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THE UNITED STATES PUBLIC HEALTH SERVICE COMMUNICABLE DISEASE CENTER[1]

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The Communicable Disease Center of the United States Public Health Service was inaugurated officially on July 1, 1946, for the field investigation and control of communicable diseases. The Center, located in Atlanta, Ga., will continue certain training and investigation functions of the Office of Malaria Control in War Areas, which it replaces, and in addition will deal with special phases of communicable disease prevention not now provided as Federal services.

While the majority of the infections to be encompassed by the Center for the present occur either exclusively or more intensively in the Tropics or subtropics and are transmitted by insects, the feature truly common to the proposed group is that the etiologic agent, vector, or reservoir of infection is known or suspected to be zoological. This would include all diseases of protozoan and helminthic origin, the most prominent of which are malaria, amebiasis, the schistosomiases, hookworm disease, filariasis, etc., and certain infections of bacterial or viral etiology such as yellow fever, dengue, certain neurovirologic disorders, the various forms of typhus and plague, sand-fly fever, diverse diarrheas and dysenteries, and possibly other diseases. While such a consolidation may be considered heterogeneous from clinical and nosologic points of view, it is eminently sound, sensible, and workable from the standpoints of laboratory diagnosis, epidemiologic investigation, and control operations.

The consequences of negligence and disregard in these matters reveal themselves in such episodes as the following:

In 1930, *Anopheles gambiae* was discovered to have invaded Brazil, presumably from West Africa. Before this vicious malaria vector had been exterminated in 1942, thousands of persons had died of malaria, hundreds of thousands had been

[1] From the Communicable Disease Center, States Relations Division.

incapacitated temporarily by it, and millions of dollars had been spent in its control—and all because of the importation of a foreign vector of disease.

In 1933, this country was confronted suddenly with a Nation-wide epidemic of amebic disease originating in Chicago. Physicians, laboratorians, and health engineers were totally unprepared to cope with it, and unnecessary losses of life and health resulted.

The onset of World War II found the United States Army virtually without personnel skilled in the diagnosis, management, and prevention of such diseases as malaria, dengue, schistosomiasis, filariasis, Japanese B., encephalitis, etc. It was necessary to rob Federal and State health services for cadres in these specialties—and these nuclei were pitifully small and all too few.

Insofar as such situations are preventable, they should not be allowed to develop. The best way to forestall them is to foster training, investigations, and control technology as continuing and permanent elements under Federal auspices.

In meeting these problems, practicing physicians and local health departments will constitute the main line of defense. Upon them will fall the task of recognizing and treating tropical and related infections and of instituting local preventive and suppressive measures to preclude the spread of these diseases. But these hazards have certain extraterritorial and interstate aspects which make them matters of Federal concern as well. It is the responsibility of the United States Public Health Service to assist in the sensitization of local medical and health practitioners so that they will remain alert to alien disease hazards, and to provide for the States the specialized assistance not otherwise available for the control of these diseases. The proposed Center will furnish these aids in addition to conducting essential research and developing new equipment, materials, and techniques.

Aside from the administrative mechanism necessary for the existence of such an organization, its functional development can be summarized under three categories corresponding, respectively, to the types of services rendered. Many of these are already established under the auspices of MCWA.

I. Training and Training-Aid Production

In-service.—Employees entering the Center, either as commissioned officers or civil servants will continue to receive orientation training in respect to the United States Public Health Service and the Communicable Disease Center. Specialized technical instruction is given in the units to which trainees are detailed.

Special.—Training in effective control practices for special diseases, such as malaria, typhus, plague, etc., is being offered to representatives of State and local health departments and to those of other Federal agencies concerned in the prevention of these diseases. Similarly, courses in the laboratory diagnosis of infections not now endemic in all parts of the country but which may be introduced by returning overseas servicemen or as a result of global air transportation are being given to technicians from public health and clinical laboratories.

Vocational health training.—CDC is to establish a pattern for vocational health training which, presumably, will be carried on in various regionalized centers throughout the country. This activity is already under way. It includes orientation in public health viewpoints, definition of Federal, State, and local

public health relationships, basic field training in public health practices, observation of all types of local health department activities and actual work participation by trainees in the field of their own specialties under training supervisors.

It is not intended for this venture to infringe in any way upon the prerogatives or fields of endeavor of schools or teaching departments of public health, hygiene, or preventive medicine. Rather, the objective is to offer additional, practical training opportunities to inexperienced graduates of such organizations on the one hand and, on the other, training to subprofessional public health workers whose educational backgrounds deny them entrance to schools of hygiene and public health.

Professional information and training aids.—This is essentially a medical and scientific information service concentrating, for the present, in the field of tropical, insect-borne, and related diseases. Physicians and technicians interested in the recognition of these infections, either clinically or in the laboratory, may receive technical information concerning the diagnosis of these diseases and, if they request it, advice as to the most readily available facilities for assistance or consultation.

Abstracts of articles, reprints, charts, exhibits, illustrated printed materials, lantern slides, film strips, and moving pictures are being produced and distributed:

1. To physicians and scientists to aid in presenting their experiences and researches before professional gatherings.

2. To medical, public health, engineering, and laboratory schools to assist in teaching.

The production and distribution of information and teaching materials, especially audio-visual training aids, will probably become one of the major functions of the Center. There appears to be no more dependable or cheaper method of stimulating or improving the instruction concerning communicable disease and its control. It is not planned to engage in lay health education activities.

II. Epidemiologic and Laboratory Services

Emergency epidemic aid.—Facilities for meeting requests for Federal assistance in analyzing and advising in regard to epidemic phenomena will be maintained.

Disease control evaluation.—Studies of morbidity and mortality rates are being made to measure the effectiveness of specific measures, especially of new and improved ones, employed in the control of tropical and related diseases.

Instructorial.—Members of the laboratory staff serve as teachers for technician training.

Laboratory services.—The laboratory will provide the microscopic, cultural, and serological services necessary for epidemiologic and control analysis. To meet the requirements of rapid field diagnosis under epidemic conditions, mobile laboratory facilities are available. Efforts are being made to develop standardized laboratory techniques to be used for survey purposes so that the data collected at different times and places may have a greater degree of comparability than at present. It should be emphasized that these services are concerned primarily with the application and field phases of communicable disease investigations and not with the establishment of new facts in the realm of pure science.

Evaluation and consultation.—In compliance with the expressed desire of State health laboratory chiefs, efforts are under way to evaluate techniques and practices employed in public health and, as requested, in clinical laboratories in the diagnosis of the diseases dealt with by the Communicable Disease Center. Ultimately this activity may be extended—it is sorely needed—into the fields of biochemistry, hematology, etc., as well as microscopy and cultural and serological techniques.

In connection with evaluation services and in response to specific requests, laboratory personnel may be sent to State and local health laboratories for the

purpose of solving technical and administrative problems or of improving substandard techniques and practices. It is hoped that advice may be offered also regarding the design and construction of regional or branch public health laboratories.

Extension.—State and local health laboratories are being provided with various series of protozoologic, helminthic, bacteriologic, entomologic, and other specimens to assist in the training of technicians, as a reference museum, and for circulation to local clinical laboratories.

III. Operational Services

Emergency epidemic control assistance.—As the neurovirological diseases assume a constantly greater importance and as some of these have been shown to be transmitted by insects, it is likely that the United States Public Health Service may be called upon to provide emergency suppressive measures against these as well as other insect-borne diseases. It is proposed that the necessary equipment and materials for such purposes be stock-piled and that a cadre of trained operatives, regularly employed on other operational details, be kept available for use in dealing with these situations.

Endemic disease control.—As a major and continuing activity of the operational organization of the Communicable Disease Center, it is planned that demonstrations of insect-borne endemic disease control be undertaken in strategic areas. This project is already under way in MCWA and will continue in the Center as model or demonstration malaria, murine typhus, dengue, filariasis, schistosomiasis, or other control programs established in places where justification for such operations is based upon high disease rates and assurance that preventive measures will be carried on by local authorities after the demonstration phase has been concluded by the Center.

Field testing.—The facilities of the Communicable Disease Center provide excellent opportunities for the controlled field testing on a large scale of new or improved materials and equipment designed for communicable disease control.

Impoundment malaria control.—In the past, MCWA engineers have functioned to assist other Federal agencies by making surveys and submitting reports, including recommendations, regarding impoundment construction and maintenance for the purpose of minimizing malaria hazards. This service has been rendered in conjunction with the public health engineers of the States concerned.

Similarly, MCWA engineers have assisted certain State health departments in formulating impounded-water regulations and have thus been in position to set high standards for the design, construction, and maintenance of these structures as far as malaria control is concerned.

