Public Health Reports

Vol. 60 • APRIL 6, 1945 • *No. 16*

EXPERIMENTAL CHEMOTHERAPY OF BURNS AND SHOCK. VIII.[1]

I. Effects of Potassium Administration, of Sodium Loss, and Fluid Loss in Tourniquet Shock

By HERBERT TABOR, *Passed Assistant Surgeon*, and SANFORD M. ROSENTHAL, *Principal Pharmacologist, United States Public Health Service*

In previous studies (*1–4*) methods have been developed for the production of standardized burn and traumatic shock and standardized fatal hemorrhage in mice. These methods permit the use of a large number of animals in a single experiment; by employing mortality as the basis of comparison, reproducible results have been obtained in the evaluation of therapeutic procedures. It has been found with all three types of trauma that a high percentage of animals would survive an otherwise fatal injury if isotonic sodium salts were administered by any route in amounts of 10 percent of body weight (*1–12*). This effect is a function of the cation, as all sodium salts behave similarly, and the evidence so far obtained indicates that it is specific for the sodium ion, since nonelectrolytes had little or no effect, while potassium salts were deleterious.[2]

Because this work has stressed the importance of electrolyte changes in the mortality from fatal trauma, an investigation was undertaken of the magnitude of these changes in the shocked animal.

THE TOXICITY OF POTASSIUM IN THE SHOCKED ANIMAL

Since it has been found that death from burn and tourniquet shock can be hastened by the administration of isotonic potassium chloride it is of interest to determine how much potassium is required to affect mortality. A comparison of the toxicity of potassium in normal animals with that in shocked animals will give some indication as to whether potassium plays a role as a factor in the mortality from shock. If potassium is involved then shocked animals should be highly sensitive to its administration. Furthermore, the quantity of potassium required to produce death in shocked mice will afford some basis for evaluating the significance of the quantitative changes to be reported in the second part of this paper.

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

[2] Unpublished studies with lithium, cesium, and rubidium indicate that they resemble potassium, while calcium (*3*) and magnesium, reported below, appear to be without effect.

METHOD

Throughout the present experiments tourniquet shock in mice was employed. The technique has been previously described (*3*). The tourniquets were applied for 2 hours and the solutions were injected intravenously at 105 minutes and intraperitoneally at 75 minutes after release. For intravenous administration 1 percent (0.134 molar) potassium chloride and 1 percent quinidine, which was used as a drug control, were administered at a uniform rate of 0.3 cc. per minute, by means of a stop watch. For intraperitoneal injection 2 percent (0.268 molar) potassium chloride and 2 percent (0.166 molar) magnesium sulfate (also used as a drug control) were employed. Control drugs were used alternately during every experiment, so that similar conditions would be present for all.

At the beginning of each experiment a certain number of the mice were selected at random to serve as mortality controls, to indicate when death from tourniquet shock alone would occur.

Death from potassium chloride and quinidine, when injected intravenously at this rate, occurs within 3 minutes following the injection. (The majority of animals died at the end of, or within 1 minute after, the injection.) Death from potassium chloride and magnesium sulfate administered intraperitoneally occurs within 20 minutes following the injection.

Since death from shock alone occurs considerably later, it was clear that these animals died from the drug administration and not from the tourniquet trauma alone. This is illustrated in the mortality curves in figure 1.

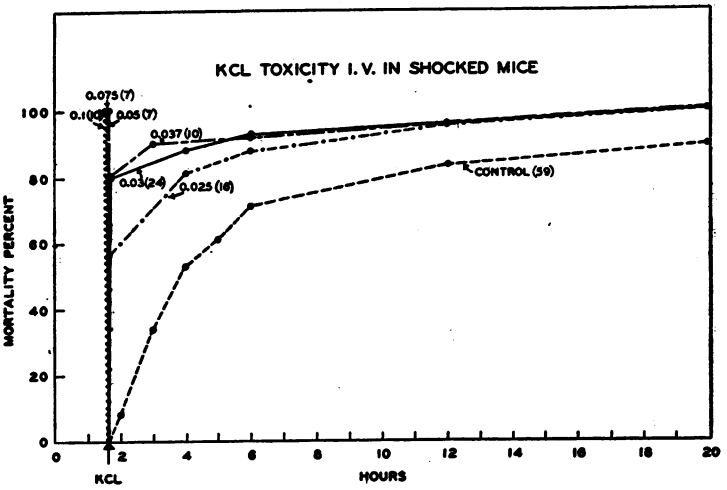

FIGURE 1.—Composite of five experiments illustrating the method employed for establishing drug toxicity in shocked mice. Potassium chloride injected intravenously 1¾ hours after tourniquet removal. Death from drug occurred within 3 minutes after the potassium chloride was administered, and was easily distinguished from death due to shock (control curve) which occurred later. Doses given on curves in grams per kilo; figures in parentheses represent number of animals used.

RESULTS

The toxicity of intravenously administered potassium chloride in shocked mice was determined upon 78 animals in 5 experiments (fig. 2). From this data the L. $D._{50}$ (50 percent lethal dose) was calculated (*13*) to be 0.024 gm. per kilo or 0.35 mg. (0.0047 milliequivalent) per 15-gm. mouse.

The toxicity of potassium chloride administered intravenously in normal mice was established in 58 animals. The L. $D._{50}$ was found to be 0.217 gm. per kilo or 3.25 mg. (0.044 milliequivalent) per 15-gm. mouse. It is thus seen that the toxicity of potassium chloride in shocked animals increases 810 percent over that in normal animals.

In order to determine whether the large increase in toxicity of potassium in shock represents a specific sensitivity to the admin-

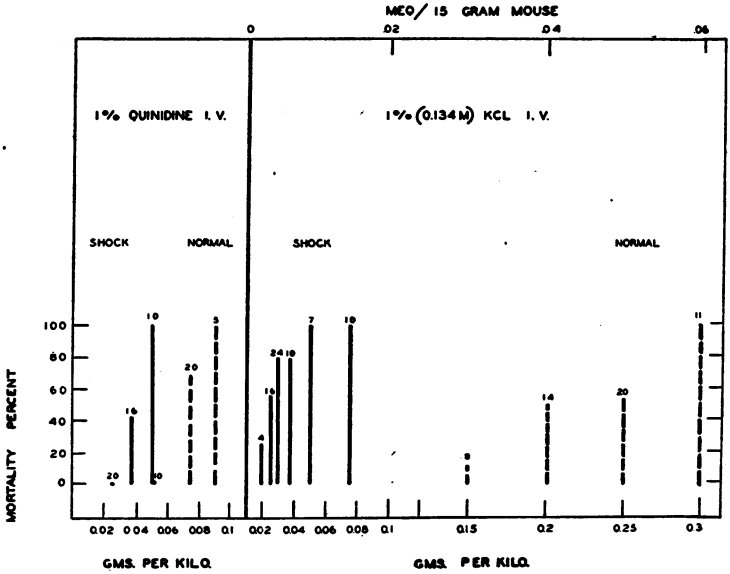

FIGURE 2.—Comparison of toxicity of potassium chloride and quinidine sulfate intravenously in normal and shocked mice. Each bar represents percent mortality for a given dose. Numbers above bars signify number of animals used.

istered drug or whether it is merely an expression of general increased susceptibility due to the sickness of the animals, control toxicities were carried out with other drugs. For intravenous injection quinidine was chosen for comparison with potassium because it is a rapid-acting drug which is believed to produce death by cardiac arrest (*14*).

The L. $D._{50}$ of quinidine sulfate intravenously in shocked animals was determined to be approximately 0.04 gm. per kilo (fig. 2). The L. $D._{50}$ in normal mice was 0.07 gm. per kilo. The toxicity in shock was, therefore, increased 75 percent above normal.

Another series of experiments was carried out with intraperitoneal injection (fig. 3). This procedure is less accurate as an index of comparative toxicity because it is affected by rates of absorption and excretion, factors that may differ in the normal and shocked animal. However, the amount of potassium required to kill the shocked mice under conditions of slower absorption might afford a better basis for evaluating the significance of the potassium liberated from the tissues in shock, as determined in the second part of this paper.[3] Obviously no exact correlation is possible since the nature of the experiment involves the administration of potassium to animals that have already released potassium from their tissues.

