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A STATISTICAL STUDY OF DELIVERY WITH CONTINUOUS CAUDAL ANALGESIA, AS COMPARED WITH OTHER METHODS ¹

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Since ether was first used a century ago as an anesthetic in obstetrical cases, there have been searches for a drug which would relieve the pains of childbirth without stopping the uterine contractions necessary to bring about the birth. Many drugs and methods have been tried in recent years, and some have proved valuable for the management of labor but objectionable because of the depressing effect upon the infant. Early in 1942, a new method for controlling childbirth pains was developed by Hingson and Edwards (6, 8), known as continuous caudal analgesia. This use of analgesia was first applied clinically for the relief of pain during several surgical operations on the lower extremities by Southworth and Hingson (5, 7) in the United States Public Health Service Hospital at Stapleton, N. Y., in October 1941. Its first obstetrical application was carried out by Hingson and Edwards (8) in January 1942, in the same hospital. This method of using analgesia has proved most valuable for the control of pain during labor and delivery. It can be started in the early stages of labor and continued through delivery and postpartum repair without increasing the danger to either mother or infant. Many reports of successful results are contained in the literature and the use of the method is increasing rapidly.

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The history of the development of continuous caudal analgesia has been discussed by Edwards and Hingson (8) in 1942 and later by Hingson and Edwards (6) in 1943. Drs. Hingson and Edwards have visited, for considerable periods of time, some of the leading institutions of medical education and lying-in hospitals in order to train men working in obstetrics in the technique of administering continuous caudal analgesia. In addition, the clinical technique and other aspects of the method have been described in a book by Lull and Hingson (4).

However, no intensive analysis of considerable numbers of deliveries under continuous caudal analgesia has been made prior to the present study, which is being published as a series of papers (1, 2, 3). The present report is a statistical analysis of deliveries with continuous caudal analgesia, done under the supervision of Drs. Hingson, Vaux, and Lull at the Philadelphia Lying-in Unit of the Pennsylvania Hospital during the years 1943-45. The records of deliveries during the years 1942-43 at the same hospital provided a control group receiving good care by the usual methods of handling childbirth. In the city of Philadelphia, 93 percent of all infants born in 1943 were delivered in hospitals; the proportions for white and colored infants were 95 and 81 percent, respectively (ref. 9, pt. II, p. 167).

The present paper is limited to the statistical aspects of the study in the Philadelphia Lying-in Hospital.

CONTINUOUS CAUDAL ANALGESIA

There were 2,516 mothers delivered of 2,546 infants with continuous caudal analgesia at the Philadelphia Lying-in Unit of the Pennsylvania Hospital during the period May 1943 through August 1945. These deliveries were done by members of the staff of the hospital and by a group of physicians who were there to learn the technique and use of delivery by the new method.

Metycaine was the drug used for continuous caudal analgesia in 99 percent of the cases. Of the 2,516 mothers delivered with continuous caudal analgesia, 90.4 percent received complete relief from pain, 4.3 percent partial relief, and in only 5.3 percent was there failure to obtain relief from pain. The 90.4 percent with complete relief represents 82.2 percent with relief without any supplementary analgesia, and 8.2 percent with relief by continuous caudal analgesia supplemented by some other anesthetic. As may be seen in figure 1, the proportion of mothers receiving complete relief was about the same for primiparas and multiparas. It was also about the same for mothers of different ages, except for a slightly lower percentage receiving complete relief among those over 35 years (table 1).

TABLE 1.—*Relief from pain among mothers during delivery with continuous caudal analgesia, by age and parity*

Relief from pain	All moth- ers	Primipara, by age					Multipara, by age				
		All ages	Under 25	25-29	30-34	35 and over	All ages	Under 25	25-29	30-34	35 and over
	Percentage with specified pain relief										
All mothers ¹	100	100	100	100	100	100	100	100	100	100	100
Complete relief.....	90.4	90.9	91.9	90.0	90.4	88.3	89.8	90.7	89.4	91.2	86.9
Partial relief.....	4.3	4.6	4.7	3.9	4.8	6.7	4.0	4.6	3.7	4.7	2.8
No relief.....	5.3	4.6	3.4	6.0	4.8	5.0	6.1	4.6	6.9	4.1	10.2
Number of mothers ² ..	2,482	1,294	614	432	188	60	1,188	216	433	363	176

¹ 9 percent (202) of the 2,243 with complete relief had supplementary analgesia to complete the delivery; 136 were among primiparas; 66 among multiparas.

² Exclusive of the few mothers with no record as to whether pain was relieved. In this and all other tables the percentages, averages, and rates are based on the number with known data about the item under consideration.

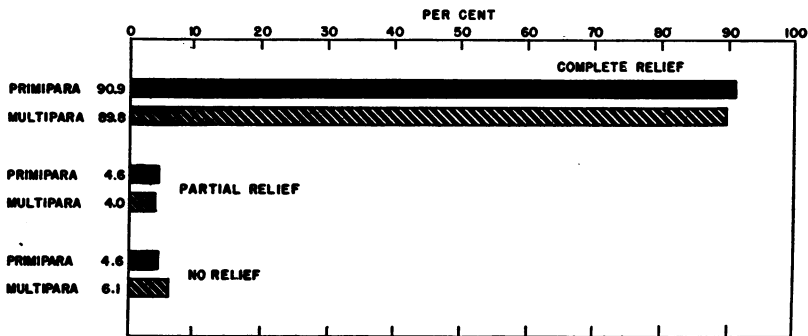


FIGURE 1.—Percentage of mothers with relief from pain during delivery with continuous caudal analgesia, by parity.