These advisory and service functions in connection with impounded water will be continued by the Center and to them will be added investigation activities necessary for the improvement of malaria control practice in impoundments.

Evaluation of vector control.—The results of disease control efficiency are frequently attested more promptly by reduction in vector densities than in specific disease prevalence. Thus it is desirable for operational control groups to have quantitative methods available for the enumeration of vectorial populations as control activities proceed. Such investigations will be maintained in the Center.

Equipment design and testing.—Control measures, especially against insect- and arthropod-borne diseases, tend to become more and more mechanized. The present activities of MCWA in designing new control equipment and in testing both new and old will be continued in the Center.

Insecticide and rodenticide research.—The advent of DDT wrote a new chapter in the history of insect control, yet the surface of this important subject is barely scratched. Already isomers of DDT are being subjected to laboratory and field

testing and other entirely new types of allegedly insecticidal compounds are available for investigation. Similarly, in rodent control, the development of ANTU and sodium fluoroacetate offer new and unexplored horizons in the reduction of rodent populations. Studies in the laboratory and in the field will continue with the objects of improving and defining the limits of current and new methods of poisoning vectors and lower animal reservoirs of disease.

Related biological studies.—The use of insecticides, larvicides, and rodenticides is attended by certain hazards to living creatures other than disease-transmitting insects and rodents. Extensive drainage interferes with the propagation of aquatic and semiaquatic forms of life of concern to nature lovers and sportsmen. It behooves the professional sanitarian to keep himself well informed regarding these dangers and to take every precaution consistent with health objectives to avoid interference with wildlife and agricultural interests. In order to provide first-hand knowledge concerning the harmful effects of control practices on the biological associates of vectors and reservoirs of disease, critical ecological studies have been initiated in MCWA. These will be continued and expanded under the aegis of the Communicable Disease Center.

These are the functions to be undertaken by the Communicable Disease Center. Collectively, they exceed the resources and facilities of individual States. They are concerned to a large degree with interstate and extracontinental health hazards. They can be most economically and effectively administered by a single, coordinated agency, as the supporting activities necessary for the productive conduct of the operations indicated above utilize common and interchangeable personnel and equipment.

The scope and magnitude of this enterprise remain to be defined by future events. It is hoped earnestly that the peacetime Communicable Disease Center will merit and receive the support and cooperation of State health departments to the same or even greater extent than did the war-related Office of Malaria Control in War Areas.

Malaria Control in War Areas

As noted above, the Communicable Disease Center replaces the Office of Malaria Control in War Areas and continues certain of its functions. This office was established shortly after the Pearl Harbor episode as the result of negotiations between the War Department and the Federal Security Agency. Its program, developed initially under the direction of Dr. L. L. Williams, Jr., was a cooperative undertaking by the United States Public Health Service and various State health departments.

In 1942 and 1943, the war emphasis was on mobilization, training, and production of military necessities. This involved mass migration of war workers and inductees, many of them to the South where the climate was favorable for year-round training but where malaria was or had been endemic. The introduction of large numbers of susceptibles into areas where occasional gametocyte carriers still could be found, where effective anophelism and temperatures favorable for

anopheline infection existed, created a potential malaria problem of national significance.

The primary aim of MCWA during these 2 years was to prevent or reduce malaria transmission around Army, Navy, and essential war industry areas by extending the control operations carried on by military authorities within these reservations. This involved not only the utilization of appropriate antilarval techniques but the institution of community educational programs and the evaluation of control progress in terms of parasite prevalence and anopheline density. Environmental operations were commenced in 15 southeastern States and Puerto Rico but were extended later to four more States, including some on the west coast, the District of Columbia, the Territory of Hawaii, and British Jamaica. Specific insect control measures were beamed not only at anophelines but at the dengue-carrying *Aedes aegypti* and, in cooperation with the Bureau of Entomology and Plant Quarantine, at the vicious dog fly on Florida beaches.

In 1944, the numbers of overseas casualties and prisoners of war evacuated to the United States rose to new heights. Many of these individuals had contracted malaria in service. Hospitals and detention camps in which they were confined were scattered throughout the country thus adding to malaria potentials in endemic areas and creating new ones in marginal sections where conditions for the existence of malaria were present but in which the disease had not been endemic for many years. The facilities of the MCWA extracantonmental program were brought into play against this hazard in the endemic situations; in the marginal ones, it was met by commissioning mobile malaria control units which covered circuits of military installations in Northern and Western States and effectively reduced adjacent anopheline breeding.

By 1945, service men were returning to the 48 States in ever increasing numbers. Upwards of half a million of them had contracted malaria overseas and the majority of these had been infected with *Plasmodium vivax*, a parasite species notable for its recurrent and treatment-resisting characteristics. While the armed forces would not release men known to be infected with *vivax* malaria, there was no way of ascertaining that parasites had disappeared completely save by long, continued observation, a procedure which was incompatible with the strong insistence of the American public for the speedy discharge of its veterans. The diffusion of these occasional carriers throughout the land added new possibilities to the national malaria problem. Its significance was admittedly indeterminate but it certainly could not be ignored by public health authorities. To meet this added threat, the so-called extended program of MCWA was activated, based on the premise that imported malaria would be most likely to establish itself in areas where conditions for transmission were ideal, that is, where they are or have been recently opera-

tive. Thus, in important malarious foci, drainage and larviciding activities were intensified by MCWA and upon these reductive measures was superimposed that mighty instrument of insect destruction, residual DDT application on domestic premises. During this same year, 1945, endemic typhus control around areas of military importance was added to the MCWA program.

The returning overseas veteran was a potential carrier not only of malaria but of numerous other infections, many of which are unknown in all or certain parts of the United States. While service men and women benefit by every preventive technique and therapeutic measure known to science before they are discharged or separated from active service, it seemed probable that overt cases of malaria, filariasis, schistosomiasis, leishmaniasis, oriental hookworm infestation, and possibly other parasitoses acquired overseas might present themselves to practitioners in any State in the Union. Special facilities were established, therefore, to aid physicians and medical technicians in the diagnosis of tropical and parasitic diseases and in the recognition of their etiologic agents.

This incomplete works catalogue fails to portray a comprehensive picture of MCWA activities. To support the huge operational program, training, evaluation, and research were necessary.

The bulk of expenditures—some 70 to 80 percent—has gone for personal services, i. e., labor. These workers numbered upwards of 4,000 at certain seasons of the war years. Together with their supervisors, they had to be recruited largely from personnel ineligible for military service. As the vast majority of technical and professional Americans customarily concerned with insect control and related activities had been absorbed by the Army and the Navy, MCWA was forced to utilize inexperienced and untrained work supervisors and technical directors. To instruct these individuals in the principles and practices of insect and rodent control, a large in-service training program was instituted, and to do it quickly audio-visual teaching methods and materials were employed. Since the materials available were inadequate in scope and quality it was necessary to produce new ones. For the guidance and evaluation of MCWA operations, epidemiologic, entomologic, parasitologic, and technologic field and laboratory facilities of considerable magnitudes were maintained. This has involved the collection, staining, and examination of thousands of thick blood films, the regular searching for and counting of anophelines and aedines, adult and larval, from a wide range of resting and breeding places, and the development of improved methods and equipment for the application of insecticides and rodenticides.

Special investigations of operational significance have been or are being carried on in association with the National Institute of Health

of the United States Public Health Service, the Health and Safety Division of the Tennessee Valley Authority, the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture, and various university and State health departments. Research subjects include the determination of whether or not foreign strains of malaria parasites are readily transmitted by native vectors, epidemiologic and entomologic evaluation of DDT domestic spray applications as used by MCWA, reasons for occasional failures of DDT as a residual larvicide, the design and testing of hand and power spray equipment, the insecticidal durability of DDT under various conditions and on various surfaces, improvement in aerial methods of dispersing DDT, anopheline host-preference studies, the effect of rat-flea destruction on human typhus prevalence, the significance of flies in the transmission of diarrheal diseases, and many others.

With the inactivation in 1945 and 1946 of numerous military establishments in this country and the rapid demobilization of the armed forces, the MCWA extracantonmental program of malaria control is being rapidly liquidated. After this year, it will remain only in such areas as have been specially requested by the Army and where State and local health resources are inadequate to supply the services required. The extended program will be continued for one or two more years.