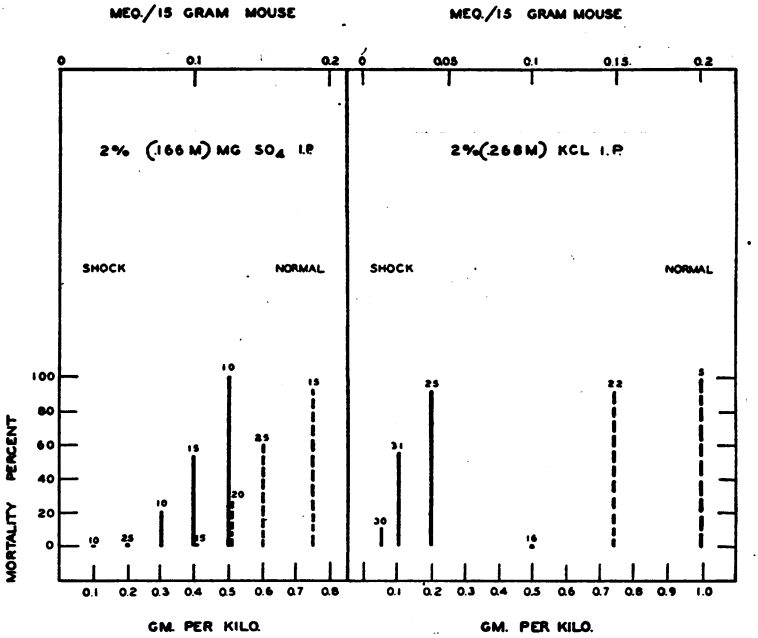

FIGURE 3.—Comparison of potassium chloride and magnesium sulfate toxicities administered intraperitoneally in normal and shocked mice.

The intraperitoneal L. $D._{50}$ for potassium chloride in shocked mice was established as 0.1 gm. per kilo or 1.5 mg. (0.02 milliequivalent) per 15-gm. mouse. The L. $D._{50}$ for normal mice was 0.66 gm. per kilo, so that an increase in toxicity of 560 percent by this route was observed in shock.

Two per cent (0.166 molar) magnesium sulfate was used as a control drug for intraperitoneal injection. The L. $D._{50}$ in shocked mice was established as 0.380 gm. per kilo, as compared to 0.575 gm. in normal mice. This represents a 51-percent increase in toxicity in shock. This increase is similar to that of quinidine, and can be attributed to the nonspecific susceptibility of sick animals.

[3] To be published in a subsequent issue.

Since magnesium occurs along with potassium as a physiological constitutent of tissue cells, these experiments are of significance in indicating that magnesium is probably not involved as a specific toxic factor in shock.

Finally, the toxicity of potassium chloride was determined in nephrectomized mice. These values were mainly obtained for correlation with the potassium data obtained in experiments reported in the second part of this paper, in view of the anuria usually present in shock. Bilateral nephrectomy was performed under ether anesthesia 3 to 6 hours previous to the experiment.

L. $D._{50}$ for intravenous potassium chloride in 16 nephrectomized mice was 0.033 milliequivalent per 15-gm. mouse, an increase of only 34 percent over the normal toxicity. L. $D._{50}$ for subcutaneous potassium chloride (0.134 molar) was approximately 1.5 gm. per kilo (0.3 milliequivalent per 15-gm. mouse) in normal mice and 0.3 gm. per kilo (0.06 milliequivalent per 15-gm. mouse) in 21 nephrectomized mice.

At the rate of intravenous administration of potassium chloride used, death results almost immediately after injection; the small difference in toxicity between normal and nephrectomized animals indicates that little renal excretion occurs under these conditions. It is believed that the increase obtained was largely due to the trauma involved in the operative procedure. The large amount tolerated by subcutaneous injection in normal as compared to nephrectomized animals is obviously due to renal excretion in the former.

THE EFFECT OF SODIUM AND FLUID LOSS IN SHOCK

The ability of shocked mice to withstand sodium and fluid loss was studied with a technique similar to that used for the study of potassium toxicity.

Advantage was taken of the procedure of Schechter (*15*) and Darrow and co-workers (*16*) for the production of sodium and fluid loss. These investigators demonstrated that fluids introduced into the peritoneum approach the composition of a serum ultrafiltrate during their absorption. The intraperitoneal injection of glucose solutions will accordingly result in a temporary withdrawal of sodium chloride and fluid from the body into these solutions.

Figure 4A shows that the intraperitoneal injection into shocked mice of 1 cc. of 10-percent or 2 cc. of 5 percent glucose per 20 gm. body weight brought about an elevation of the mortality curve of approximately 50 percent. Smaller doses of glucose gave intermediate effects. Although death following glucose was not as prompt as with potassium chloride, deaths occurred sufficiently soon after injection to be differentiated from the later deaths which occurred in the control animals.

The peritoneal fluid was collected at death in the majority of mice receiving intraperitoneal glucose. As a check upon the technique (*15*) it was found that an average of 96 percent of injected fluid could be recovered from the peritoneal cavity immediately after injection.

Measurement of the volume changes and sodium content of these fluids (table 1) revealed that isotonic glucose brought about a con-

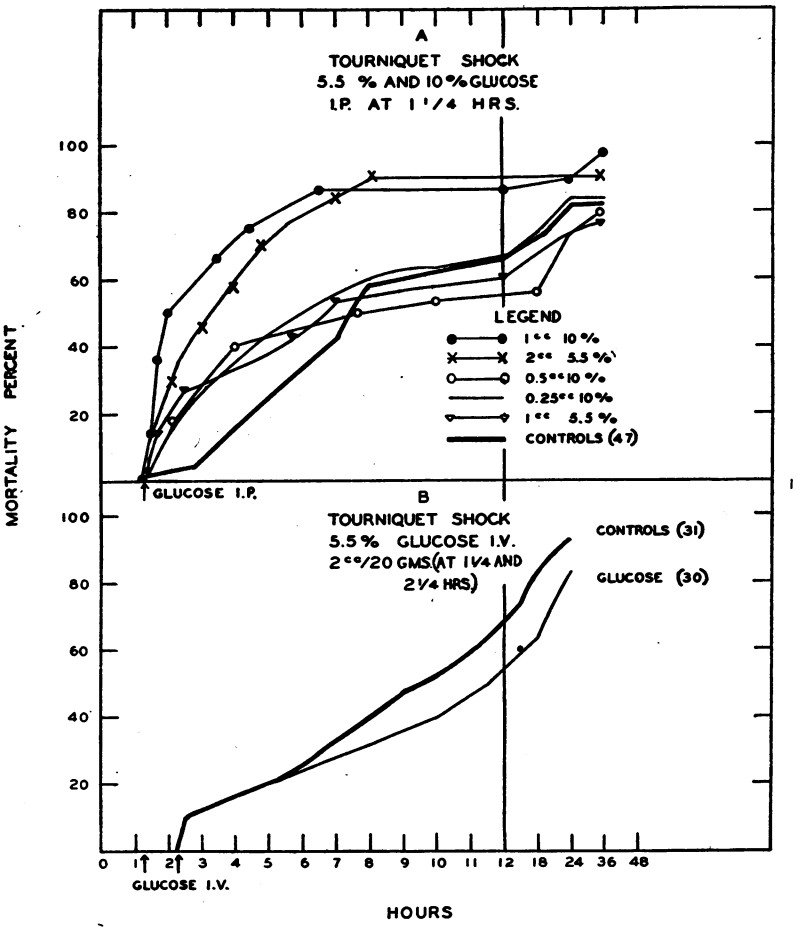

FIGURE 4.—A. Increase in mortality following the intraperitoneal injection of 5.5 percent and 10 percent glucose in shocked mice. Each curve represents 30 mice, except the control curve, which represents 47 mice. Doses are upon a basis of 20 gm. body weight, given in 1 injection 75 minutes after tourniquet release. B. The absence of effect of 5.5 percent glucose intravenously in shocked mice; 1 cc. per 20 gm. injected 75 minutes and repeated 135 minutes after tourniquet release.

siderable sodium loss with minor changes in volume of fluid, while hypertonic glucose caused both sodium and fluid loss. The average sodium loss with isotonic glucose (2 cc.) was 0.13 milliequivalent per 20-gm. mouse. With 10 percent glucose (1 cc.) the average sodium

loss was 0.10 milliequivalent per 20-gm. mouse, and the average fluid loss 0.38 cc. per 20-gm. mouse.[4]

In order to demonstrate the importance of these intraperitoneal changes on the increase in mortality observed, a series of 30 shocked mice were injected with 2 cc. (per 20 gm. body weight) of isotonic glucose intravenously. In contrast to the intraperitoneal administration the intravenous injection did not affect the mortality curve (fig. 4B).

TABLE 1.—*Volume changes and sodium accumulation in peritoneal fluids from tourniquet-shocked mice receiving intraperitoneal injections of glucose 75 minutes after release of tourniquet. Fluids obtained at death*

Type of therapy	Number of mice [1]	Average survival time [2] (minutes)	Amount administered (cc./20 gm.)	Amount recovered (cc.)	Total sodium in peritoneal fluid (mEq.)
5.5 percent glucose	4	55	1.0	0.91	0.074
	4	26	1.0	.89	.063
Do	3	65	2.0	2.06	.122
	3	69	2.0	2.1	.133
	2	157	2.0	2.0	.165
	2	20	2.0	2.0	.097
	3	53	2.0	1.75	.110
10 percent glucose	6	107	.5	.80	.080
	4	62	.5	.77	.075
Do	4	30	1.0	1.34	.085
	4	43	1.0	1.42	.097
	2	109	1.0	1.52	.127
	4	25	1.0	1.25	.074
	4	50	1.0	1.18	.084
	3	111	1.0	1.55	.150

[1] The peritoneal fluids of the indicated number of mice were pooled for analysis. Results are expressed as amount per 20-gm. mouse.
[2] After glucose administration.