The average duration of caudal analgesia was 3.7 hours for primiparas and 2.3 hours for multiparas, with an average duration of 3.0 hours for the whole caudal group. The median, which is defined as the point or value above and below which there are 50 percent of the cases, was 3.0 hours for primiparas, 1.7 hours for multiparas, with a median of 2.2 hours for the whole caudal group. Figure 2 shows by parity the average number of hours of caudal analgesia for specified hours of labor. Table 2 shows the distribution of mothers with specified durations of labor according to the number of hours of continuous caudal analgesia.

In the administration of continuous caudal analgesia it is essential to avoid sudden drops in blood pressure. Figure 3 shows the distribution of mothers according to the drop in systolic blood pressure during delivery, and table 3 shows the data for mothers of different ages. The percentage of mothers whose blood pressure dropped 25 or more millimeters is slightly higher for those over 30 years of age than for mothers from 18 to 29 years. The few under 18 years also show a higher proportion with a drop of 25 or more millimeters.

TABLE 2.—*Distribution of mothers according to hours of continuous caudal analgesia for specified hours of labor*

Hours of continuous caudal analgesia	All moth- ers	Duration of labor in hours										
		Un- der 3	3-4	5-6	7-8	9-10	11- 12	13- 14	15- 19	20- 24	25- 29	30 and over
Percentage of mothers												
All mothers.....	100	100	100	100	100	100	100	100	100	100	100	100
Under 1.....	11.8	40.0	20.2	15.7	9.5	7.7	9.5	6.4	7.5	8.3	1.6	9.8
1.....	20.7	42.4	39.7	24.8	19.6	18.4	13.6	14.2	13.6	14.0	9.8	6.1
2.....	22.3	17.6	29.1	29.6	29.6	17.7	18.2	15.7	16.4	18.2	18.0	13.4
3.....	14.2	.....	9.9	17.1	16.9	22.4	13.2	13.7	11.4	9.1	13.1	9.8
4.....	10.4	.....	1.0	8.8	12.4	11.0	14.9	16.7	10.7	15.7	9.8	12.2
5.....	6.7	.....	.....	2.8	6.6	9.7	10.7	10.8	11.8	7.4	4.9	3.7
6.....	4.3	.....	.....	1.1	3.4	5.4	7.0	5.4	6.8	9.1	8.2	8.5
7.....	3.5	.....	.....	.....	.8	3.0	5.4	6.4	8.6	6.6	6.6	11.0
8-11.....	4.3	.....	.....	.....	1.1	4.7	5.4	6.9	9.3	6.6	18.0	17.1
12 and over.....	1.8	.....	.....	.....	.....	.....	2.1	3.9	3.9	5.0	9.8	8.5
Mean hours of continuous caudal analgesia.....	3.04	.98	1.42	2.00	2.54	3.18	3.66	4.03	4.27	4.08	5.43	5.35
Number of mothers.....	2,395	85	292	351	378	299	242	204	280	121	61	82

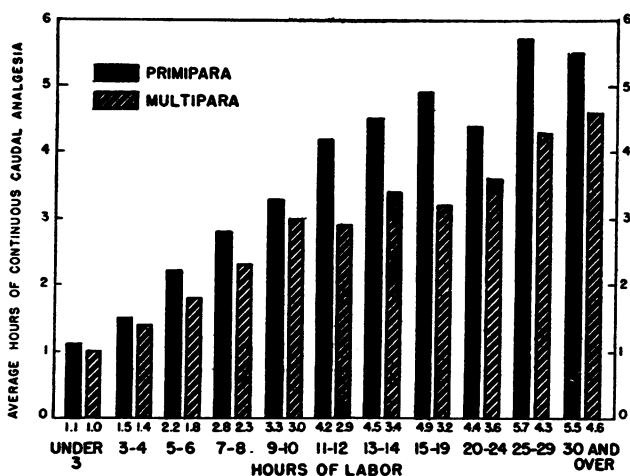


FIGURE 2.—Average hours of continuous caudal analgesia for mothers with specified hours of labor, by parity.

Table 4 shows the distribution according to minimum systolic blood pressure during continuous caudal analgesia for mothers with specified maximum systolic blood pressure during delivery but before caudal analgesia. Table 5 shows the distribution according to the drop in systolic blood pressure during continuous caudal analgesia for mothers with specified systolic pressures before the drop. Of the mothers with precaudal systolic blood pressures of less than 105 millimeters, about 45 to 80 percent experienced either a rise or a drop of less than 5 millimeters. But of those with precaudal systolic pressures of 135 mm. or more, about 40 to 65 percent experienced drops of 35 to 70 mm.

TABLE 3.—*Distribution of mothers according to drop¹ in systolic blood pressure (in millimeters of mercury) during continuous caudal analgesia*

Drop ² in systolic blood pressure in mm.	All ages ¹	Age of mother					
		Under 18	18-24	25-29	30-34	35-39	40 and over
Percentage of mothers							
All mothers.....	100	100	100	100	100	100	100
Rise of 6 or more.....	5.1	2.1	4.8	5.1	5.7	5.9	6.5
Rise of 0-5 or drop of 0-4.....	12.3	6.2	13.1	12.1	12.6	10.3	16.1
Drop of:							
5-14.....	23.9	27.1	22.7	24.4	25.1	23.5	19.4
15-24.....	25.2	12.5	26.5	27.3	23.1	20.6	19.4
25-34.....	17.0	27.1	17.6	16.7	15.2	18.6	12.9
35-44.....	9.4	16.7	9.1	8.8	9.5	10.3	12.9
45-54.....	4.0	2.1	4.4	2.9	4.8	5.4	6.5
55 and over.....	3.1	6.2	1.8	2.7	4.0	5.4	6.5
Number of mothers.....	2,457	48	777	851	546	204	31

¹ Of patients of all ages, 48.5 percent showed a drop of 1 to 20 mm., inclusive.