Thus the war-connected operations of MCWA are rapidly diminishing as, indeed, they should. The basic organization, however, of physicians, engineers, and biologists skilled and experienced in the control of insect- and rodent-borne diseases remains and, in the opinion of many, should be continued (1) as a safeguard against a recurrence of that unfortunate state of affairs which prevailed in 1942 when this Nation could not find enough competent malaria control teams to service the Army and the Navy overseas and to protect the health of its civilians at home, (2) as a prevention against the establishment of exotic infections introduced into this country by returning veterans, occupational troops or as a result of constantly increasing global air traffic, and (3) to combat certain endemic infections, notably murine typhus, sylvatic plague, and insect-borne virus infections, which are progressively infiltrating and entrenching themselves in new sections of the United States.

TIME PER SERVICE IN A CHILDREN'S DENTAL CLINIC [1]

By ISIDORE ALTMAN, *Statistician, United States Public Health Service*

The care of children's teeth must be a fundamental consideration in approaching the problem of dental health; yet sufficient data upon which to base any action appear to be lacking. To augment available information on the dental needs and treatment of children, the Division of Public Health Methods of the United States Public Health Service has undertaken a number of studies of children's dental care in cooperation with representative dental clinics and public dental health agencies.

These studies are directed toward the determination of two major factors: the volume of services required by children, and the amount of time necessary to provide those services. Such data on volume and time represent (*a*) the size of the problem of dental care in children and (*b*) the personnel, in terms of professional man-hours, required to meet the problem. With this information, it is possible to arrive at estimates of the necessary extent and cost of programs of care.

The present paper is based on the first of the proposed studies and deals with the amount of time required—in one clinic at least—for the routine and more commonly occurring children's dental services. No effort to explore the quality of work done has been undertaken in these time studies. Since clinics serving the public, however, generally maintain some safeguard over quality of work, through supervision, inspection by the dental society, or other means, it is assumed that an adequate standard of quality is being preserved.

MATERIAL

The material for this report was gathered in the clinics of the Philadelphia Mouth Hygiene Association, a social agency which operates six dental clinics,[2] strategically located throughout the city of Philadelphia, for children in low economic circumstances. The children pay 50 cents per visit for routine treatment, and comparably low fees are charged for prosthetic appliances and orthodontia. The clinics themselves vary in size, from two chairs to six, in relation to the demands in each area. They are staffed by dentists employed on a full-time salaried basis and by hygienists and hygienist-interns who usually perform the prophylaxes and manage the administrative and clerical details of the clinics.

The record forms in use by the Association clinics will be reproduced in another paper where they will be more appropriate to the text.

[1] From the Division of Public Health Methods.

[2] The number has varied with circumstances. Present plans are to add two new clinics. The Association's largest clinic has been closed awaiting the completion of new quarters.

That paper will deal with volume of treatment of different kinds received by a representative group of children over several years, and with the number of visits required to provide such treatment.

METHOD OF RECORDING TIME AND NUMBER OF OBSERVATIONS

On and after August 1, 1945, the dentists and hygienists of the Philadelphia Mouth Hygiene Association were instructed to write on the case record the clock time they commenced and completed a treatment. For example, the entry for the time taken for an extraction might appear as "2:10–2:24," the entry being made in the column provided for that visit. Time was ordinarily recorded from the moment the dentist began to attend the child to the moment the child left the chair. Time was not counted for the period following an extraction when the patient would customarily rest in another chair before leaving the clinic. Allowance was also made for such interruptions as telephone calls.

The recordings of operating time were allowed to accumulate for a little over 3 months in the 5 clinics in operation at the time. Then, in November, a full day was spent in each of the 4 smaller clinics and 2 days in the largest clinic tabulating these time recordings. As many successive records as possible were gone through, with one letter of the alphabet being taken at a time. The minutes per operation were tabulated, as well as age, sex, and color of the child, identity of the operator and of the treated tooth. That a representative sample of all the time recordings was collected by this method is evidenced by the fact that in 3 clinics over half the letters of the alphabet were covered; in the largest clinic, 8 letters (a-b-c-r-s-t-u-v) were completed. In all, 2,706 routine operations for 1,068 children were tabulated, an average of 2.5 observations per child.

On the days that these entries were transcribed for the purpose of analysis, independent observations were made on the recordings of 9 of the 12 dentists then employed, to check uniformity in writing down the time of treatment. The observer's and the dentists' averages are shown in table 1. The differences found, except for 2 dentists, were small, and for the group the tendency toward understatement was balanced by the tendency in the other direction. Thus, it may be confidently concluded that the procedure followed produces consistent and, on the whole, accurate results, although the table suggests that some independent check should be made of the dentists' self-observations.

Adjustments were made for dentists "IV" and "VII" to bring them in line with the others by increasing the entries of the former by 4 minutes and decreasing those of the latter by 3 minutes. Dentists "II" and "III" persistently rounded their entries to the nearest 5 minutes; but, as the table shows, these entries concurred in the average

TABLE 1.—*Comparison of sample time recordings by 9 dentists with independent observations. Philadelphia Mouth Hygiene Association, 1945*

Dentist (1)	Number of observations (2)	Average number of minutes recorded by—		Difference, column (3)—column (4) (5)
		Dentist (3)	Observer (4)	
I	16	13.3	13.7	−0.4
II	8	11.9	11.5	+.4
III	8	15.8	16.8	−1.0
IV	11	8.1	12.5	−4.4
V	25	14.7	14.4	+.3
VI	26	12.4	12.5	−.1
VII	13	13.1	9.7	+3.4
VIII	4	12.2	11.0	+1.2
IX	3	12.3	11.3	+1.0
All dentists	114	12.9	12.9	0.0

with the observer's findings. Unfortunately, the time recordings by the hygienists could not be checked in this way.

Age, color, and sex composition.—The age, color, and sex distribution of the children for whom time of operation was recorded is shown in table 2. The great majority of the children ranged in age from 6 through 15 years, with the average at 10.8 years. This distribution agrees fairly well with that of all United States school children in these age limits, and adjustment for such age differences as there are would have little appreciable effect upon the average time for the entire group since variation with age was small (see table 4). The agreement in number and distribution between white boys and girls and between Negro boys and girls is quite remarkable since observations were tabulated as they came up in alphabetical sequence.

TABLE 2.—*Number of children, by sex, color, and age groups, for whom length of time of operation was recorded. Philadelphia Mouth Hygiene Association, 1945*

Color and sex	Average (years)	All Ages	Age in years											
			Under 6	6	7	8	9	10	11	12	13	14	15	16 and over
All children	10.8	1,068	53	74	80	87	104	102	99	111	92	106	[1] 77	83
White:														
Boys	10.3	419	17	23	27	43	53	49	40	48	37	33	23	17
Girls	11.0	419	27	26	22	33	31	36	39	45	40	48	38	34
Negro:														
Boys	10.8	110	3	15	12	6	7	10	9	7	8	11	8	14
Girls	11.4	119	6	5	9	5	10	16	11	11	7	14	7	18

[1] Includes 1 child of unknown sex and color.

TIME PER OPERATION

All children.—In table 3 and figure 1 is shown the average time required for a prophylaxis, a "tooth-filling," an extraction, and a polishing. Tabulations for fillings were made only where the treatment indicated for a tooth had been completed, whether one surface

or more than one surface was filled. Hence, the term "tooth-filling" will be employed to indicate throughout that fillings are being considered only on a per tooth basis. Polishings were separately timed since it is the policy in these clinics to devote a final session to the polishing of fillings. Hence, in comparing these findings with those of other time studies, it is important to know as to the latter whether or not the minutes for polishing are included with those for fillings.

The average time for a prophylaxis was 15.5 minutes. This is an

TABLE 3.—*Average time per operation, by color and sex of children, Philadelphia Mouth Hygiene Association, 1945*

Color and sex	Prophylaxis	Tooth filling	Extraction		Polishing
			Deciduous teeth	Permanent teeth	
	Average time (minutes) ±1 standard deviation				
All children	15.5±6.1	16.8±8.4	9.3±4.6	12.5±4.4	11.8±4.1
White:					
Boys	15.5±6.2	17.4±9.0	9.5±4.1	12.3±3.8	12.7±4.1
Girls	15.0±5.5	17.0±9.1	10.0±4.7	12.5±4.8	10.8±4.4
Negro:					
Boys	16.3±6.6	14.8±6.5	7.4±3.0	11.4±3.8	(1)
Girls	16.9±7.0	15.4±6.5	10.2±4.7	14.0±4.6	(1)
	Number of observations				
Total	559	1,582	300	163	[2] 102
White:					
Boys	231	663	145	44	42
Girls	217	621	90	62	40
Negro:					
Boys	57	149	34	29	11
Girls	54	149	31	28	8

[1] Averages omitted because of small number of observations.
[2] Includes 1 child of unknown sex and color.