These results suggest that from the viewpoint of therapy the intravenous administration of glucose solutions (without sodium chloride) is ineffective in traumatic shock, while with certain routes of administration it may be harmful (*2*).

Tests of the toxicity of intraperitoneal glucose injections in normal mice were made in order to compare approximately the susceptibility of normal and shocked animals.

Because of the volume of solution required to kill normal animals, complete mortality data could not be obtained, since it did not seem desirable to exceed a volume of 4 cc. per 20 gm. in a single intraperitoneal injection.

With the intraperitoneal injection of 4 cc. isotonic glucose into 10 normal mice, only 1 died. With 10 percent glucose the mortality in groups of 10 normal mice was 10 percent for 2 cc., 20 percent for 3 cc., and 70 percent for 4 cc. These values indicate that the normal animal

[4] Confirmatory of Schecter, fluid loss much greater than this was found in normal mice when glucose was injected intraperitoneally. With isotonic glucose the average fluid loss within an hour after injection of 1 cc. was 0.25 cc., and with 2 cc. it was 0.7 cc. per 20-gm. mouse; with 1 cc. of 10 percent glucose I. P. it was 0.64 cc. The low values in shock are perhaps an expression of the degree of extracellular dehydration.

is approximately one-fourth as susceptible as the shocked animal to these injections.

SUMMARY

Studies of the toxicity of potassium chloride administered intravenously, intraperitoneally, and subcutaneously were carried out in normal and nephrectomized mice and in mice subjected to tourniquet shock.

In the shocked animal the intravenous toxicity increased 810 percent over the value observed in normal mice and the intraperitoneal toxicity increased 560 percent.

Under similar conditions the toxicity of quinidine intravenously in shocked mice increased 75 percent above normal while toxicity of magnesium sulfate intraperitoneally increased 51 percent.

The toxicity of potassium chloride administered intravenously in nephrectomized mice indicates that absence of renal excretion of the injected drug was not an important factor in the observed increase in potassium toxicity in shock.

Shocked animals exhibit an increased sensitivity to sodium and fluid withdrawal produced by the intraperitoneal injection of isotonic and hypertonic glucose solutions.

REFERENCES

(1) Rosenthal, S. M.: Experimental chemotherapy of burns and shock. I. Methods. II. Effects of local therapy upon mortality from shock. Pub. Health Rep., **57**: 1923 (1942).
(2) Rosenthal, S. M.: Experimental chemotherapy of burns and shock. III. Effects of systemic therapy on early mortality. Pub. Health Rep., **58**: 513 (1943).
(3) Rosenthal, S. M.: Experimental chemotherapy of burns and shock. IV. Production of traumatic shock in mice. V. Therapy with mouse serum and sodium salts. Pub. Health Rep., **58**: 1429 (1943).
(4) Tabor, H., Kabat, H., and Rosenthal, S. M.: The chemotherapy of burns and shock. VI. Standardized hemorrhage in the mouse. VII. Therapy of experimental hemorrhage. Pub. Health Rep., **59**: 637 (1944).
(5) Allen, F. M.: Theory and therapy of shock. Am. J. Surg., **62**: 80 (1943).
(6) Prinzmetal, M., Hechter, O., Margoles, C., and Feigen, G.: Principle from liver effective against shock due to burns; preliminary report. J. Am. Med. Assoc., **122**: 720 (1943).
(7) Fox, C. L., Jr.: Oral sodium lactate in the treatment of burn shock. J. Am. Med. Assoc., **124**: 207 (1944).
(8) Fox, C. L., Jr., and Keston, A. S.: The mechanism of shock from burns and trauma traced with radiosodium. J. Clin. Invest., **23**: 935 (1944).
(9) Scott, C. C., Worth, H. M., and Robbins, E. B.: Comparative value of some blood substitutes used for treatment of experimental shock. Arch. Surg., **48**: 315 (1944).
(10) Katz, L. N., Friedberg, L., and Asher, R.: Efficacy of isotonic sodium chloride and glucose solutions in preventing shock following venous occlusion of a limb in the dog. Am. J. Physiol., **140**: 65 (1943).
(11) Locke, W.: An experimental method for evaluating blood substitutes. Science, **99**: 475 (1944).
(12) Swingle, W. W., and Kleinberg, W.: Plasma, gelatin and saline therapy in experimental wound shock. Am. J. Physiol., **141**: 713 (1944).
(13) Bliss, C. I.: The determination of the dosage-mortality curve from small numbers. Quart. J. Pharm. and Pharmacol., **11**: 192 (1938).
(14) Sollmann, T.: A Manual of Pharmacology. 6th ed. W. B. Saunders Co., Philadelphia, 1942.

(15) Schechter, A. J.: Electrolyte and volume changes in fluids injected into the peritoneal cavity. Yale J. Biol. Med., 4: 168 (1931).
(16) Darrow, D. C., and Yannet, H.: The changes in the distribution of body water accompanying increase and decrease in extracellular electrolyte. J. Clin. Inv., 14: 266 (1935). Metabolic studies of the changes in body electrolyte and distribution of body water induced experimentally by deficit of extracellular electrolyte. J. Clin. Inv., 15: 419 (1936).

NOTE.—Part II of this paper will appear in a subsequent issue.

NUISANCE COMPLAINTS AND MUNICIPAL HEALTH DEPARTMENT PRACTICES

By M. ALLEN POND, *Sanitary Engineer (R) United States Public Health Service*

INTRODUCTION

Divisions of sanitary inspection in health departments have, perhaps more than any other branch, tended to become peculiarly tradition-bound in their development. In city health departments the sanitary inspection services and activities have consistently absorbed a considerable part of the budget; but only rarely has anyone made any serious effort to evaluate the activities performed, bring up to date the techniques and practices, or allocate personnel according to need. It is obvious, therefore, that, in the interests of administrative efficiency, an intelligent job of self-criticism would benefit not only the bureau studied but the health department as a whole, through the development of standards upon which to base a series of activities appropriate to modern urban conditions.

Studies of the inspection services offered by two eastern city health departments [1] were begun in 1940. The method of approach was essentially the same for each community: inspection records were transcribed to special forms for later analysis; stenographic accounts were taken of conversations transpiring during about 500 inspections; and local and State laws were studied. Field visits were made with each inspector in city B by the sanitary engineer director of the local study as a check on the accuracy of record keeping and the stenographic reports.

This paper deals with one phase of the study. An attempt is made to delineate the more important aspects of complaint work, discuss their implications, and suggest changes that might be made in administrative practices as a result of the demonstrated need. It is planned to prepare a further publication dealing with routine sanitary inspections.

[1] City A, which is roughly three times as large as city B, spends about 60 cents per capita per year through its health department for general sanitation, plumbing, industrial hygiene, communicable disease (other than venereal diseases and tuberculosis), and food and drug and veterinary meat inspections. City B budgets slightly less than 20 cents per capita per year for sanitary, milk, and food inspection work. Both cities are served by good public water supplies and are more than 85 percent sewered. Each has several times won the annual U. S. Chamber of Commerce health conservation contest. City A was studied from June 1940 to May 1941; City B for the two calendar years 1939 and 1940.

CURRENT FREQUENCY OF COMPLAINTS IN MUNICIPAL HEALTH DEPARTMENTS

Health departments have, through tradition, become repositories for complaints about nearly all kinds of environmental conditions that offend the senses, and many that do not. Health officers generally feel compelled to have all complaints investigated, with the result that considerable time is spent on problems of little sanitary significance.

In the absence of uniform record-keeping systems it is futile to compare the complaint experience of various health agencies. As an example, the range in annual frequency of complaints reported by 14 urban health departments is cited in table 1. It is evident that size of city bears little relationship to the relative frequency of complaints.

TABLE 1.—*Number of complaints of all types recorded in city health department bureaus of inspection per 100,000 population per year*

City	Population (1940)	Year	Complaints per 100,000 population per year
Hartford, Conn	166,267	1939-40	3,120
Louisville, Ky	319,077	1940	2,960
Columbus, Ohio	306,087	1939-40	2,070
Newark, N. J	429,760	1940	1,975
Tampa, Fla	108,391	1938	1,205
Portland, Oreg	305,394	1938-39	818
Baltimore, Md	859,100	1940-41	737
Milwaukee, Wis	587,472	1939-41	721
Bridgeport, Conn	147,121	1940	649
New Haven, Conn	160,605	1939-40	605
Syracuse, N. Y	205,967	1939	472
Springfield, Mass	149,554	1940	369
Detroit, Mich	1,623,452	1940	355
Providence, R. I	253,504	1931-33-37	288

Is the variation in the number of complaints per unit of population in these 14 cities due to difference in sanitary conditions, methods of record keeping, relative awareness of sanitary problems, or levels of discretion among the general public concerning what are health problems? Probably each of these factors has its effect, but it would require thorough analysis of the experience in each community before valid conclusions could be drawn.