² Changes in blood pressure shown in this table were computed by comparing the two actual readings for each individual patient.

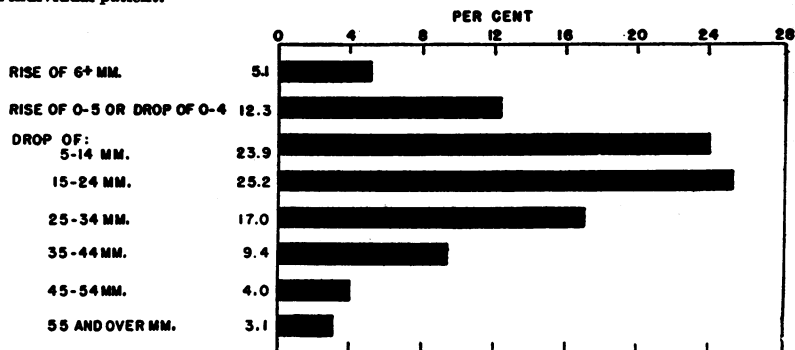


FIGURE 3.—Percentage distribution of mothers according to drop in systolic blood pressure (in millimeters of mercury) during continuous caudal analgesia.

TABLE 4.—*Distribution of mothers with specified maximum systolic blood pressure during labor but before continuous caudal analgesia, according to minimum systolic blood pressure during continuous caudal analgesia*

Maximum blood pressure before analgesia (mm.)	Mean minimum blood pressure (mm.)	All mothers	Minimum systolic blood pressure during continuous caudal analgesia (mm.)										Number of mothers
			Under 65	65-74	75-84	85-94	95-104	105-114	115-124	125-134	135-144	145 and over	
			Percentage of mothers										
All mothers.....	100.2	100	1.9	3.7	9.0	21.7	26.2	21.9	10.1	3.6	1.3	0.5	2,457
Under 85.....	88.3	100	16.7			50.0	33.3						6
85-94.....	92.9	100		6.5	9.7	51.6	22.6	3.2	3.2	3.2			31
95-104.....	93.4	100	2.0	5.4	20.7	25.6	28.6	11.3	5.4	.5	.5		208
105-114.....	97.0	100	1.1	5.0	10.3	27.4	29.9	18.8	4.8	2.2	.5	.2	643
115-124.....	99.5	100	2.3	3.4	8.3	21.8	27.3	24.9	9.2	1.9	.5	.5	572
125-134.....	104.1	100	1.7	2.4	6.5	15.6	22.7	26.8	17.7	5.0	.9	.6	462
135-144.....	107.8	100	3.7	1.2	3.7	13.0	20.5	21.7	19.3	9.9	6.8		161
145-154.....	115.3	100	2.6	2.6	5.3	5.3	7.9	26.3	10.5	23.7	10.5	5.3	38
155-164.....	113.9	100			9.7	3.2	6.5	12.9	19.4	16.1	16.1	3.2	31
165 and over.....	125.0	100					10.0	30.0	10.0	20.0	10.0	20.0	10

TABLE 5.—*Distribution of mothers with specified maximum systolic blood pressure during labor but before caudal analgesia, according to the drop¹ in systolic blood pressure during continuous caudal analgesia*

Maximum blood pressure before analgesia (mm.)	All mothers	Rise of 6+ mm.	Rise of 0-5 or drop of 0-4	Drop ¹ in millimeters of mercury							Number of mothers
				5-14	15-24	25-34	35-44	45-54	55-64	65 and over	
	Percentage of mothers										
All mothers.....	100	5.4	12.7	23.1	25.6	17.0	9.4	3.9	1.9	1.1	2,457
Under 85.....	100	83.3	-----	-----	16.7	-----	-----	-----	-----	-----	6
85-94.....	100	32.3	51.6	9.7	6.5	-----	-----	-----	-----	-----	31
95-104.....	100	17.7	28.6	25.6	20.7	5.4	2.0	-----	-----	-----	203
105-114.....	100	7.6	18.8	29.9	27.4	10.3	5.0	1.1	-----	-----	643
115-124.....	100	2.9	9.2	24.9	27.3	21.8	8.3	3.4	2.3	-----	872
125-134.....	100	1.5	5.0	17.7	26.8	22.7	15.6	6.5	2.4	1.7	462
135-144.....	100	-----	6.8	9.9	19.3	21.7	20.5	13.0	3.7	4.9	161
145-154.....	100	-----	5.3	10.5	23.7	10.5	26.3	7.9	5.3	10.6	38
155-164.....	100	-----	-----	3.2	16.1	16.1	19.4	12.9	12.9	19.4	31
165 and over.....	100	-----	-----	-----	20.0	10.0	20.0	10.0	30.0	10.0	10

¹ Changes in blood pressure shown in this table were computed as differences between midpoints of 10-millimeter class intervals of blood-pressure readings before and during caudal analgesia. The percentages for all mothers are remarkably close to those in table 3 which were computed by comparing the two actual readings for each individual patient.