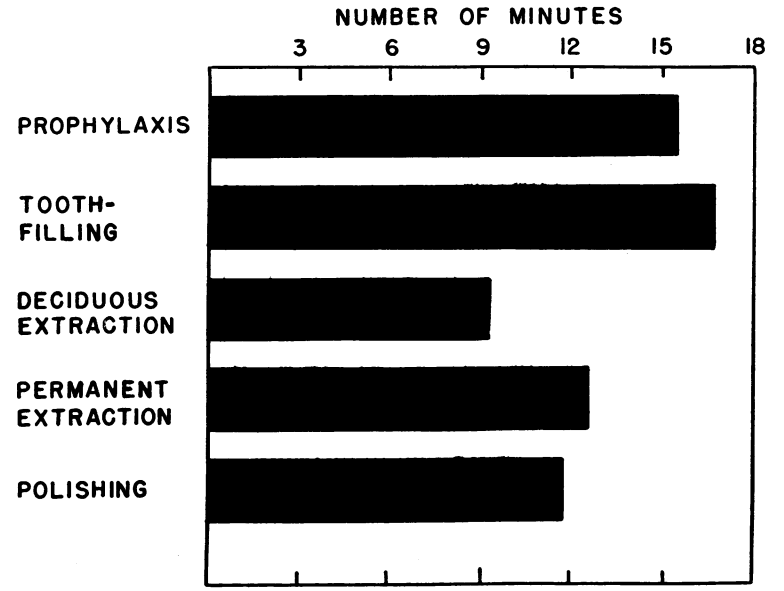

FIGURE 1.—Average number of minutes per specified treatment. Philadelphia Mouth Hygiene Association, 1945

average for dentists and hygienists combined (see table 5). The further treatments required by the child were generally noted at the prophylaxis sitting, but this procedure took little time which could not be separated from the prophylaxis proper.

The average time per tooth-filling was 16.8 minutes, and per extraction 10.4 minutes—12.5 minutes for a permanent tooth and 9.3 minutes for a deciduous tooth. The extractions were of a kind requiring only a local anesthetic; the more complicated extractions are referred to hospital dental surgery departments. For this reason, no data for time of postoperative treatment were available. Time was ordinarily recorded from the moment the child sat in the chair to a minute or two after the extraction. As was stated above, the dentists did not record the time the child had to wait before he was permitted to leave the clinic.

It frequently happens that more than one deciduous tooth is extracted at one sitting. Of the 300 deciduous extractions shown in table 3, 119 were part of such multiple extractions. The average time per tooth when there were multiple deciduous extractions was 5.9 minutes.

There were 102 observations of polishing time. For this number, the average length of time was 11.8 minutes. As closely as one could tell, the number of teeth polished was 4.9 per child—with a resultant average polishing time per tooth of 2.4 minutes.

Color and sex.—Table 3 also shows the time per operation by color and sex of the children. With one exception, the differences that were found were small. Only time per tooth-filling showed a statistically significant difference between white and Negro children; the average time per white child was 17.2 minutes, per Negro child, 15.1 minutes. This item will be checked where possible when other clinics are studied. The only other color and sex difference that may have some meaning is the finding that for both the deciduous and permanent teeth, extractions for Negro boys took the shortest amount of time.

Age.—Average time per operation for each age year is shown in table 4 and figure 2. On the whole, there seems to be little relation between minutes required for a treatment of these routine kinds and the child's age. The older children take somewhat longer for a prophylaxis. Time per tooth-filling shows an increase from 15 minutes in the very young to 18 minutes at 9 and 10 years and then a decrease to 16 minutes at 15 and 16 years. The length of time for extracting a permanent tooth shows a tendency to decrease with increasing age.

Speed of operators.—Affecting these time studies is, of course, the speed of the dentists and, for prophylaxes, of the hygienists as well. The 12 dentists who were observed [3] ranged in age from 23 years to

[3] Actually, there were 14 dentists in the period studied, but 2 dentists, who left the association's employ early in the study, accounted for only 21 of the 2,706 observations.

TABLE 4.—*Average time per operation, by age of children. Philadelphia Mouth Hygiene Association, 1945*

Operation	Age in years											
	Under 6	6	7	8	9	10	11	12	13	14	15	16 and over
	Average time (minutes)[1]											
Prophylaxis	13.9	12.8	14.4	14.8	15.3	15.7	16.4	15.7	15.9	17.4	16.1	18.5
Tooth-filling	15.0	15.6	15.8	17.8	18.4	18.1	17.4	17.0	16.8	16.7	16.5	15.4
Extraction:												
Deciduous	9.5	9.0	8.8	9.2	9.7	9.7	10.6					
Permanent							15.9	13.6	12.3	12.2	12.2	11.7
	Number of observations											
Prophylaxis	36	45	42	56	55	64	48	59	45	45	34	30
Tooth-filling	69	104	119	125	131	136	147	193	164	172	121	101
Extraction:												
Deciduous	22	38	54	47	46	47	28	7	6	4		1
Permanent			3	2	8	9	11	14	19	36	21	40

[1] Averages based on 10 or less observations are omitted.

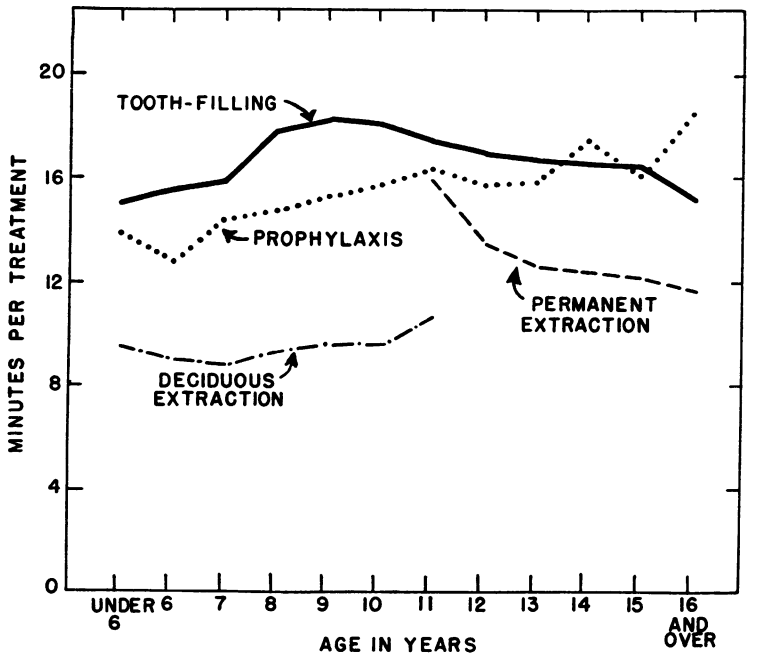

FIGURE 2.—Average number of minutes per specified treatment and age in years. Philadelphia Mouth Hygiene Association, 1945.

60 years, with 7 dentists under 30. The concentration of younger men is understandable, since these clinics attract new graduates who look upon service with the Philadelphia Mouth Hygiene Association as akin to an internship in children's dentistry. The oldest dentist is clinic supervisor for the association.

Table 5 shows the average time for filling a tooth and for an extraction for the 12 dentists observed. In addition, average time for a prophylaxis is shown for 6 dentists and 6 hygienists for whom there was a sufficient number of cases recorded. The dentists are lettered from A through L in order of increasing age.

It is readily apparent that, for this group of dentists at least, there is little discernible relationship between age and speed. All that can

TABLE 5.—*Average time per operation by dentist or hygienist. Philadelphia Mouth Hygiene Association, 1945*

Operation	Dentists												Hygienists					
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	Average time (minutes)																	
Prophylaxis	12.7	----	11.1	12.6	17.4	(1)	----	----	----	----	----	11.6	22.7	19.7	14.6	15.5	16.6	16.0
Tooth-filling	15.6	21.6	17.1	12.8	17.2	18.8	12.1	15.5	10.6	12.5	17.4	9.9	----	----	----	----	----	----
Extraction	10.1	13.7	9.7	11.0	12.1	(1)	9.5	7.6	7.6	12.4	10.5	9.8	----	----	----	----	----	----
	Number of observations																	
Prophylaxis [2]	29	----	83	22	21	7	----	----	----	----	----	38	15	102	71	72	30	39
Tooth-fillings [3]	89	307	199	64	104	30	89	85	59	167	149	100	----	----	----	----	----	----
Extraction [4]	34	65	58	12	24	7	48	54	25	44	56	30	----	----	----	----	----	----

[1] Average omitted because of smaller number of observations.
[2] Total observations, 529. Difference from total in table 3 (559) accounted for by dentists and hygienists not included in this table because of small number of observations.
[3] Total observations, 1,442. Difference from total in table 3 (1,582) accounted for by 9 fillings done by 2 dentists not included in table and 131 fillings involving more than 1 dentist.
[4] Total observations, 457. Difference from total in table 3 (463) accounted for by 6 extractions by dentist not included in table.

be said is that, with the exception of dentist "K," the older men do appear to be somewhat more rapid operators.