TYPE OF COMPLAINT

Classification of complaints by type is a frequent health department practice. Because of this, the same type of tabulation has been made of the data from cities A and B (table 2).

Refuse complaints comprised almost half of those recorded in city B and, if the "cause unknown" group is eliminated, approximately one-quarter of those in city A. Plumbing complaints were the second and third most numerous in these cities, respectively. Neither city

health department is responsible for the collection of refuse, although in both communities the health authorities are concerned with sanitation problems relating thereto. In city A, control of plumbing is vested in the health department by State law, while in city B activities other than investigations of complaints relative to plumbing are functions of a bureau in the building department.

TABLE 2.—*Number and percentage of sanitation complaints by type for cities A and B*

Cause of complaint	City A		City B	
	Number	Percent	Number	Percent
Refuse	1,668	19.1	876	44.9
Plumbing	1,163	13.3	327	16.7
Housing	211	2.4	78	4.0
Animals	1,195	13.7	76	3.9
Rodents and vermin	415	4.8	170	8.7
Safety hazard	15	0.2	56	2.9
Heat	420	4.8	60	3.1
All other	1,135	13.0	311	15.8
Unknown	2,510	28.7		
Total	8,732	100.0	1,954	100.0

In city A the percentage of complaints classified as "cause unknown" decreased from an average of about 35 for the first 9 months to approximately 11 for the last 3 months of the study year. Was this a result of closer supervision of record keeping, or was there a real drop in the percentage of "cause unknown" complaints? (The relatively large number of "cause unknown" complaints probably arose from the fact that many nuisances were abated at the time of the first visit, and the inspectors did not record in the files the type of complaint which had been investigated.) No complaints recorded in the health department of city B were classified as "cause unknown," although the number of complaints listed in the annual report exceeded by 69 percent the number actually recorded and on file in the office of that agency. A possible explanation of this discrepancy may be that complaints received in the field were counted but not recorded in the office file.

Differences exist between districts within the cities in regard to the percentage distribution of complaints by type (see table 3 for data on city B.). It appears that the type of complaint registered is related in part to socioeconomic factors not revealed by gross methods of analysis. Incidentally, there were three times as many people living in areas having average annual family incomes of less than $1,500 as in those districts in which the income exceeded $1,500, and four times as many complaints from the low-income areas as from the others. An exception was noted in one section of city A from which an excessive number of complaints of all types were made despite a relatively high average income level.

TABLE 3.—*Types of complaint by average annual income of premise occupants in city B*

Type of complaint	Percentage of complaints at premises where income of occupants is—		
	Above $1,500	Below $1,500	All incomes
Garbage and rubbish	20.3	79.7	100.0
Water supply, sewage disposal and plumbing	6.4	93.6	100.0
Rodents and vermin	18.3	81.7	100.0
All complaints	20.0	80.0	100.0

UNJUSTIFIED COMPLAINTS

Annual reports of health departments often refer to the incidence of "unjustified" complaints. The assumption is, apparently, that any visit not involving a health nuisance is nonproductive. If unjustified complaints are wasteful, what is the logic behind any routine inspection program in which there is no assurance that sanitary nuisances exist at each place visited?

Theoretically, every field visit by a sanitarian affords him an opportunity to discover health problems and to carry on health education activities. As a matter of fact, a complainant is almost always in a favorable position to be taught. Thus, during the investigation of an unwarranted complaint an alert inspector would be quick to grasp the chance to instruct the complainant in the characteristics of environmental health hazards.

Standards for determining the justifiability of complaints apparently vary widely. In table 4 the percentage of complaints reported unjustified in recent annual reports of five eastern city health departments is recorded.

TABLE 4.—*Percentage of unjustified complaints in 5 eastern cities*

City	Unjustified complaints (percent)	City	Unjustified complaints (percent)
Syracuse, N. Y.	19.62	Providence, R. I.	4.01
New Haven, Conn.	19.09	Newark, N. J.	3.91
Springfield, Mass.	5.23		

Individual inspectors seem to react differently to complaint work. In city B, for instance, there were four inspectors concerned with general sanitation. During the study years the percentages of complaints reported as unjustified by these men were 15.2, 16.2, 17.7, and 29.4, respectively.

The monthly incidence rate of unjustified complaints varied in city A from 0.1 to 6.9 percent and in city B from 8.7 to 24.3 percent (table 5). In the former, unjustified complaints were proportionately more frequent in the months from February through August (excepting

June) than during the fall and early winter. The months with the smallest ratio of unjustified complaints in city B were March and April, the season in which refuse nuisances form the bulk of complaint work. It might be assumed from this that the inspectors in this city believed that refuse complaints were usually justified, but the data in table 6 refute this supposition.

TABLE 5.—*Percentage of complaints reported unjustified, by month*

Month	Number of complaints		Percent unjustified		Month	Number of complaints		Percent unjustified	
	City A	City B	City A	City B		City A	City B	City A	City B
January	758	100	2.8	20.0	July	824	265	5.2	17.0
February	474	111	6.7	24.3	August	972	219	6.9	17.8
March	531	139	5.1	15.1	September	731	132	4.0	21.2
April	661	309	6.4	8.7	October	797	122	2.8	18.9
May	669	231	5.7	20.6	November	602	129	2.0	20.9
June	758	249.	0.1	17.7	December	612	110	1.6	20.0

TABLE 6.—*Number of garbage and refuse complaints and percentage reported unjustified, by months*

Month	Number of complaints		Percent unjustified		Month	Number of complaints		Percent unjustified	
	City A	City B	City A	City B		City A	City B	City A	City B
January	105	31	3.8	16.2	August	182	77	8.2	19.5
February	95	45	9.5	13.3	September	120	44	2.5	15.9
March	151	73	4.0	6.8	October	136	27	3.7	29.5
April	248	191	4.8	6.8	November	101	40	3.0	15.0
May	201	107	5.0	12.1	December	84	42	4.8	23.7
June	54	89	0	17.9					
July	191	109	6.8	14.6	Total	1,668	876	5.0	13.9

Twenty-three percent of the 384 complaints made by residents of the sections of city B reporting annual average family incomes in excess of $1,500 were unjustified, while 19.8 percent of the 1,537 complaints from areas with family incomes of less than $1,500 per year were unjustified. There were wide ranges within these groups, but most of the subclasses were so small that statistically significant differences could not be demonstrated.

Information on the opinions of sanitarians on the justifiability of complaints received from different sources in city B is presented in table 7. Anonymous complaints are variously believed to be: (*a*) the acts of "cranks" and thus not worthy of investigation; (*b*) of equal importance with those made by known persons; and (*c*) an indication of a fear of oppression, and thus of immediate concern to the health department. It is noteworthy that four-fifths of the complainants did not identify themselves, or their names were not recorded. Anonymous complainants in this city apparently were no more indiscriminate, in terms of the number of justifiable complaints registered,

than were those citizens who divulged their names. The local visiting nurses made a significantly low number of unjustified complaints.

TABLE 7.—*Frequency of complaints and proportion "justified" in city B by class of complainant*

Source	Number complaints	Unjustified complaints	
		Number	Percent
Visiting nurse association	35	1	2.9
Police	148	17	11.5
Anonymous	1,570	302	19.2
All identified citizens [1]	228	46	20.2
Total	1,981	366	18.5

[1] Excluding visiting nurse association nurses and policemen.

THE ADMINISTRATIVE HANDLING OF COMPLAINTS

Information concerning the following was collected in city B:

(*a*) Method by which complaint was transmitted.

(*b*) Time elapsing between the receipt of the complaint by the health department and the initial investigation.

(*c*) Time elapsing between the receipt of the complaint and the closing of the case.

(*d*) Number of reinspections following complaint investigations.

The data upon which the elapsed time and reinspection analyses are based probably are not as reliable as those presented earlier in this report. In many instances they had to be computed from records available from several sources; in other cases the information was taken directly from a single "complaint card" dealing with a given problem or address. They are sufficiently accurate, nevertheless, to show any differences that may appear within the classes analyzed.

Method of transmitting complaints.—There were 1,847 complaints for which definite information concerning the method of transmission to the health department was available. Of these, 78 percent came by telephone, 8 percent were mailed in, and in 14 percent of the cases the complainant appeared in person. There is reason to believe that the relative frequency of complaints transmitted by the complainant in person would be considerably higher if all those received in the field were promptly registered in the appropriate office file.