Blood loss was measured for women delivered by continuous caudal analgesia, but no measurements were available for the control group delivered by usual methods. The average for all mothers in the caudal group was 127 cubic centimeters, with 8.6 percent losing more than 250 cc. The corresponding figures for primipara and multipara, respectively, were averages of 132 and 122 cc., and percentages of 8.9 and 8.4 losing more than 250 cc. (table 6).

TABLE 6.—*Distribution according to blood loss (in cubic centimeters) of the mothers delivered with continuous caudal analgesia, by parity*

Parity	Mean blood loss (cc.)	All moth-ers	Blood loss in cubic centimeters						Num-ber of moth-ers
			50 and under	51-100	101-250	251-500	501-750	751 and over	
		Percentage of mothers							
All mothers.....	127	100	28.5	37.3	25.5	7.1	1.0	0.5	2,387
Primipara.....	132	100	25.2	37.6	28.2	7.4	1.2	.3	1,239
Multipara.....	122	100	32.1	36.9	22.6	6.8	.9	.7	1,148

Among the 2,516 mothers delivered by continuous caudal analgesia were 32 or 2.6 percent of the multiparas who had had previous deliveries by this method between the beginning of the work in Philadelphia in May 1943 and the termination of this study in August 1945.

COMPARABILITY OF CAUDAL AND CONTROL GROUPS

Most of the infants born at the Philadelphia Lying-in Hospital prior to July 1943 were delivered by the usual methods and with the usual anesthetics and sedatives. It was not practicable to abstract more

than about 1,000 of these cases for comparison with the caudal group. Deliveries by other than continuous caudal analgesia during the period of December 1942 through July 1943 were used for this purpose, comprising a total of 1,024 mothers delivered of 1,034 infants.

The mothers in the control group were delivered largely in the winter months, but deliveries in the caudal group extended over a period of 28 months, including 2 winters and parts of 3 summers. Although the total mortality under 1 year of age is higher in the winter, that under 1 week of age which is dealt with in this paper has little or no seasonal variability. Large proportions of the deaths in these early ages are due to prematurity, congenital malformations, and injury at birth, which causes are essentially without seasonal variation (ref. 10, p. 249).

In the control group 62 percent of the mothers were delivered with nitrous oxide and ether, 30 percent with nitrous oxide alone, 2 percent with ether alone, 0.4 percent with other anesthetics, and 5.6 percent without an anesthetic.

For both caudal and control groups during the respective periods covered, all deliveries by the specified methods were included in the analysis. The mothers who were delivered by continuous caudal analgesia represent an unselected group except for the inclusion of a few with heart disease who could not stand the strain of other methods.

The deliveries in both caudal and control groups were all done in the one large maternity hospital, with Dr. Norris Vaux in charge of the obstetrical services throughout the periods covered. Physicians making deliveries during these periods were members of the staff of the hospital, but a group of graduate student physicians taking the special course in continuous caudal analgesia were observing and assisting with deliveries by that method.

Before considering the results in the caudal and control groups, the characteristics of each category must be examined to insure that the two are comparable with respect to the many factors which would influence the character and outcome of the delivery. Table 8 and more detailed tables have been prepared to make these comparisons.

Table 7 shows the age distribution of mothers in the caudal as compared with the control group. While the caudal group was slightly younger,² the differences were small and the average ages were about the same, 27.1 and 27.7 years for the caudal and control groups, respectively.

Of the whole caudal group, 51.9 percent of the mothers were primiparas, as compared with 52.3 percent in the control group. The

² The difference between the age distributions of the two groups, as tested by the chi-square method, was of doubtful significance ($P=0.023$).

TABLE 7.—*Distribution of mothers in the caudal and control groups according to age, by parity*

Age	Percentage in each age group						Number of mothers			
	All mothers		Primipara		Multipara		Primipara		Multipara	
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
All ages.....	100	100	100	100	100	100	1,307	536	1,209	488
Under 18.....	2.0	0.8	3.7	1.1	0.2	0.4	48	6	2	2
18-19.....	4.8	3.1	7.3	5.6	2.1	4	96	30	25	2
20-24.....	26.7	25.3	36.6	34.0	16.0	15.8	478	182	193	77
25-29.....	34.8	35.4	33.2	36.4	36.5	34.4	434	195	441	168
30-34.....	22.1	24.6	14.5	17.2	30.4	32.8	190	92	307	190
35-39.....	8.3	9.1	4.0	5.0	12.9	13.5	52	27	156	66
40 and over.....	1.4	1.7	.7	.7	2.1	2.7	9	4	25	13

TABLE 8.—*Miscellaneous comparative data for the caudal and control groups*

	Caudal		Control	
	Number	Percent-age	Number	Percent-age
All mothers.....	2,516	100	1,024	100
Primiparas.....	1,307	51.9	536	52.3
Multiparas.....	1,209	48.1	488	47.7
White.....	2,204	87.6	952	93.0
Colored.....	312	12.4	72	7.0
Private room.....	1,350	53.7	622	60.7
Ward.....	1,166	46.3	402	39.3
Average age.....	27.1		27.7	
Previous history of stillbirth and/or neonatal death.....	68	2.7	26	2.5
Previous history of any abdominal operation.....	421	16.7	192	18.8
Previous history of abdominal operation excluding appendectomy only.....	133	5.3	57	5.6
Total mothers with chronic disease.....	144	5.7	47	4.6
Total mothers with chronic disease, excluding cardiac disease.....	74	2.9	33	3.2
Total mothers with complications during pregnancy.....	22	.87	10	.98
Total mothers with complications during delivery.....	380	15.1	186	18.2
Total mothers with dystocia.....	184	7.3	76	7.4
Total mothers with postpartum fever (100.4° F. or above for 2 or more consecutive days).....	187	7.4	111	10.8
Afterpains, severe (required 3 or more injections of an analgesic).....	422	16.8	229	22.4
Average hospital days.....	10.4		11.2	
Maternal deaths.....	2		2	
Maternal deaths per 1,000 deliveries.....		.79		1.93