Of the hygienists, "N" and "Q" are employees of several years' standing while the other four are hygienist-interns. Here too, there is apparently no difference in rapidity of performance between the more and less experienced. However, when dentists and hygienists are compared for prophylaxis time, it is seen that the dentists take a significantly smaller amount of time on the average.

Type of tooth.—The different kinds of teeth have been divided in table 6, into deciduous and permanent, with further rough sub-

TABLE 6.—*Average time to fill tooth, by type of tooth. Philadelphia Mouth Hygiene Association, 1945*

	Tooth group [1]					
	I	II	III	IV	V	VI
Average time to fill tooth (minutes)	14.4	13.1	15.2	14.9	18.4	13.1
Number of teeth	267	26	67	287	918	17

[1] Deciduous:
I Upper and lower molars.
II All other deciduous teeth.
Permanent:
III Upper central and lateral incisors.
IV Upper and lower premolars.
V Upper and lower molars.
VI All other permanent teeth.

division according to morphological type and relationship to caries attack. The great majority of teeth filled are molars and premolars and it was to be expected that the bulk of the time recordings in a group of children such as this would involve fillings in the first permanent molars. These molars require more time for filling than any of the others, 18.4 minutes on the average as compared with 15.2 minutes for the permanent upper incisors and 14.9 minutes for the permanent bicuspids. By the same token the dentists spend more time per tooth on the deciduous molars, 14.4 minutes, than on the other deciduous teeth, 13.1 minutes.

COMPARISON WITH OTHER STUDIES

Few other studies of this kind have been reported; and these have been reported in such a way as to make comparison difficult. In table 7 there is shown a summary comparison with the estimates of

TABLE 7.—*Comparison of time data from three studies*

Item	Philadelphia Mouth Hygiene Association	Lee-Jones [1]	Brandhorst [2]
Number of dentists reporting	12		8
Number of children	1,068		6,644
Age group (years)	4–17	5–17	5
Minutes for:			
Prophylaxis	15.5	30	20
Tooth-filling	16.8	45	37
Extraction: Deciduous	9.3	15	
Permanent	12.5	[3] 20	[3] 27

[1] See reference (*1*).
[2] See reference (*2*).
[3] From data for young adults.

time made for Lee and Jones (*1*) by practicing dentists and with a study of St. Louis children reported by Brandhorst in which the "data were compiled from reports submitted by good operators" (*2*).

The time recorded in the two latter reports is far in excess of that observed in the present study, but we do not know just how the observations were made and what factors were taken into consideration; for example, the time for polishing is very likely included with time for filling in these reports. Conditions may be sufficiently different between private practice and that in clinics, where assistants maintain a routine, constant flow of patients, to account in large part for these variations in time. It is not unlikely that valid contrast can only be had between studies made under parallel conditions.

SUMMARY

1. Data have been presented on the time it takes to perform routine dental operations for children. The study was made in the clinics of the Philadelphia Mouth Hygiene Association, where over 2,700 observations were tabulated.

2. The average number of minutes per operation was found to be as follows:

Prophylaxis	15. 5
Tooth-filling	16. 8
Extraction of a deciduous tooth	9. 3
Extraction of a permanent tooth	12. 5
Polishing	11. 8

3. Differences by color and sex and by age are shown in the tables. In general, these differences are small.

4. Operating time for prophylaxes, fillings, and extractions among 12 dentists showed considerable variation, but little association with age and experience of the practitioner.

5. Upper and lower permanent molars required 18.4 minutes to fill on the average, significantly more than other teeth in the mouth.

6. Average time reported in two other studies is greater than that found here, but validity of the comparison is questionable.

ACKNOWLEDGMENT

Appreciative thanks are due first to Lt. Col. William C. Webb, Jr., executive director of the children's dental clinics of the Philadelphia Mouth Hygiene Association, and the members of his staff. Without their cooperation and many hours of assistance, the study would not have been possible. Acknowledgment must also be made of the advice and assistance received from Dr. Antonio Ciocco and Dr. Henry Klein of the Division of Public Health Methods. Responsibility for tabulation and for the preparation of tables and charts was borne by Mrs. Marion Lee Fatt of this Division.

REFERENCES

(*1*) Lee, Roger I., and Jones, Lewis W.: The Fundamentals of Good Medical Care. Chicago, University of Chicago Press, 1933 (Committee on the Costs of Medical Care, Publication No. 22).

(*2*) Brandhorst, O. W.: Some facts that should be considered in any plan for dental service for the masses. J. Am. Coll. Dentists, **5**: 273–288 (December 1938).

DEATHS DURING WEEK ENDED JULY 20, 1946

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

	Week ended July 20, 1946	Corresponding week, 1945
Data for 93 large cities of the United States:		
Total deaths	8,093	7,698
Average for 3 prior years	7,924	
Total deaths, first 29 weeks of year	273,272	267,820
Deaths under 1 year of age	650	531
Average for 3 prior years	594	
Deaths under 1 year of age, first 29 weeks of year	18,095	17,619
Data from industrial insurance companies:		
Policies in force	67,231,494	67,386,918
Number of death claims	11,331	13,294
Death claims per 1,000 policies in force, annual rate	8.8	10.3
Death claims per 1,000 policies, first 29 weeks of year, annual rate	10.1	10.7

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 JULY 27, 1946

Summary

A total of 912 cases of poliomyelitis was reported for the week, as compared with 668 last week, 391 for the corresponding week last year, and 740 for the same week in 1944. The last-named figure is the largest number reported for any previous corresponding week for which weekly records are available (since 1927). Slight decreases were recorded in the New England and East South Central areas. Increases were slight in the Middle Atlantic, South Atlantic, and West South Central areas. The largest increases, as well as about 52 percent of the week's total, occurred in the East North Central area (71 to 146) and the West North Central (213 to 328). Increases of 6 or more cases were reported in 16 States, as follows: New York (22 to 30), Ohio (13 to 38), Indiana (5 to 11), Illinois (42 to 66), Michigan (7 to 13), Wisconsin (4 to 18), Minnesota (97 to 188), North Dakota (3 to 11), Nebraska (20 to 32), Georgia (3 to 16), Tennessee (0 to 6), Mississippi (19 to 25), Oklahoma (6 to 33), Washington (2 to 11), Oregon (1 to 9), and California (38 to 52). Decreases of 4 or more cases occurred in New Hampshire (12 to 8), New Jersey (9 to 5), South Dakota (11 to 5), Florida (24 to 20), Alabama (33 to 18), Louisiana (27 to 18), Texas (61 to 52), Wyoming (8 to 4), and New Mexico (12 to 6).

The total to date is 4,172, as compared with a 5-year median for the period of 2,316 and 3,180 for the corresponding period in 1934, the latter being the largest number recorded for the corresponding period of any previous year of record. However, the annual total for 1934 was only 7,517. Weekly records are not available for the year 1916. In that year 28 States reported a total of 6,727 cases for the first 7 months of the year (4,445 in New York) and 27,363 for the entire year (New York 13,223).

Of the total of 144 cases of typhoid and paratyphoid fever (as compared with 109 last week and a 5-year median of 237), Indiana reported 12 (last week 4, preceding week 14) and Michigan reported 15.