Waiting period before complaint investigations.—Varying periods of time elapsed after complaints were received before investigations were made (table 8). The reasons given to account for the delay included: (*a*) complaint was received at the end of a working day or week; (*b*) press of other work made it difficult to start new assignments; and (*c*) the inspector suspected that the complaint was unjustified. Complaints about plumbing, water supply, or sewage disposal, where health hazards are most likely, apparently received no special handling.

TABLE 8.—*Waiting period before investigation of complaints in city B*

Complaints received			Waiting period (days) after receipt of complaint									
			0		1		2		3		4 or more	
Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All	1,780	100	1,008	57	503	28	166	9	62	4	41	2
Plumbing, water supply, and sewage disposal	299	100	152	51	100	33	25	8	17	6	5	2

Time elapsing to close of case.—By definition a case was "closed": (*a*) when the nuisance was abated, or, (*b*) when the problem had been referred to another agency. It was often difficult to determine precisely when a case was terminated.

Of the 1,362 justified complaints in city B useful to this tabulation, 37 percent of the cases were closed within a week, and an additional 21 percent were terminated by the end of the second week. However, among those lasting a month or over were one-fourth of all the sewage complaints. Is an inspection bureau effectively carrying out its function when unsatisfactory sewage disposal conditions are allowed to continue a month? It was noted also that 32 cases (over 2 percent of the total), many of which involved garbage or rubbish, were open 1 month or longer.

Reinspections following complaint investigations.—There were 1,367 complaints for which data on reinspections exist. Of these cases, 61 percent involved no more than one visit in addition to the original investigation. Only 5.5 percent of the complaints resulted in more than 5 reinspections. There were 3,768 visits (including the original) made as a result of this group of 1,367 complaints, or an average of 2.76 visits per complaint. The average number of visits per complaint about sewage disposal was 3.90, while the average refuse complaint involved 2.41 visits.

DISCUSSION

Citizen complaints to official agencies are symptoms of dissatisfaction and apprehension. Hence they present opportunities for the health department to render service. Although many complaints have no communicable disease significance, a large proportion relate to one or another phase of the broadening concept of public health.

Experience is demonstrating that an effective communicable disease control program is but a cornerstone in the structure of a well-organized health agency. Public health involves the whole man—and it involves not only the well man, but the sick. It may be assumed that most complainants or members of their families are either ill or afraid they will be, and the health department therefore has a respon-

sibility to help them. Competent investigation and follow-up of complaints are the best therapy that may be rendered.

For administrative purposes it is important to discover what citizens complain about, and what health departments do about complaints. Is the fact that complaints from different sections of a city vary as to type an indication that careful consideration should be given to special neighborhood problems? Do these apparent differences represent a real geographic variation in environmental health hazards, or are they an indication of a lack of uniform group thinking about health? Once these factors are known, it is pertinent to question the value of the services offered and to consider, if they are useful, how they may be improved.

Furthermore, complaint investigations and reinspections are time-consuming. Roughly a quarter of all visits made by the general sanitary inspectors in city B involved complaint investigations or reinspections during the years 1939–40. The work cost the city about $2,000 per year. Did this expenditure improve or protect the health of the city?

The limited experience reported here indicates that there is little basis for attempting to compare practices in different cities in the absence of uniformity in administrative routine and record keeping. Possibly the greatest need in this field is for the development of a pattern of service and reporting that embraces the essentials of good administrative practice. Recent studies of the field consultant staff of the State and Provincial Health Authorities of North America furnish valuable information in this regard.

It would appear that present methods of tabulation are used more to preserve routine data for annual reports than as bases for the formulation of administrative policy. Careful analysis of well-kept records might provide the answers to some of the questions raised here, and would doubtless furnish a basis for more effective local health department inspection programs.

SUMMARY

Data concerning the complaint experience of two city health departments are presented and analyzed. The frequency, type, and justifiability of complaints are discussed, and the administrative handling of them is reviewed.

ACKNOWLEDGMENT

The author is indebted to the health officers and inspectors of the two cities in which these studies were made. Without their help and courtesy, the data could not have been gathered. The guidance and critical assistance of J. M. Dalla Valle, Sc. D., and C. M. Derryberry. Ph. D., were invaluable.

INCIDENCE OF HOSPITALIZATION, FEBRUARY 1945

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	February	
	1944	1945
1. Number of plans supplying data	54	75
2. Number of persons eligible for hospital care	10,231,853	15,906,124
3. Number of persons admitted for hospital care	80,500	123,026
4. Incidence per 1,000 persons, annual rate, during current month (daily rate × 365)	105.6	100.8
5. Incidence per 1,000 persons, annual rate for the 12 months ending February 28	104.8	103.6

DEATHS DURING WEEK ENDED MARCH 10, 1945

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

	Week ended Mar. 10, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	9,593	9,548
Average for 3 prior years	9,802	
Total deaths, first 10 weeks of year	97,851	103,672
Deaths under 1 year of age	610	591
Average for 3 prior years	633	
Deaths under 1 year of age, first 10 weeks of year	6,362	6,306
Data from industrial insurance companies:		
Policies in force	67,107,271	66,357,378
Number of death claims	15,343	13,836
Death claims per 1,000 policies in force, annual rate	11.9	10.9
Death claims per 1,000 policies, first 10 weeks of year, annual rate	10.8	11.6

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 MARCH 17, 1945

Summary

A total of 243 cases of meningococcus meningitis was reported for the current week, as compared with 284 last week, 497 and 619, respectively, for the corresponding weeks of the epidemic years of 1944 and 1943, and a 5-year (1940–44) median of 91. Of the current total, 136 cases were reported in 7 States reporting 10 or more cases each, as follows (last week's figures in parentheses): *Increases*—New York 36 (29), Illinois 22 (16), California 27 (20); *decreases*—Pennsylvania 16 (26), Ohio 13 (16), Tennessee 10 (11), Texas 12 (15). The total reported to date this year is 2,791, as compared with 6,087 for the corresponding period last year and a 5-year median of 752.

Of the total of 25 cases of poliomyelitis reported for the week, as compared with 34 last week, 6 occurred in New York, 4 in California, 3 in North Carolina, and 12 in 9 other States. For the corresponding week last year, 20 cases were reported, which number was also the 5-year median. The total for the year to date is 400, as compared with 263 for the same period last year and a 5-year median of 287.

A slight increase occurred in the incidence of scarlet fever. A total of 6,660 cases was reported, as compared with 6,399 last week, 7,373 for the week last year, and a 5-year median of 4,426. Of the current total, 3,465 cases, or 52 percent, occurred in the Middle Atlantic and East North Central areas. The cumulative figure is 61,470, as compared with 61,731 for the same period last year and a 5-year median of 44,084.

Of the total of 20 cases of smallpox reported, a larger number than any weekly total for more than a year, 5 occurred in Indiana, 3 each in Wisconsin, Missouri, and Mississippi, and 6 in 5 other States. The total to date is 114, as compared with 144 and 300, respectively, for the corresponding periods of last year and 1943. The last named figure is also the 5-year median for the period.

Current reports of diphtheria, influenza, typhoid fever, and whooping cough are below the respective 5-year medians, as are also the cumulative figures for all of these diseases except diphtheria.

