	0.0	18
West South Central	43.0	0.0	5.7	5.7	3	2.9	28.7	8.6	32	0.0	8.6	6
Mountain	15.9	0.0	23.8	7.9	56	7.9	135.0	7.9	127	0.0	0.0	79
Pacific	9.5	4.7	7.9	3.2	35	9.5	17.4	7.9	76	0.0	1.6	22
Total	13.6	1.8	4.6	2.4	21	10.5	45.2	39.6	64	0.0	1.8	64

PLAGUE INFECTION IN TACOMA, WASH.

Under date of October 18, 1944, plague infection, first reported on October 16, was reported confirmed in two specimen fleas taken on the water front at Tacoma, Wash.

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodent).—A rat found on September 19, 1944, in Honokaa, Paauhua area, Hamakua District, Island of Hawaii, T. H., was proved positive for plague on September 25, 1944.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended September 30, 1944.—During the week ended September 30, 1944, 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		55		34	72	9	2	17	57	246
Diphtheria		6	5	19		4	2			36
Dysentery, bacillary				9		3				12
Encephalitis, infectious						1				1
German measles				4	7	1	2	1	14	29
Influenza					29			1	5	35
Measles	1		5	38	20	11	6	3	32	116
Meningitis, meningococcus		1			3	1				5
Mumps				47	26	4	3	6	22	108
Poliomyelitis		2	3	7	14	4	1	6	2	39
Scarlet fever	2	3	4	44	66	15		13	17	164
Tuberculosis (all forms)		1	6	188	36	18		24	25	298
Typhoid and paratyphoid fever		1		20	6	1	1		2	31
Undulant fever				1						1
Venereal diseases:										
Gonorrhea		38	33		98	23	24	19	70	305
Syphilis	4	13	24		74	15	9	8	20	167
Whooping cough		19		89	42	14	10	31	17	222

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW 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.)

Plague

British East Africa—Kenya.—For the week ended September 23, 1944, 5 cases of plague with 1 death were reported in Kenya, British East Africa.

French West Africa—Dakar.—For the week ended October 7, 1944, 19 cases of plague with 15 deaths were reported in Dakar, French West Africa.

Palestine.—For the week ended September 30, 1944, 5 cases of plague were reported in Haifa and Jaffa, Palestine.

Portugal—Azores—Angra do Heroismo.—For the week ended October 14, 1944, 3 cases of plague were reported in Angra do Heroismo, Azores, Portugal.

Senegal—Thies.—For the period September 11–20, 1944, 8 cases of plague with 7 deaths were reported in Thies, Senegal.

Tunisia—Tunis.—For the week ended October 21, 1944, 1 fatal case of plague was reported in Tunis, Tunisia.

Smallpox

French Guinea.—For the period September 11–20, 1944, 73 cases of smallpox with 4 deaths were reported in French Guinea.

Union of South Africa.—For the month of July 1944, 217 cases of smallpox with 35 deaths were reported in the whole Union of South Africa.

Venezuela.—For the month of September 1944, 54 cases of smallpox (including 51 cases in Caracas and vicinity) were reported in Venezuela.

Typhus Fever

Algeria.—For the period September 1–10, 1944, 18 cases of typhus fever were reported in Algeria.

Egypt.—For the week ended September 16, 1944, 46 cases of typhus fever with 7 deaths were reported in Egypt.

French West Africa—Dakar.—For the month of August 1944, 16 cases of typhus fever were reported in Dakar, French West Africa.

Tunisia.—Typhus fever has been reported in Tunisia as follows: September 11–20, 1944, 50 cases; September 21–30, 1944, 10 cases.

Union of South Africa.—Typhus fever has been reported in the Union of South Africa as follows: May 1944, 492 cases, 182 deaths; June 1944, 395 cases, 119 deaths; July 1944, 160 cases, 11 deaths. These figures are for the entire Union of South Africa. For the month of August 1944, 283 cases of typhus fever with 13 deaths were reported in Cape Province, practically all from the eastern half of the Province.

Venezuela.—For the month of September 1944, 10 cases of typhus fever with 1 death were reported in Venezuela, including 5 cases in Araguay State, 2 cases in Lara State, and 2 cases in Zulia State.

Yellow Fever

French Guinea—Kindia (vicinity of).—On October 6, 1944, 1 fatal case of suspected yellow fever was reported in the vicinity of Kindia, French Guinea.

Gold Coast.—On September 28, 1944, 1 fatal case of yellow fever was reported in Gold Coast, no location being given.

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