Deaths recorded during the week in 93 large cities of the United States totaled 8,256, as compared with 8,087 last week, 8,346 and 7,971, respectively, for the corresponding weeks of 1945 and 1944, and a 3-year average of 8,243. The cumulative number is 281,522, as compared with 276,166 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended July 27, 1946, and comparison with corresponding week of 1945 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 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945	
NEW ENGLAND												
Maine	0	0	0	------	------	------	35	3	11	0	0	1
New Hampshire	0	0	0	------	------	------	53	1	4	1	1	1
Vermont	0	0	0	------	------	------	58	6	20	0	0	0
Massachusetts	3	4	2	------	------	------	319	115	164	0	5	5
Rhode Island	0	0	1	------	------	------	14	1	11	1	2	1
Connecticut	2	0	0	1	1	------	51	12	44	2	1	1
MIDDLE ATLANTIC												
New York	7	5	7	[1] 1	[1] 2	[1] 2	493	42	211	9	8	10
New Jersey	1	1	1	2	2	2	165	20	58	0	2	4
Pennsylvania	8	7	7	2	------	------	202	169	85	3	10	10
EAST NORTH CENTRAL												
Ohio	8	5	3	1	1	1	238	13	43	5	6	4
Indiana	3	1	2	------	1	1	16	4	8	0	1	1
Illinois	3	5	8	3	2	3	69	129	77	5	8	8
Michigan [2]	4	12	4	1	------	------	84	95	95	1	4	4
Wisconsin	8	2	3	4	------	7	262	42	196	1	3	1
WEST NORTH CENTRAL												
Minnesota	5	14	2	------	------	1	23	6	13	2	2	1
Iowa	3	1	1	------	------	------	39	11	18	2	1	1
Missouri	3	0	2	------	------	------	5	18	18	3	5	5
North Dakota	0	0	0	------	------	------	8	------	4	0	1	0
South Dakota	0	0	1	------	------	------	2	1	2	1	0	0
Nebraska	1	3	3	------	1	1	2	11	11	0	1	0
Kansas	3	6	2	1	------	------	10	11	14	0	0	1
SOUTH ATLANTIC												
Delaware	1	0	0	------	------	------	3	------	------	0	0	0
Maryland [2]	4	10	1	------	------	1	81	9	27	0	0	3
District of Columbia	0	0	0	------	------	------	20	------	6	0	1	1
Virginia	9	5	3	71	39	45	49	7	13	3	2	2
West Virginia	2	4	3	1	15	2	24	3	4	3	2	2
North Carolina	3	7	7	------	------	------	27	3	18	0	3	3
South Carolina	3	24	4	98	73	73	46	9	15	0	0	2
Georgia	2	3	4	------	1	8	10	------	7	0	2	1
Florida	6	1	3	------	------	3	4	12	12	2	4	4
EAST SOUTH CENTRAL												
Kentucky	3	4	3	------	------	------	55	15	10	0	0	1
Tennessee	4	2	2	4	6	6	15	2	5	2	2	1
Alabama	6	16	5	12	------	4	28	4	13	2	9	3
Mississippi [2]	0	8	3	------	------	------	------	------	------	2	0	0
WEST SOUTH CENTRAL												
Arkansas	3	4	0	20	2	5	16	4	4	1	1	1
Louisiana	1	3	3	13	1	3	35	2	2	0	4	1
Oklahoma	1	2	2	------	14	6	18	10	5	4	1	0
Texas	15	45	27	222	372	197	107	82	82	5	7	3
MOUNTAIN												
Montana	1	1	1	------	3	------	36	1	3	0	0	0
Idaho	0	1	0	5	6	------	2	36	5	0	0	0
Wyoming	0	0	1	------	------	5	6	1	8	0	0	0
Colorado	1	4	4	------	15	15	34	11	16	0	1	0
New Mexico	13	4	1	1	3	2	12	18	9	0	0	0
Arizona	3	1	1	32	29	23	14	5	24	1	0	0
Utah [2]	0	0	0	------	------	------	15	95	25	0	0	0
Nevada	0	0	0	------	------	------	------	------	2	0	0	0
PACIFIC												
Washington	2	11	3	------	1	------	19	76	41	0	4	3
Oregon	1	1	1	------	------	3	17	25	25	1	1	1
California	18	20	10	8	1	24	213	354	333	13	6	6
Total	164	247	150	503	591	591	3,054	1,494	1,863	75	111	111
30 weeks	9,232	7,565	6,915	190,197	68,898	80,073	633,780	98,605	531,495	4,274	5,881	5,881

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended July 27, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median 1941-45	Week ended—		Median 1941-45	Week ended—		Median 1941-45	Week ended—		Median 1941-45
	July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945		July 27, 1946	July 28, 1945	
NEW ENGLAND												
Maine	0	6	0	12	9	9	0	0	0	1	1	1
New Hampshire	8	2	0	0	4	0	0	0	0	0	0	0
Vermont	0	2	0	3	2	1	0	0	0	0	0	1
Massachusetts	4	13	2	41	32	48	0	0	0	5	1	1
Rhode Island	0	0	0	1	0	1	0	0	0	0	0	0
Connecticut	6	11	3	4	5	8	0	0	0	2	1	0
MIDDLE ATLANTIC												
New York	30	72	11	57	212	73	0	0	0	2	5	10
New Jersey	5	32	3	14	15	15	0	0	0	2	2	3
Pennsylvania	11	16	8	31	69	52	0	0	0	6	14	7
EAST NORTH CENTRAL												
Ohio	38	14	11	73	51	51	0	0	0	6	8	8
Indiana	11	2	2	5	12	12	1	0	0	12	2	2
Illinois	66	3	6	18	37	37	0	0	0	2	0	7
Michigan [2]	13	8	8	29	115	35	0	3	0	15	6	5
Wisconsin	18	0	0	22	32	32	0	0	0	0	1	0
WEST NORTH CENTRAL												
Minnesota	188	0	2	8	22	20	0	0	0	0	0	0
Iowa	17	2	2	8	9	11	1	0	0	0	0	1
Missouri	38	2	2	8	11	11	0	0	0	5	5	4
North Dakota	11	0	0	1	1	3	0	0	0	1	1	0
South Dakota	5	0	0	3	1	2	0	0	0	0	0	0
Nebraska	32	0	1	5	8	6	0	0	0	0	0	0
Kansas	36	4	4	9	24	20	0	0	0	2	1	1
SOUTH ATLANTIC												
Delaware	1	0	0	1	0	1	0	0	0	1	0	0
Maryland [2]	6	8	3	9	22	9	0	0	0	5	3	3
District of Columbia	0	5	1	4	5	5	0	0	0	0	1	0
Virginia	6	22	3	12	19	16	0	0	0	4	4	8
West Virginia	2	1	1	12	24	13	0	0	0	3	3	3
North Carolina	2	2	3	12	13	13	0	0	0	3	2	7
South Carolina	1	7	2	1	4	3	0	0	0	3	6	6
Georgia	16	4	4	4	7	10	0	0	0	4	10	13
Florida	20	6	3	3	3	3	0	0	0	2	18	4
EAST SOUTH CENTRAL												
Kentucky	4	3	11	4	19	16	0	0	0	7	6	8
Tennessee	6	29	15	9	10	10	0	0	0	5	6	7
Alabama	17	9	9	7	8	8	0	0	0	3	3	6
Mississippi [2]	25	1	1	3	6	3	0	1	0	4	9	8
WEST SOUTH CENTRAL												
Arkansas	*18	0	2	5	2	2	0	0	0	4	6	8
Louisiana	18	6	3	1	1	2	0	0	0	8	2	6
Oklahoma	33	12	4	8	14	6	1	0	0	1	3	4
Texas	52	40	8	17	26	20	0	0	0	7	15	27
MOUNTAIN												
Montana	3	1	1	5	5	5	0	0	0	0	2	2
Idaho	1	0	0	11	4	4	1	0	0	2	1	0
Wyoming	4	2	0	0	0	2	0	0	0	0	0	0
Colorado	48	1	0	32	16	12	0	0	0	1	6	5
New Mexico	6	0	1	4	3	2	0	0	0	2	1	3
Arizona	9	1	0	3	2	2	0	0	0	4	0	1
Utah [2]	5	11	2	7	3	3	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	11	9	1	4	17	8	0	0	0	4	4	1
Oregon	9	1	1	5	6	6	0	0	0	5	0	1
California	52	21	13	54	103	71	0	0	0	3	6	6
Total	912	391	361	589	1,013	706	4	4	4	146	165	237
30 weeks	*4,172	2,439	2,316	85,067	132,165	95,462	270	259	598	2,076	2,298	2,747

[2] Period ended earlier than Saturday.

[3] Including paratyphoid fever reported separately, as follows: Massachusetts 4; Connecticut 1; New Jersey 2; Ohio 1; Indiana 2; West Virginia 1; Georgia 1; Louisiana 2; Oregon 1.

*Correction: Arkansas, poliomyelitis, weeks ended June 1 and June 8, 1946, 0 and 1 case, respectively, (instead of 1 and 2).