A total of 9,622 deaths was recorded for the week in 93 large cities of the United States, as compared with 9,583 last week, 9,532 for the corresponding week last year, and a 3-year (1942–44) average of 9,505. The cumulative figure is 107,463, as compared with 113,204 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended March 17, 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
	Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944	
NEW ENGLAND												
Maine	[1] 2	2	1	------	------	1	4	247	173	1	2	2
New Hampshire	0	0	0	------	------	------	0	3	13	0	0	0
Vermont	0	0	0	1	2	------	15	173	18	0	0	0
Massachusetts	7	5	2	------	------	------	144	708	811	3	25	3
Rhode Island	0	0	0	------	------	------	10	376	138	1	4	1
Connecticut	1	1	1	2	5	4	122	407	407	2	5	3
MIDDLE ATLANTIC												
New York	22	9	15	[2] 4	[2] 6	[2] 11	136	2,925	2,321	36	55	22
New Jersey	3	3	4	6	13	16	75	1,366	1,366	7	15	5
Pennsylvania	7	9	11	2	9	------	163	1,258	1,258	16	39	7
EAST NORTH CENTRAL												
Ohio	14	6	6	27	19	22	68	3,413	732	13	29	2
Indiana	7	15	7	6	9	39	47	266	266	1	9	1
Illinois	2	8	20	3	117	41	92	1,280	963	22	25	5
Michigan [3]	7	9	8	2	6	23	70	1,651	555	4	35	5
Wisconsin	1	0	1	33	52	52	33	1,701	871	3	5	1
WEST NORTH CENTRAL												
Minnesota	5	4	3	2	1	1	9	1,570	179	3	7	1
Iowa	3	4	2	------	30	28	16	213	213	0	0	0
Missouri	22	3	6	4	3	8	9	474	325	7	26	1
North Dakota	2	2	2	1	22	21	4	245	64	2	3	0
South Dakota	0	2	1	------	------	2	23	75	27	3	0	0
Nebraska	1	3	2	------	4	11	22	70	107	0	0	0
Kansas	2	5	5	2	5	9	16	761	533	1	5	1
SOUTH ATLANTIC												
Delaware	1	0	0	------	------	------	17	15	15	1	0	0
Maryland [3]	6	5	5	3	9	9	52	1,182	170	9	9	9
District of Columbia	0	0	0	------	1	5	10	129	100	1	1	1
Virginia	3	1	10	551	261	552	89	1,235	779	8	24	5
West Virginia	5	2	3	13	40	72	66	566	148	5	12	2
North Carolina	6	7	8	------	14	28	27	2,106	921	6	11	2
South Carolina	6	5	3	411	449	754	62	492	257	0	13	1
Georgia	5	4	4	17	24	144	29	303	303	2	6	2
Florida	1	1	3	1	2	10	60	308	185	7	7	2
EAST SOUTH CENTRAL												
Kentucky	9	3	4	------	56	56	23	86	91	4	8	2
Tennessee	2	5	6	45	81	93	108	312	312	10	11	2
Alabama	6	9	7	144	252	316	9	648	349	4	12	3
Mississippi [3]	8	15	8	------	------	------	------	------	------	3	6	2
WEST SOUTH CENTRAL												
Arkansas	2	7	7	88	127	226	65	291	235	3	4	
Louisiana	5	1	5	31	7	13	11	68	68	5	6	2
Oklahoma	2	6	7	327	155	207	39	88	65	2	4	2
Texas	33	44	36	1,200	1,201	1,361	443	2,038	1,416	12	20	10
MOUNTAIN												
Montana	3	1	2	27	10	11	17	105	87	0	0	0
Idaho	3	0	0	------	37	------	2	72	72	0	0	0
Wyoming	2	2	0	6	1	5	13	116	95	1	1	0
Colorado	5	1	7	29	36	44	18	350	247	0	0	0
New Mexico	1	1	1	1	4	5	2	140	66	1	0	0
Arizona	1	5	2	67	125	125	4	557	136	0	3	1
Utah [3]	1	0	0	------	158	8	104	31	155	1	1	0
Nevada	0	0	0	------	8	3	0	5	4	0	0	0
PACIFIC												
Washington	9	2	2	------	------	9	210	181	322	6	8	1
Oregon	19	5	4	11	45	28	42	102	421	0	6	2
California	29	21	21	30	59	211	1,187	2,094	742	27	35	3
Total	281	243	288	3,097	3,465	4,536	3,787	32,802	23,150	243	497	91
11 weeks	[1] 3,441	2,790	3,238	46,295	314,418	140,504	23,960	240,054	159,593	2,791	6,087	752

[1] 2 cases of diphtheria were erroneously reported in Maine for the week ended Feb. 10, 1945.
[2] New York City only.
[3] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended March 17, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [4]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944		Mar. 17, 1945	Mar. 18, 1944	
NEW ENGLAND												
Maine	0	0	0	40	22	11	0	0	0	0	1	0
New Hampshire	0	0	0	12	4	4	0	0	0	0	0	0
Vermont	0	2	0	24	17	8	0	0	0	0	0	0
Massachusetts	1	0	0	403	447	330	0	0	0	5	2	1
Rhode Island	0	0	0	35	14	14	0	0	0	0	0	0
Connecticut	0	0	0	101	96	69	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	6	0	0	894	623	623	0	0	0	3	5	5
New Jersey	1	0	0	182	288	288	0	0	0	1	0	0
Pennsylvania	0	0	0	748	656	342	0	0	0	4	2	6
EAST NORTH CENTRAL												
Ohio	0	0	0	474	507	343	0	0	0	3	1	2
Indiana	0	0	0	208	225	191	5	0	1	1	1	1
Illinois	0	1	1	409	551	516	0	1	2	3	0	1
Michigan [3]	0	0	0	305	264	259	0	0	0	0	2	1
Wisconsin	2	0	1	245	332	191	3	0	1	0	0	0
WEST NORTH CENTRAL												
Minnesota	0	1	0	93	219	88	0	0	1	0	0	0
Iowa	0	0	0	64	178	65	0	0	1	0	0	1
Missouri	0	1	1	134	173	102	3	0	2	2	3	3
North Dakota	0	0	0	42	71	21	1	0	0	0	1	0
South Dakota	0	0	0	16	34	15	0	0	0	0	0	0
Nebraska	0	2	0	93	86	36	0	0	0	0	0	0
Kansas	0	0	0	106	131	67	0	0	1	1	0	0
SOUTH ATLANTIC												
Delaware	0	0	0	18	16	16	0	0	0	0	0	0
Maryland [3]	0	0	0	245	238	85	0	0	0	0	1	1
District of Columbia	0	0	0	63	222	18	0	0	0	0	0	0
Virginia	0	0	0	156	93	48	0	0	0	1	3	2
West Virgin	1	0	0	73	116	46	0	0	0	1	4	2
North Caroia	3	0	0	94	41	34	0	0	0	0	0	0
South Carolina	0	0	0	14	8	5	0	0	0	3	1	1
Georgia lina	1	0	0	26	17	17	1	0	0	1	8	3
Florida	0	0	0	7	14	8	0	0	0	5	1	3
EAST SOUTH CENTRAL												
Kentucky	0	0	0	55	77	94	0	0	0	2	3	2
Tennessee	0	0	0	61	96	81	1	0	1	2	0	2
Alabama	0	0	0	22	17	23	0	0	1	1	0	1
Mississippi [3]	2	0	0	32	4	6	3	0	0	1	3	1
WEST SOUTH CENTRAL												
Arkansas	1	0	0	77	12	7	0	0	3	2	2	2
Louisiana	0	0	1	15	17	14	2	0	0	1	1	3
Oklahoma	0	0	0	47	16	16	1	0	0	0	2	1
Texas	1	2	2	130	155	65	0	5	2	1	8	6
MOUNTAIN												
Montana	0	0	0	28	53	26	0	0	0	3	0	0
Idaho	0	1	0	43	109	11	0	0	0	1	0	0
Wyoming	0	0	0	14	8	11	0	0	0	0	0	0
Colorado	0	1	0	71	71	51	0	1	1	0	3	0
New Mexico	0	2	0	26	17	5	0	0	0	2	3	0
Arizona	0	0	0	36	20	10	0	0	0	0	1	1
Utah [3]	0	0	0	41	109	32	0	0	0	1	0	0
Nevada	0	0	0	1	0	0	0	0	0	0	0	0
PACIFIC												
Washington	2	0	0	153	360	46	0	0	0	1	1	1
Oregon	0	0	0	62	156	11	0	1	0	0	0	1
California	4	7	2	422	373	170	0	0	0	4	7	5
Total	25	20	20	6,660	7,373	4,426	20	8	40	56	70	70
11 weeks	400	263	287	61,470	61,731	44,084	114	144	300	624	816	827

[3] Period ended earlier than Saturday.

[4] Including paratyphoid fever reported separately, as follows: Massachusetts, 5; New York, 1; South Carolina, 1; Florida, 1; Montana, 2; Utah, 1; Washington, 1; California, 2.