age distributions of the primiparas and multiparas are, as would be expected, quite different, but it may be seen in table 7 that for each of these categories, the age distribution of mothers in the caudal group is reasonably comparable with that of mothers in the control group. The average ages of primiparas were 25.3 and 26.0 for the caudal and control groups, respectively, and the average ages of multiparas were 29.2 and 29.5 for the caudal and control groups, respectively.

Of less significance is the type of accommodation at the hospital; 54 percent of the caudal group were private patients as compared with 61 percent of the control group. Of the mothers delivered under continuous caudal analgesia, 12 percent were colored, as compared with 7 percent of the mothers in the control group (table 8).

Chronic disease in the mother and complications during pregnancy

constitute an additional hazard at delivery. Of all mothers in the caudal group, 5.7 percent had some chronic disease, as compared with 4.6 percent of the mothers in the control group. Mothers with a cardiac condition were delivered more frequently with continuous caudal analgesia since this method caused less strain on the heart. Omitting cardiac conditions, 2.9 percent of the mothers in the caudal group and 3.2 percent of those in the control group had some chronic disease. Of all mothers in the caudal group, 0.87 percent had complications during pregnancy, as compared with 0.98 percent in the control group.

In the caudal group 16.7 percent of the mothers had a history of an abdominal operation, as compared with 18.8 percent for the control group. The percentages were slightly higher in both groups for multiparas, presumably because they constituted an older age group. Of the total mothers with a history of an abdominal operation, a large proportion had had appendectomy only. Thus, of the caudal group 11.4 percent gave a history of appendectomy only, as compared with 5.3 percent for other abdominal operations. Corresponding percentages for the control group were 13.2 for appendectomy only and 5.6 for other abdominal operations.

Of the total mothers in the caudal group 2.7 percent had a history of a previous stillbirth or neonatal death, as compared with 2.5 percent of the control group (table 8).

Thus with respect to chronic disease, history of an abdominal operation, history of previous loss of a fetus or infant, and complications during pregnancy, the two groups showed approximately the same percentage of mothers who came to delivery with such conditions.

The size of the infant as well as prior disease may constitute a complication of delivery. Both of these classes of situations exist prior to the beginning of delivery. Of the infants delivered by the caudal method, the average weight at birth was 7.14 pounds as compared with 7.11 pounds in the control group. Reference to table 19 and figure 11 indicates that the distribution of the infants according to weight at birth was similar in the caudal and control groups. In the caudal group 6.6 percent of the infants weighed 5 pounds 8 ounces or less (premature), as compared with 6.5 percent in the control group.

Considering all infants in the caudal group, 7.3 percent of the records indicated dystocia, as compared with 7.4 percent for the control group (table 8). Dystocia as here used refers to a disproportion of pelvic and fetal diameters.

DELIVERY IN CAUDAL AND CONTROL GROUPS

The average duration of labor in the caudal group was 11.1 hours, as compared with 11.3 hours in the control group. Among primiparas

who were private patients, the average duration of labor was 11.6 hours for the caudal group and 13.0 hours for the control; among private-patient multiparas the averages were identical for the two groups, 7.5 hours. The average duration was longer for ward patients than for private patients, 12.6 hours for the caudal as compared with 12.4 hours for the control group. It may be seen in table 9 that there are no consistent differences between the caudal and control groups in the average duration of labor for mothers of corresponding ages, hospital status, and parity.

TABLE 9.—*Mean hours of labor by age of mother, parity, and type of accommodation*

Parity and type of accommodation	All ages		Age of mother						Number of mothers (all ages)	
			Under 25		25-29		30 and over			
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
Primipara:										
Private room.....	11.6	13.0	11.3	13.8	11.7	12.2	11.6	13.1	695	333
Ward.....	14.8	15.4	14.0	15.7	15.5	15.4	18.0	13.2	566	182
Multipara:										
Private room.....	7.5	7.5	8.4	8.5	7.9	7.5	7.0	7.3	588	250
Ward.....	10.5	9.8	10.1	8.8	11.2	10.4	10.0	10.0	574	208

Although average durations of labor were about the same for the two groups, the controls had more mothers with a very short duration (table 10). This was to be expected because the administration of continuous caudal analgesia requires time. Thus in the control group 2.5 percent of the mothers were in labor for less than 2 hours, as compared with 1.0 percent in the caudal group. Likewise the controls had more mothers with very long hours of labor. Mothers with a duration of 20 or more hours comprised 12.9 percent of the control as compared with 10.9 percent for the caudal group.