Telegraphic morbidity reports from State health officers for the week ended July 27, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended July 27, 1946							
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever endemic	Undulant fever
	July 27, 1946	July 28, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	33	51	30								1
New Hampshire	4	2	2								2
Vermont	20	21	23								3
Massachusetts	119	140	131		1						
Rhode Island	14		6								
Connecticut	34	71	57								5
MIDDLE ATLANTIC											
New York	117	378	279	7	4			4		1	2
New Jersey	136	195	169								3
Pennsylvania	109	244	254				1	1			7
EAST NORTH CENTRAL											
Ohio	104	192	227				1	1	1		
Indiana	28	25	27	1					1		7
Illinois	198	165	165	4	1		1	5	1		12
Michigan [3]	193	143	234								2
Wisconsin	204	87	186								8
WEST NORTH CENTRAL											
Minnesota	12	10	40	5			1				
Iowa	43	17	25								
Missouri	28	45	22					2	3		2
North Dakota	1	3	10								
South Dakota			5								2
Nebraska	5	4	19								
Kansas	30	41	66								4
SOUTH ATLANTIC											
Delaware	5	8	1					1			1
Maryland [3]	16	76	76					4			2
District of Columbia	9	10	12								
Virginia	132	99	92			136		7	2		2
West Virginia	20	46	28					1			
North Carolina	120	189	184					6		5	
South Carolina	60	67	67		24					1	
Georgia		17	17	1					2	26	2
Florida	18	15	19	6	1	2	1			13	2
EAST SOUTH CENTRAL											
Kentucky	140	52	72				1	1	1		
Tennessee	25	33	34		1	2	1	5	3	2	1
Alabama	20	33	26	4			1	2		14	2
Mississippi [3]										5	4
WEST SOUTH CENTRAL											
Arkansas	10	12	14	1	1				8	2	1
Louisiana	18	1	4		1				1	7	
Oklahoma	14	14	14				1	1			
Texas	173	213	213	24	310	41			2	28	12
MOUNTAIN											
Montana	6	7	24								
Idaho	36	9	6			2					
Wyoming	2	1	5					1			
Colorado	11	62	29								2
New Mexico	10	4	7		2	1					
Arizona		19	19			33	1				2
Utah [3]	11	23	72								
Nevada			1								
PACIFIC											
Washington	35	34	34								1
Oregon	35	25	25			2					1
California	70	212	212	6	5		5			3	5
Total	2,428	3,115	3,603	59	351	219	15	42	25	107	100
Same week, 1945	3,115			32	701	343	23	28	23	151	115
Average, 1943–45	3,074			50	668	361	16	[4] 22	16	[4] 130	
30 weeks: 1946	57,712			1,693	10,369	3,941	319	302	571	1,776	2,877
1945	76,405			1,077	14,308	4,219	228	259	479	2,137	2,844
Average, 1943–45	84,947		[4] 112,867	1,085	11,691	4,003	304	[4] 284	461	[4] 1,768	

[3] Period ended earlier than Saturday.
[4] 5-year median, 1941–45.

WEEKLY REPORTS FROM CITIES

City reports for week ended July 20, 1946

This table lists the reports from 88 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	16	0	0	0	1	0	1	------
New Hampshire:												
Concord	0	0	------	0	1	0	0	0	1	0	0	------
Vermont:												
Barre	0	0	------	0	-------	0	0	0	0	0	0	------
Massachusetts:												
Boston	1	0	------	1	47	0	5	0	2	0	0	17
Fall River	0	0	------	0	7	0	0	0	0	0	0	------
Springfield	0	0	------	0	10	0	0	0	2	0	0	2
Worcester	0	0	------	0	43	0	6	0	2	0	0	44
Rhode Island:												
Providence	0	0	------	0	20	0	1	0	4	0	0	8
Connecticut:												
Bridgeport	0	0	------	0	2	0	2	0	0	0	0	5
Hartford	0	0	------	0	2	0	0	2	0	0	0	9
New Haven	0	0	------	0	3	0	0	0	0	0	0	1
MIDDLE ATLANTIC												
New York:												
Buffalo	1	0	------	0	2	2	1	1	2	0	0	3
New York	4	1	4	1	110	5	26	14	19	0	2	47
Rochester	0	0	------	0	4	0	0	1	4	0	2	1
Syracuse	0	0	------	0	1	0	0	1	6	0	0	2
New Jersey:												
Camden	0	0	------	0	-------	0	0	0	0	0	0	2
Newark	0	0	1	0	8	1	4	0	2	0	1	19
Trenton	0	0	------	0	5	0	1	0	0	0	0	------
Pennsylvania:												
Philadelphia	1	0	2	0	11	1	21	0	11	0	1	21
Pittsburgh	0	0	------	0	9	0	9	3	7	0	0	5
Reading	0	0	------	0	1	0	1	0	0	0	0	7
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	------	0	3	1	3	1	6	0	0	11
Cleveland	1	0	------	0	114	1	2	12	14	0	2	7
Columbus	0	0	------	0	5	0	0	0	0	0	0	2
Indiana:												
Fort Wayne	0	0	------	0	2	0	4	0	0	0	0	------
Indianapolis	0	0	------	0	1	0	4	3	2	0	0	5
South Bend	0	0	------	0	1	0	0	0	0	0	0	------
Terre Haute	0	0	------	0	2	0	1	0	0	0	0	1
Illinois:												
Chicago	0	0	1	0	16	1	15	12	12	0	0	79
Springfield	0	0	------	0	-------	1	1	0	1	0	0	6
Michigan:												
Detroit	2	2	------	0	5	0	4	4	8	0	3	64
Flint	0	0	------	0	-------	0	2	0	1	0	0	6
Grand Rapids	0	0	------	0	3	0	0	0	2	0	0	5
Wisconsin:												
Kenosha	0	0	------	0	8	0	0	1	1	0	0	------
Milwaukee	0	0	------	0	13	0	1	0	0	0	0	82
Racine	0	0	------	0	54	0	0	0	2	0	0	4
Superior	0	0	------	0	4	0	0	0	0	0	0	4
WEST NORTH CENTRAL												
Minnesota:												
Duluth	2	0	------	0	-------	0	1	1	0	0	0	1
Minneapolis	1	0	------	0	5	0	5	50	4	0	0	------
Missouri:												
Kansas City	0	0	------	0	-------	0	5	7	1	0	0	3
St. Joseph	0	0	------	0	-------	0	0	0	0	0	0	------
St. Louis	0	2	------	0	6	0	6	16	1	0	0	2

See footnotes at end of table.

City reports for week ended July 20, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	1	0	------	0	1	0	3	2	2	0	0	1
Kansas:												
Topeka	0	0	------	0	------	0	0	3	0	0	0	11
Wichita	0	0	------	0	1	0	0	3	1	0	0	------
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	2	0	0	0	0	0	0	5
Maryland:												
Baltimore	3	0	1	1	112	0	7	1	3	0	0	12
Cumberland	0	0	------	0	------	0	0	0	0	0	0	0
Frederick	0	0	------	0	------	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	0	24	0	6	0	1	0	1	4
Virginia:												
Lynchburg	0	0	------	0	4	0	0	0	2	0	0	------
Richmond	0	0	------	0	4	0	2	1	1	0	1	14
Roanoke	0	0	------	0	------	0	0	0	0	0	0	1
West Virginia:												
Charleston	0	0	------	0	------	0	0	0	0	0	0	------
Wheeling	0	0	------	0	------	0	0	0	0	0	0	16
North Carolina:												
Raleigh	0	0	------	0	1	0	1	0	1	0	0	9
Wilmington	0	0	------	0	------	0	2	0	0	0	0	------
Winston-Salem	0	0	------	0	8	0	0	0	0	0	0	------
South Carolina:												
Charleston	0	0	------	0	1	0	1	0	0	0	0	------
Georgia:												
Atlanta	0	0	------	0	3	0	3	1	0	0	0	------
Brunswick	0	0	------	0	------	0	0	0	0	0	0	------
Savannah	0	0	------	0	7	0	0	1	0	0	0	------
Florida:												
Tampa	11	0	------	0	1	0	2	3	0	0	0	3
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	5	1	3	2	1	0	2	12
Nashville	0	0	------	0	------	1	0	0	0	0	1	------
Alabama:												
Birmingham	0	0	1	0	2	0	1	6	1	0	1	1
Mobile	0	0	------	0	------	0	0	2	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	1	0	0	2	0	0	0	------
Louisiana:												
New Orleans	*10	0	3	0	*39	*7	*4	*11	0	0	3	5
Shreveport	0	0	------	0	------	1	1	1	0	0	0	------
Texas:												
Dallas	5	0	------	0	1	0	1	14	6	0	0	------
Galveston	0	0	------	0	------	0	0	0	0	0	0	------
Houston	1	0	------	0	4	0	2	5	0	0	0	------
San Antonio	0	0	------	1	------	0	2	4	1	0	0	2
MOUNTAIN												
Montana:												
Billings	0	0	------	0	5	0	0	1	1	0	0	------
Great Falls	0	0	------	0	4	0	1	0	0	0	0	------
Helena	0	0	------	0	1	0	0	0	0	0	0	------
Missoula	0	0	------	0	------	0	0	0	0	0	0	------
Idaho:												
Boise	0	0	------	0	------	0	0	0	1	0	0	------
Colorado:												
Denver	4	0	------	0	5	0	3	15	2	0	0	8
Pueblo	1	0	------	0	7	1	0	3	1	0	0	------
Utah:												
Salt Lake City	0	0	----	0	11	0	0	0	2	0	0	2

*Monthly reports from Charity Hospital included; figures not used in computing rates.