Telegraphic morbidity reports from State health officers for the week ended March 17, 1945, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Whooping cough			Week ended Mar. 17, 1945							
	Week ended—		Median 1940–44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever	Undulant fever
	Mar. 17, 1945	Mar. 18, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	82	36	32	0	0	0	0	0	0	0	3
New Hampshire	7	0	5	0	0	0	0	0	0	0	0
Vermont	47	15	23	0	0	0	0	0	0	0	2
Massachusetts	214	94	171	0	0	0	1	0	0	0	0
Rhode Island	37	0	18	0	1	0	0	0	0	0	0
Connecticut	80	38	66	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York	270	121	319	2	7	0	0	0	0	0	9
New Jersey	121	42	128	0	0	0	0	0	0	0	1
Pennsylvania	205	141	225	0	1	0	0	0	0	0	2
EAST NORTH CENTRAL											
Ohio	212	80	233	0	0	0	0	0	0	0	1
Indiana	16	16	45	0	0	0	0	0	0	0	1
Illinois	70	46	92	1	0	0	2	0	1	0	6
Michigan[3]	63	120	188	0	0	0	0	0	0	0	3
Wisconsin	63	63	102	0	0	0	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota	20	26	26	3	1	0	1	0	0	0	4
Iowa	3	20	18	0	0	0	0	0	1	0	0
Missouri	16	10	22	0	0	1	0	0	0	0	0
North Dakota	1	2	3	0	0	0	3	0	0	0	0
South Dakota	0	1	1	0	0	0	0	0	0	0	0
Nebraska	10	19	7	0	0	0	0	0	0	0	0
Kansas	37	28	57	0	0	0	0	0	0	0	2
SOUTH ATLANTIC											
Delaware	0	1	1	0	0	0	0	0	0	0	0
Maryland[3]	42	59	72	0	0	0	0	0	0	0	0
District of Columbia	2	3	15	0	0	0	0	0	0	0	0
Virginia	30	74	55	0	0	30	0	0	0	0	0
West Virginia	41	45	46	0	0	0	0	0	0	0	0
North Carolina	132	115	127	1	0	0	0	0	0	1	0
South Carolina	76	61	57	1	24	0	0	0	0	1	0
Georgia	4	16	32	0	1	1	0	0	4	4	2
Florida	27	14	18	6	0	0	0	0	2	1	0
EAST SOUTH CENTRAL											
Kentucky	37	61	61	0	0	0	0	0	0	0	0
Tennessee	15	21	40	0	0	0	0	0	0	0	2
Alabama	21	35	35	0	0	0	0	0	1	6	2
Mississippi[3]	----	----	----	0	0	0	0	0	0	3	0
WEST SOUTH CENTRAL											
Arkansas	23	7	10	3	1	0	0	0	0	0	0
Louisiana	2	0	8	1	1	0	0	0	1	1	2
Oklahoma	28	10	15	0	0	0	0	0	0	0	0
Texas	230	211	211	4	312	7	0	0	0	11	8
MOUNTAIN											
Montana	12	3	10	0	0	0	0	0	0	0	1
Idaho	3	8	8	0	0	0	0	0	0	0	0
Wyoming	2	6	3	0	0	0	0	0	0	0	0
Colorado	27	24	29	0	2	0	0	0	0	0	1
New Mexico	6	8	16	1	0	0	0	0	0	0	0
Arizona	20	31	23	0	0	12	0	0	0	0	0
Utah[3]	17	20	87	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	20	55	61	0	0	0	0	0	0	0	1
Oregon	23	36	30	0	0	0	0	0	0	0	2
California	295	106	286	4	5	0	0	0	0	0	2
Total	2,709	1,948	3,531	27	356	51	7	0	10	28	69
Same week 1944	1,948	----	----	27	152	52	13	0	12	34	51
Average, 1942–44	3,221	----	----	23	124	59	11	[4]1	14	[4]34	35
11 weeks; 1945	26,139	----	----	293	5,714	1,430	73	4	218	575	923
1944	20,283	----	----	276	2,184	700	115	2	113	451	431
Average, 1942–44	35,621	----	[4]42,972	246	1,744	523	103	[4]5	178	[4]451	336

[3] Period ended earlier than Saturday.

[4] 5-year median, 1940–44.

Anthrax: Pennsylvania, 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended March 10, 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	0	0	------	0	0	0	3	0	2	0	0	0
New Hampshire:												
Concord	0	0	------	0	0	0	0	0	6	0	0	0
Massachusetts:												
Boston	3	0	------	0	38	2	8	0	111	0	0	37
Fall River	0	0	------	0	2	2	1	0	9	0	0	1
Springfield	0	0	------	0	2	0	3	0	12	0	0	0
Worcester	0	0	------	0	0	2	7	0	19	0	0	9
Rhode Island:												
Providence	0	1	------	0	0	0	1	0	12	0	0	39
Connecticut:												
Bridgeport	0	0	------	0	0	1	2	0	3	0	0	2
Hartford	0	0	------	0	42	1	1	0	28	0	0	0
New Haven	0	0	------	0	0	1	2	0	8	0	0	8
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	1	2	0	4	0	8	0	0	0
New York	8	1	4	3	52	18	70	2	314	0	1	103
Rochester	0	0	------	0	1	0	3	0	7	0	1	3
Syracuse	0	0	------	0	0	1	2	0	6	0	0	16
New Jersey:												
Camden	1	0	1	0	0	0	5	0	2	0	0	0
Newark	0	0	2	0	7	4	8	0	23	0	0	10
Trenton	0	0	1	0	0	1	3	0	19	0	0	0
Pennsylvania:												
Philadelphia	4	0	3	2	72	6	37	0	130	0	0	62
Pittsburgh	0	0	------	1	5	1	14	0	19	0	0	1
Reading	0	0	------	0	2	0	5	0	4	0	0	3
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	------	0	0	2	6	0	16	0	0	2
Cleveland	0	0	12	2	11	2	9	0	67	0	0	48
Columbus	0	0	2	2	3	0	4	0	9	0	0	5
Indiana:												
Fort Wayne	0	0	------	0	0	0	3	0	7	0	0	1
Indianapolis	8	0	------	0	2	1	11	0	33	0	0	0
South Bend	0	0	------	0	1	0	0	0	0	0	0	2
Terre Haute	0	0	------	0	2	0	0	0	4	0	0	0
Illinois:												
Chicago	0	0	1	0	32	12	28	0	162	0	0	22
Springfield	0	0	------	0	4	0	2	0	11	0	0	2
Michigan:												
Detroit	5	0	4	1	12	1	12	0	105	0	0	14
Flint	0	0	------	0	0	0	0	0	9	0	0	0
Grand Rapids	0	0	------	0	1	0	1	0	10	0	0	0
Wisconsin:												
Kenosha	0	0	------	0	1	0	0	0	0	0	0	2
Milwaukee	0	0	------	0	5	1	11	0	69	0	0	9
Racine	0	0	------	0	4	2	1	0	2	0	0	7
Superior	0	0	------	0	0	0	0	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	1	0	1	0	6	0	0	1
Minneapolis	1	0	------	0	5	0	6	0	29	0	0	10
St. Paul	0	0	------	0	4	0	2	0	11	0	0	6
Missouri:												
Kansas City	1	0	------	0	0	1	6	0	13	0	0	3
St. Joseph	0	0	------	0	0	0	0	0	8	0	0	0
St. Louis	2	1	2	0	2	6	14	0	29	0	0	9
North Dakota:												
Fargo	0	0	------	0	0	0	1	0	1	0	0	0
Nebraska:												
Omaha	0	0	------	0	13	1	7	0	18	0	0	0
Kansas:												
Topeka	1	0	------	0	0	0	1	1	7	0	0	8
Wichita	1	0	------	0	4	0	3	0	3	0	0	14

City reports for week ended March 10, 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								
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	1	0	6	0	2	0	0	0
Maryland:												
Baltimore	4	0	1	1	5	0	8	0	107	0	0	34
Cumberland	0	0	------	0	0	5	0	0	10	0	0	0
Frederick	0	0	------	0	0	0	1	0	2	0	0	0
District of Columbia:												
Washington	0	0	------	0	12	0	12	0	65	0	0	2
Virginia:												
Lynchburg	0	0	------	0	0	0	0	0	7	0	0	0
Richmond	0	0	------	1	3	0	2	0	11	0	0	0
Roanoke	0	0	------	0	0	0	0	0	3	0	0	1
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	5	0	0	0
Wheeling	0	0	------	0	42	0	0	0	1	0	0	0
North Carolina:												
Raleigh	0	0	------	0	0	0	1	0	0	0	0	3
Wilmington	0	0	------	0	0	0	3	0	0	0	0	5
Winston-Salem	0	0	------	0	1	0	2	0	18	0	0	3
South Carolina:												
Charleston	0	0	13	0	7	1	1	0	2	0	0	1
Georgia:												
Atlanta	0	0	8	0	1	0	3	0	9	0	0	0
Brunswick	0	0	------	0	1	0	1	0	1	0	0	2
Savannah	0	0	4	3	5	0	0	0	1	0	1	0
Florida:												
Tampa	0	0	------	1	2	1	0	0	1	0	1	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	9	1	86	4	11	0	8	0	0	11
Nashville	0	0	------	0	0	1	4	0	5	0	0	0
Alabama:												
Birmingham	0	0	------	2	1	2	7	0	2	0	1	1
Mobile	0	0	------	1	0	0	2	0	2	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	1	0	------	0	3	0	3	0	3	0	0	3
Louisiana:												
New Orleans	1	0	2	1	19	4	8	0	10	0	2	3
Shreveport	0	0	------	0	0	0	7	0	0	0	0	0
Texas:												
Dallas	2	0	------	0	22	0	2	0	11	0	0	8
Galveston	0	0	------	0	0	0	2	0	0	0	0	0
Houston	0	0	------	0	0	1	6	2	14	0	0	0
San Antonio	1	0	------	0	0	0	8	1	3	0	0	0
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	1	0	3	0	0	0
Great Falls	0	0	------	1	1	0	1	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	0	0	0	0
Missoula	0	0	------	0	0	0	1	0	3	0	0	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	2	0	5	0	7	0	6	0	23	0	0	14
Pueblo	0	0	------	0	0	0	1	0	6	0	0	1
Utah:												
Salt Lake City	0	0	------	0	32	0	1	0	15	0	0	8
PACIFIC												
Washington:												
Seattle	3	0	------	2	38	0	13	0	29	0	0	4
Spokane	2	0	2	0	0	0	0	0	4	0	0	0
Tacoma	0	0	------	0	11	0	1	0	5	0	0	5
California:												
Los Angeles	11	0	10	3	44	3	5	0	82	0	0	25
Sacramento	0	0	------	0	2	1	4	0	17	0	0	6
San Francisco	0	0	------	0	99	0	2	0	90	0	0	14
Total	62	3	86	29	777	92	444	6	1,951	0	7	615
Corresponding week, 1944	51	------	171	48	8,853	------	502	------	2,463	0	7	316
Average, 1940–44	70	------	344	[1]48	[2]5,701	------	[1]524	------	1,733	1	13	903

[1] 3-year average, 1942–44.