TABLE 10.—*Percentage distribution of mothers according to total duration of labor*

Group	Mean hours of labor	All mothers	Duration of labor in hours									Number of mothers
			Under 2	2-3	4-5	6-7	8-10	11-14	15-19	20-29	30 and over	
Caudal.....	11.1	100	1.0	7.3	14.4	16.7	19.5	18.6	11.6	7.5	3.4	2,423
Control.....	11.3	100	2.5	11.7	12.9	14.3	15.2	16.8	13.7	8.9	4.0	973

Figure 4 shows the distribution of infants in the caudal and control groups according to the type of delivery of the mother. Table 11 shows the same data by color and parity. In the caudal group 84.5 percent were operative (including all forceps deliveries) and 15.5 percent were spontaneous deliveries, as compared with 69.0 and 31.0 percent, respectively, for the control group. The major differences between the two

TABLE 11.—*Distribution by type of delivery, color, and parity for the 2,546 births to 2,516 mothers in the caudal group, and the 1,034 births to 1,024 mothers in the control group*

Type of delivery	All colors						White		Colored	
	All mothers		Primipara		Multipara					
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
Percentage for each type										
All infants.....	100	100	100	100	100	100	100	100	100	100
Spontaneous.....	14.8	29.4	5.1	10.8	25.1	49.4	13.5	27.2	24.4	58.9
Breech, spontaneous.....	.7	1.6	.6	.7	.9	2.6	.7	1.5	1.3	4.1
Forceps, outlet.....	68.3	56.4	74.1	75.9	62.1	35.3	69.3	58.4	61.3	30.1
Forceps, mid.....	8.4	4.0	12.7	5.4	3.9	2.4	8.8	4.2	5.4	1.4
Forceps, a. c. head.....	1.1	.9	1.3	1.3	1.0	.4	1.2	.9	.6	-----
Breech, extraction.....	2.0	1.9	1.8	1.5	2.2	2.4	1.9	1.9	2.2	2.7
Podalic version.....	.4	.4	-----	-----	.7	.8	.4	.4	.3	-----
Cesarean section.....	4.3	5.4	4.4	4.3	4.1	6.6	4.3	5.6	4.4	2.7
Number of infants.....	2,546	1,034	1,307	536	1,239	498	2,231	961	315	73

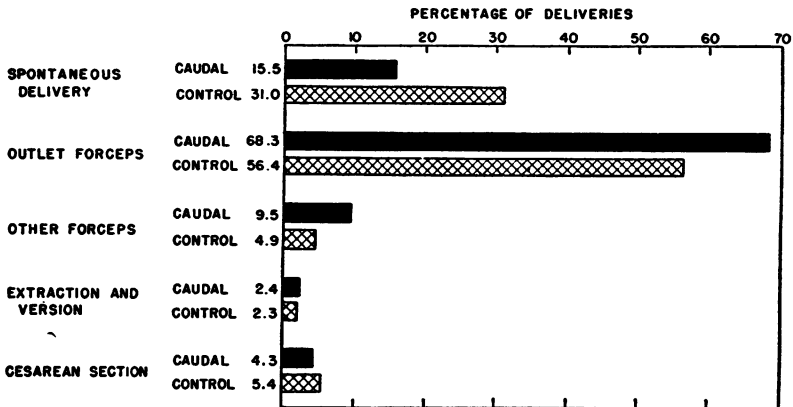


FIGURE 4.—Percentage distribution of infants according to type of delivery of the mothers in the caudal and control groups.

groups are accounted for by fewer spontaneous deliveries and more deliveries with forceps, especially outlet forceps, in the caudal group. Considering all forceps deliveries together, 78 percent of the caudal group were delivered with forceps as compared with 61 percent of the control group.

Table 12 shows for each type of delivery the percentage of mothers on whom an episiotomy was done. Considering all types of deliveries, episiotomy was used more frequently in the caudal group, but the reverse was true in the case of forceps deliveries.

Of the mothers with continuous caudal analgesia the third stage of labor lasted less than 5 minutes in 50 percent of the cases, and less than 3 minutes in 30 percent of the cases. The corresponding figures for the control group were 34 percent and 21 percent for periods less

TABLE 12.—Percentage of mothers for whom an episiotomy was done, by type of delivery and parity

Group	Percentage with episiotomy					Number of deliveries				
	All types ¹	Spontaneous ²	For-cps, outlet	For-cps, mid	Other types ³	All types ¹	Spontaneous ²	For-cps, outlet	For-cps, mid	Other types ³
All mothers:										
Caudal.....	78.9	37.5	87.7	86.0	76.1	1,924	149	1,524	184	67
Control.....	70.7	31.5	90.9	92.7	66.7	691	101	530	38	22
Primipara:										
Caudal.....	91.4	65.3	94.2	89.2	82.5	1,142	49	912	148	33
Control.....	88.8	46.8	94.3	93.1	86.7	453	29	384	27	13
Multipara:										
Caudal.....	65.8	31.1	79.5	75.0	70.8	782	100	612	36	34
Control.....	51.2	27.8	83.0	91.7	50.0	238	72	146	11	9

¹ Excluding cesarean section.² Including breech, spontaneous.³ Including breech extraction and podalic version.

than 5 minutes and less than 3 minutes, respectively. More detailed data are shown in table 13. Considering all infants together, the mean duration of the third stage of labor was 6.6 minutes for the caudal and 8.9 minutes for the control group (fig. 5). The difference of 2.3 minutes is more than seven times the standard error of that difference, indicating that it is much larger than would be expected to occur by chance. Considering the data for white and colored separately, and for primiparas and multiparas separately, white primiparas in the caudal group averaged 7.6 minutes, as compared with 10.3 minutes for the control group. The corresponding averages for white multiparas were 5.8 and 7.6 minutes (table 14). Similarly, among the colored the average duration of the third stage of labor was consistently lower in the caudal group, although the difference was small for colored multiparas. The median duration of the third stage of labor was similarly lower in the several caudal groups than in the corresponding control groups.