City reports for week ended July 20, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	0	0	------	0	9	0	2	0	3	0	0	8
Spokane	0	0	------	0	------	0	0	1	1	0	0	2
Tacoma	0	0	------	0	1	0	0	0	2	0	0	3
California:												
Los Angeles	3	0	2	0	22	1	3	9	11	0	2	4
Sacramento	3	0	------	0	1	0	3	3	0	0	0	1
San Francisco	1	0	------	0	14	1	3	3	7	0	0	2
Total	46	5	15	3	806	19	183	215	169	0	23	601
Corresponding week, 1944	32	------	9	4	570	------	205	------	274	0	21	895
Average, 1941–45	42	------	22	[1] 6	[2] 814	------	[1] 228	------	258	0	24	1,059

[1] 3-year average, 1943–45.
[2] 5-year median, 1941–45.

Dysentery, amebic.—Cases: New York 3; Indianapolis 1; Chicago 2; San Antonio 1.
Dysentery, bacillary.—Cases: New Haven 1; Richmond 1; Nashville 1; Los Angeles 1.
Dysentery, unspecified.—Cases: New Haven 1; Baltimore 1; San Antonio 6.
Leprosy.—Cases: Chicago 1.
Rocky Mountain spotted fever.—Cases: Philadelphia 1; Lynchburg 1; Richmond 4; Winston-Salem 1; Memphis 1; Nashville 1; Birmingham 2.
Tularemia.—Cases: Duluth 2; Richmond 1; New Orleans 1.
Typhus fever, endemic—Cases: New York 1; Winston-Salem 1; Atlanta 1; Brunswick 1; Tampa 1; Memphis 1; Mobile 5; Little Rock 1; New Orleans* 10; Houston 1; San Antonio 3; Los Angeles 1.

*Including monthly reports from Charity Hospital.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,086,800)

	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	2.6	0.0	0.0	2.6	395	0.0	36.6	5.2	31	0.0	2.6	225
Middle Atlantic	2.8	0.5	3.2	0.5	70	4.2	29.2	9.3	24	0.0	2.8	50
East North Central	1.8	1.2	0.6	0.0	140	2.4	22.5	20.1	30	0.0	3.0	168
West North Central	9.0	4.5	0.0	0.0	29	0.0	45.1	184.8	20	0.0	0.0	41
South Atlantic	22.9	0.0	1.6	1.6	273	0.0	39.2	11.4	13	0.0	3.3	105
East South Central	0.0	0.0	5.9	0.0	41	11.8	23.6	59.0	12	0.0	23.6	77
West South Central	24.3	0.0	8.6	0.0	24	4.0	24.3	105.2	20	0.0	8.6	20
Mountain	39.7	0.0	0.0	0.0	262	7.9	31.8	150.9	56	0.0	0.0	79
Pacific	11.1	0.0	3.2	0.0	74	3.2	17.4	25.3	38	0.0	3.2	32
Total	7.2	0.8	2.3	0.5	126	3.0	28.5	33.5	26	0.0	3.5	92

PLAGUE INFECTION IN SAN LUIS OBISPO AND VENTURA COUNTIES, CALIF., AND KLAMATH COUNTY, OREG.

CALIFORNIA

Plague infection has been reported proved, under dates of July 15 and 22, 1946, in pools of fleas and tissue from ground squirrels in California, as follows: *San Luis Obispo County*—207 fleas from 18 ground squirrels, *C. beecheyi*, taken 6 miles east of Santa Margarita;

200 fleas from 27 ground squirrels, same species, taken 2 miles east and 1 mile north of Santa Margarita; 200 fleas from burrows located 2 miles southwest of Santa Margarita. *Ventura County*—42 fleas, and in tissue from 2 ground squirrels found dead 1½ miles south of Moorpark, received at the laboratory on June 21.

OREGON

Under date of July 23, plague infection was reported proved in a pool of 9 fleas from 11 ground squirrels, *C. oregonus*, taken June 26 on road to Keno, from 2 to 7 miles northeast of Worden, Klamath County, Oreg.

TERRITORIES AND POSSESSIONS

Puerto Rico

Notifiable diseases—4 weeks ended July 13, 1946.—During the 4 weeks ended July 13, 1946, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chickenpox	26	Poliomyelitis	10
Diphtheria	39	Syphilis	115
Dysentery, unspecified	7	Tetanus	10
Gonorrhea	130	Tuberculosis (all forms)	703
Influenza	39	Typhoid fever	10
Malaria	356	Typhus fever (murine)	11
Measles	21	Whooping cough	140

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended June 29, 1946.—During the week ended June 29, 1946, 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		34	1	100	323	45	44	35	127	709
Diphtheria			1	22	7	1	1	1	4	37
Dysentery, bacillary				5						5
German measles		1		22	28		1	9	8	69
Influenza					4	2				6
Measles		13		256	335	136	10	223	48	1,021
Meningitis, meningococcus		1		1	5				2	9
Mumps				17	278	34	46	48	97	520
Poliomyelitis				4				3		7
Scarlet fever		1	2	28	36	21	3	7	14	112
Tuberculosis (all forms)		5	7	194	48	14	5	19	63	355
Typhoid and paratyphoid fever				5	1	1	1		10	18
Undulant fever				1	7			1		9
Venereal diseases:										
Gonorrhea	1	23	3	60	158	45	53	45	136	524
Syphilis		14	5	82	97	15	10	14	49	286
Whooping cough		4		54	50	1		26	7	142

FINLAND

Notifiable diseases—May 1946.—During the month of May 1946, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	10	Paratyphoid fever	400
Diphtheria	746	Poliomyelitis	16
Dysentery, unspecified	10	Scarlet fever	216
Gonorrhea	1,287	Syphilis	548
Malaria	20	Typhoid fever	29

JAMAICA

Notifiable diseases—4 weeks ended June 29, 1946.—During the 4 weeks ended June 29, 1946, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis	1		Poliomyelitis		1
Chickenpox	3	13	Scarlet fever		3
Diphtheria	2	4	Tuberculosis (pulmonary)	38	68
Dysentery, unspecified	2	5	Typhoid fever	9	135
Erysipelas		1	Typhus fever (murine)	3	
Leprosy		2			

NEW ZEALAND

Notifiable diseases—4 weeks ended June 15, 1946.—During the 4 weeks ended June 15, 1946, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	13	2	Poliomyelitis	8	
Diphtheria	270	3	Puerperal fever	3	
Dysentery:			Scarlet fever	130	
Amebic	8		Tetanus	3	2
Bacillary	10	1	Trachoma	3	
Erysipelas	21		Tuberculosis (all forms)	144	59
Malaria	9		Typhoid fever	13	1
Ophthalmia neonatorum	4				

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 recent months. 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.

Cholera

China.—Cholera has been reported in China as follows: Shanghai, July 1–10, 1946, 784 cases, 54 deaths; Nanking, June 21–30, 1946, 3 cases; Chekiang Province, June 1–30, 1946, 96 cases, 9 deaths; Hupeh Province, June 11–20, 1946, 39 cases, 21 deaths; Kwangsi Province—Wuchow, May 21–31, 1946, 214 cases, 68 deaths.

Malay States—Kelantan.—For the week ended July 20, 1946, 56 cases of cholera with 42 deaths were reported in Kelantan, Malay States.

Manchuria—Liaoning Province—Chinsi.—During the first 2 days of July 1946, 12 cases of cholera with 12 deaths were reported in Chinsi, Liaoning Province, Manchuria.

Plague

China.—Plague has been reported in China as follows: Chekiang Province—Wenchow, June 11–20, 1946, 22 cases, 2 deaths; Fukien Province—Foochow, June 11–20, 1946, 232 cases, 66 deaths; Futsing, June 1–10, 1946, 48 cases, 27 deaths.

Typhus Fever

Guatemala.—For the month of May 1946, 77 cases of typhus fever with 11 deaths were reported in Guatemala. Departments reporting the highest incidence are: Huehuetenango, 18 cases, 3 deaths; Alta Verapaz, 16 cases; Sacatepequez, 14 cases, 1 death; Quezaltenango, 13 cases, 3 deaths.