[2] 5-year median, 1940–44.

Anthrax.—Cases: Philadelphia, 1.

Dysentery, amebic.—Cases: Boston, 1; Chicago, 3.

Dysentery, bacillary.—Cases: Buffalo, 5; New York, 7; Detroit, 3; Charleston, S. C., 2; Los Angeles, 4.

Dysentry, unspecified.—Cincinnati, 1; Richmond, 1; San Antonio, 4.

Tularemia.—Cases: St. Louis, 2.

Typhus fever, endemic.—Cases: New Orleans, 1; Shreveport, 1; San Antonio, 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 89 cities in the preceding table (estimated population, 1943, 34,385,900)

	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	7.9	2.6	0.0	0.0	221	23.6	73.5	0.0	551	0.0	0.0	252
Middle Atlantic	6.0	0.5	5.1	3.2	65	14.3	69.9	0.9	246	0.0	0.9	92
East North Central	7.9	0.0	11.6	3.0	47	12.8	53.5	0.0	306	0.0	0.0	70
West North Central	11.9	2.0	4.0	0.0	58	15.9	81.6	2.0	249	0.0	0.0	101
South Atlantic	6.5	0.0	42.5	9.8	131	11.4	65.4	0.0	400	0.0	3.3	85
East South Central	0.0	0.0	53.1	23.6	513	41.3	141.6	0.0	100	0.0	5.9	71
West South Central	14.3	0.0	5.7	2.9	126	14.3	103.3	8.6	118	0.0	5.7	40
Mountain	15.9	0.0	39.7	7.9	318	0.0	87.4	0.0	397	0.0	0.0	183
Pacific	25.3	0.0	19.0	7.9	307	6.3	39.5	0.0	359	0.0	0.0	85
Total	9.4	0.5	13.1	4.4	118	14.0	67.5	0.9	297	0.0	1.1	94

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodents and fleas).—A rat found on January 30, 1945, in District 10A, Paauhau area, Honokaa, Island of Hawaii, was proved positive for plague on February 8, 1945. A rat found on February 3, 1945, in District 3A, Kapulena area, Honokaa, Island of Hawaii, was proved positive for plague on February 8, 1945. A pool of fleas taken from 77 rodents on February 5, 1945, in Hamakua Mill area, Hamakua, Island of Hawaii, was proved positive for plague on February 14, 1945.

Panama Canal Zone

Notifiable diseases—January 1945.—During the month of January 1945, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	13				7		6		26	
Diphtheria	5	1			1		4	1	10	2
Dysentery:										
Amebic	2		4	2	3		5		14	2
Bacillary	2	1					3		5	1
Malaria [1]	7		4		54		46	2	111	2
Measles					9		12		21	
Meningitis, meningococcus							2		2	
Mumps	1				7		1		9	
Paratyphoid fever	2		1		5				8	
Pneumonia		13		3	35	1		10	[2] 35	27
Scarlet fever					1		1		2	
Tuberculosis		25		2	3			12	[2] 3	39
Typhoid fever	1						2		3	
Whooping cough					4				[2] 4	

[1] 35 recurrent cases.
[2] In the Canal Zone only.

FOREIGN REPORTS

ANGOLA

Notifiable diseases—October—December 1944.—During the months of October, November, and December 1944, certain notifiable diseases were reported in Angola as follows:

Disease	October		November		December	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Beriberi	40		30		34	1
Bilharziasis	282		298		201	
Chickenpox	9		34		4	
Diphtheria	1		1		3	
Dysentery:						
Amebic	113	2	145	9	104	4
Bacillary	13		1		1	1
Gonorrhea	211		287		297	
Hookworm disease	697	6	757	5	586	6
Influenza	736	1	691	15	873	4
Leprosy	7	5	5		9	3
Measles	52	1	54		67	
Meningitis, meningococcus	10	4	8	3	7	3
Mumps	12		30		11	
Pneumonia	201	23	188	17	183	20
Poliomyelitis			1			
Relapsing fever	29		30		38	
Scarlet fever	1					
Septicemia			4	1	6	1
Sleeping sickness	203	13	158	8	97	11
Smallpox	45		4		45	
Syphilis	402	2	436	2	361	1
Tetanus	6	2	4	3	4	2
Trachoma	2		2			
Tuberculosis (pulmonary)	71	10	75	9	59	11
Typhoid and paratyphoid fever	14	3	16	2	14	1
Whooping cough	45	3	48	1	79	2
Yaws	927		851		660	1

CANADA

Provinces—Communicable diseases—Week ended February 24, 1945.—During the week ended February 24, 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			1	70	255	42	14	55	101	538
Diphtheria		5	2	38		12	1	1	2	61
Dysentery:										
Bacillary									2	2
Unspecified					1					1
German measles		1		18	6	1	1	5	12	44
Influenza		6			97	1			20	124
Measles			1	113	129	15	7	17	272	554
Meningitis, meningococcus					2					2
Mumps		1		284	183	42	32	152	26	720
Poliomyelitis						1				1
Scarlet fever		7	4	112	94	29	4	35	23	308
Smallpox							5			5
Tuberculosis (all forms)		2	5	214	41	12		15	19	308
Typhoid and paratyphoid fever				4		6				10
Undulant fever									1	1
Venereal diseases:										
Gonorrhea	1	24	10	67	150	45	21	15	46	379
Syphilis	1	20	6	136	127	24	8	9	23	354
Whooping cough		18	2	104	57	3	5	40	10	239

CUBA

Habana—Communicable diseases—4 weeks ended March 3, 1945.—During the 4 weeks ended March 3, 1945, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chickenpox	22		Scarlet fever	1	
Diphtheria	17		Tuberculosis	1	
Malaria	1		Typhoid fever	21	4
Measles	3				

Provinces—Notifiable diseases—4 weeks ended February 24, 1945.—During the 4 weeks ended February 24, 1945, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana[1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer		1	2	2		14	19
Chickenpox		16	1	4	17	6	44
Diphtheria		22	5		1	2	30
Leprosy		4	1	2	1	5	13
Malaria	5	4	2	8		210	229
Measles		3		34	2	26	65
Scarlet fever		1			1		2
Tuberculosis	11	5	18	13	22	47	116
Typhoid fever	6	51	10	18	5	32	122
Whooping cough				36			36
Yaws						3	3

[1] Includes the city of Habana.

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

Egypt—Port Said.—For the week ended February 17, 1945, 1 case of plague was reported in Port Said, Egypt, and for the week ended February 24, 1945, 2 cases of plague were reported in the same place.

Madagascar.—For the period February 1–10, 1945, 5 cases of plague were reported in Madagascar.

Smallpox

French Guinea.—For the period February 21–28, 1945, 143 cases of smallpox were reported in French Guinea.

Nicaragua—Managua.—For the month of January 1945, 123 cases of smallpox were reported in Managua, Nicaragua.

Nigeria.—For the week ended February 3, 1945, 251 cases of smallpox with 19 deaths were reported in Nigeria.

Togo (French).—For the period February 21–28, 1945, 137 cases of smallpox were reported in French Togo.

Venezuela.—For the month of February 1945, 60 cases of smallpox with 2 deaths were reported in Caracas and 6 cases of smallpox were reported in La Guayra, Venezuela.

Typhus Fever

Egypt.—For the week ended February 10, 1945, 375 cases of typhus fever with 57 deaths were reported in Egypt.

Turkey.—For the week ended March 10, 1945, 85 cases of typhus fever were reported in Turkey.

Venezuela.—For the month of February 1945, 8 cases of typhus fever with 1 death were reported in Venezuela.

Yugoslavia—Croatia.—For the period January 1–21, 1945, 137 cases of typhus fever (including 71 cases in Bihac, 16 cases in Sarajevo, and 21 cases in Tuzla) were reported in Croatia, Yugoslavia.

Yellow Fever

Ivory Coast—Guiglo.—On March 13, 1945, 1 fatal case of yellow fever was reported in Guiglo, Ivory Coast.

Venezuela—Tachira State—Dantas.—On February 19, 1945, 1 death from yellow fever was reported in Dantas, near San Antonio, Tachira State, Venezuela.

×