TABLE 13.—Distribution of mothers according to duration in minutes of third stage of labor

Group	All moth- ers	Duration of third stage in minutes								Mean ¹	Stand- ard devi- ation	Stand- ard error of mean	Med- ian
		Un- der 2	2-3	4-5	6-7	8-9	10-14	15-19	20 and over				
	Percentage of mothers												
Caudal ²	100	11.7	30.5	16.7	9.4	7.9	14.1	5.9	3.8	6.6	7.14	0.14	4.4
Control ²	100	10.4	17.9	11.9	11.7	9.4	19.1	12.7	6.8	8.9	8.70	.27	7.2

¹ Difference between means of caudal and control: 2.3 ± 0.31 (standard error).² Based on 2,506 caudal and 1,016 control mothers with known duration of third stage of labor.

Severe afterpains (requiring three or more injections of an analgesic drug) were less frequent in the caudal group, 16.8 percent of the

TABLE 14.—Average duration of the third stage of labor of white and colored mothers

Group	Average duration in minutes						Number of mothers		
	Mean duration			Median duration					
	Total	White	Colored	Total	White	Colored	Total	White	Colored
All mothers:									
Caudal.....	6.6	6.7	5.4	4.4	4.7	3.4	2,506	2,197	309
Control.....	8.9	9.0	7.0	7.2	7.3	5.2	1,016	945	71
Primipara:									
Caudal.....	7.4	7.6	6.0	5.1	5.4	3.6	1,301	1,131	170
Control.....	10.3	10.3	10.1	9.2	9.3	8.0	533	503	30
Multipara:									
Caudal.....	5.7	5.8	4.6	3.9	4.0	3.2	1,205	1,066	139
Control.....	7.4	7.6	4.8	5.7	5.9	3.4	483	442	41

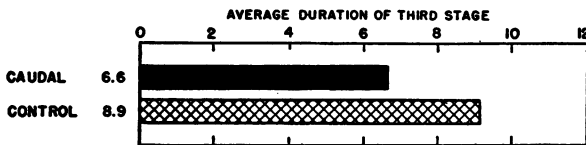


FIGURE 5.—Average duration in minutes of the third stage of labor for the caudal and control groups.

mothers in the caudal group experiencing severe afterpains, as compared with 22.4 percent in the control group (fig. 6; table 8). This difference is definitely significant; that is, it is larger than would be expected to occur by chance.³ It should be noted, however, that mothers in the caudal group received routinely $\frac{1}{4}$ to $\frac{1}{2}$ grain of morphine within an hour after delivery. This procedure may account for some of the difference.

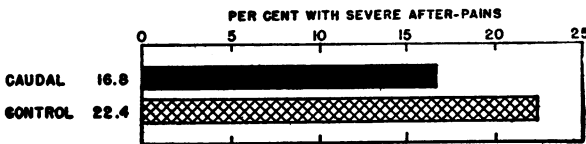


FIGURE 6.—Percentage of mothers with severe afterpains in the caudal and control groups ("Severe"—requiring three or more injections of an analgesic drug).

Of the mothers in the caudal group, 16.7 percent had one or more postpartum catheterizations, as compared with 14.1 percent in the

³ The fourfold table and chi square were used to test the statistical significance of the differences between the caudal and control groups with respect to the several measures that are expressed in rates or percentages. A complete description of the fourfold-table method and the resulting chi square, together with a table from which "P" is read, is included in Pearl, Raymond, Medical Biometry and Statistics, 3rd edition, W. B. Saunders Company, 1940, pp. 324-329 and table B of Appendix IV, pp. 480-488.

The value P (probability) gives the probability of obtaining by chance, in samples of the size under consideration, a difference of the given magnitude or larger, between the rates for the two groups, if the true difference is zero. P of 0.01 or less (1 in 100 trials) is commonly considered as "statistically significant." This expression means that the difference between the rates for the caudal and control groups is larger than would be expected to occur by chance. With P of 0.02 to 0.05, the difference is said to be "of doubtful or borderline significance," and when P is larger than 0.05 the difference is said to be "not statistically significant," that is, it may have occurred by chance. In the present study P of 0.001 or less is described as "definitely significant", in the statistical sense that the difference is sufficiently large that the probability of its occurrence by chance is very small.

control group (table 15). However, 2.1 percent of mothers in the caudal group had four or more catheterizations as compared with 2.4 percent for the control group. The mean number for mothers with one or more catheterizations was 1.9 catheterizations in the caudal and 2.2 catheterizations in the control group.

TABLE 15.—*Postpartum catheterizations among mothers in the caudal and control groups, by color*

Color	Mean for those with one or more catheterizations	Postpartum catheterizations								All mothers
		Percentage of mothers with:				Number of mothers with:				
		1	2	3	4 or more	1	2	3	4 or more	
All mothers:										
Caudal.....	1.9	11.0	2.6	1.0	2.1	276	65	26	52	2,516
Control.....	2.2	8.1	2.7	.9	2.4	83	28	9	25	1,024
White:										
Caudal.....	1.9	11.1	2.9	1.2	2.1	244	63	26	47	2,204
Control.....	1.7	8.3	2.9	.8	2.5	79	28	8	24	952
Colored:										
Caudal.....	.9	10.3	.6	---	1.6	32	2	---	5	312
Control.....	2.7	5.6	---	1.4	1.4	4	---	1	1	72

A tabulation was made of mothers who had a temperature of 100.4° F. or above for two or more consecutive days following delivery. In the caudal group, 7.4 percent had fever by this standard, as compared with 10.8 percent in the control group—a difference which was definitely significant (fig. 7 and table 8).

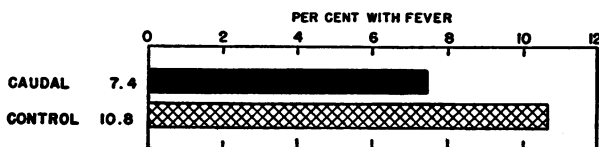


FIGURE 7.—Percentage of mothers who had a postpartum temperature of 100.4° F. for two or more consecutive days in the caudal and control groups.

Although the samples are too small to measure maternal mortality, the mortality in the two groups should be recorded. There were 2 deaths of mothers among the 2,516 delivered by continuous caudal analgesia, a rate of 0.79 maternal deaths per 1,000 mothers delivered, as compared with a rate of 1.93 per 1,000 mothers in the control group, based also on 2 deaths among the 1,024 mothers (table 8). As might be expected with these small numbers of deaths, this difference is not statistically significant; that is, it may have occurred by chance.

Most of the mothers had an examination of the uterus 6 weeks after parturition. However, the results of the examination of patients under the care of private physicians were frequently not entered on the hos-

pital record; thus the results are unknown for many of the private patients. Among ward patients 3.9 percent of the mothers in the caudal group showed subinvolution of the uterus, as compared with 8.3 percent of those in the control group (table 16). Of the private patients for whom the results were entered on the hospital record, 5.5 percent of those in the caudal group showed subinvolution of the uterus, as compared with 9.5 percent of the private patients in the control group. When private and ward patients are combined, the proportions with subinvolution were 4.4 percent for the caudal and 8.5 percent for the control group (fig. 8). A difference as large or larger than this amount is definitely significant in the statistical sense of being much larger than would be expected to occur by chance.

TABLE 16.—*Percentage of mothers found to have subinvolution of the uterus on examination 6 weeks after delivery*

	Mothers with subinvolution of uterus						Number of mothers with records of postpartum examination		
	Percentage of those examined			Number					
	Private and ward	Private room	Ward	Private and ward	Private room	Ward	Private and ward	Private room	Ward
Caudal.....	4.4	5.5	3.9	72	29	43	1,629	524	1,105
Control.....	8.5	9.5	8.3	39	8	31	459	84	375

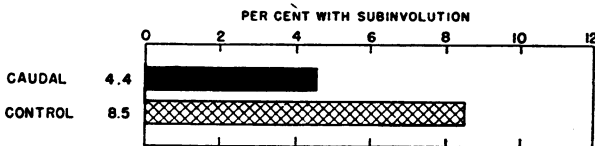


FIGURE 8.—Percentage of mothers found to have subinvolution of the uterus on examination 6 weeks after delivery in the caudal and control groups.

The days of hospital care following delivery are influenced by rather artificial factors which manifest themselves in this study with a considerably longer duration of hospital stay for private than for ward patients. However, the differences between the average hospital stay for the caudal and control groups are small when comparisons are made separately for private and ward patients. The differences tend toward a slightly shorter hospital stay in the caudal than in the control group.

NEONATAL MORBIDITY, NEONATAL MORTALITY, AND STILLBIRTHS

In any study of the relief of childbirth pain, the health and viability of the infant must be considered as well as the health of the mother.

The delay in respiration of the newborn infant and the necessity

TABLE 17.—*Delay in respiration of two or more minutes among full term and premature infants discharged alive from the hospital*

Term	Percentage				Number					
	Infants with delayed respiration ¹		Infants requiring special agent		Infants with delayed respiration ¹		Infants requiring special agent		All infants discharged alive	
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
All infants.....	3.6	9.6	2.5	8.7	89	64	62	85	2,488	961
Full term.....	3.2	8.8	2.2	7.9	76	82	52	74	2,345	933
Premature ²	9.1	25.0	7.0	22.9	13	12	10	11	143	48

¹ Includes infants requiring special agent for respiration.

² Premature includes infants weighing 5 pounds 8 ounces (2,500 grams) or less.

for a special agent to induce respiration may be indications of the effect upon the infant of anesthetics given to the mother during labor. Table 17 shows the proportion of infants discharged alive from the hospital in whom respiration was delayed for more than 2 minutes or in whom special agents were used to induce respiration. Among those delivered by continuous caudal analgesia, the group of infants who had difficulty in breathing amounted to 3.6 percent of the total, as compared with 9.6 percent of the control group, a difference which is definitely significant. In the caudal group 2.5 percent of the infants required the use of a special agent to induce respiration as compared with 8.7 percent in the control group, a difference which is also definitely significant (fig. 9). In the caudal group there were 143 premature ⁴

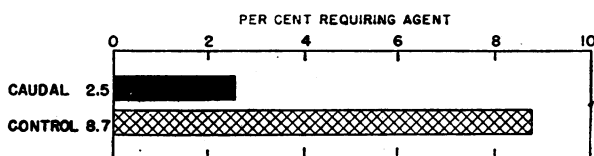


FIGURE 9.—Percentage of infants who required a special agent to induce respiration in the caudal and control groups.

infants who were discharged alive from the hospital, and 48 such infants in the control group. Of the 143 premature infants in the caudal group, 13 or 9.1 percent had a delay of more than 2 minutes before respiration began or had a special agent to induce respiration, as compared with 12 or 25.0 percent in the control group. Of these premature infants who experienced difficulty in breathing, all except 3 in the caudal and 1 in the control group required a special agent to induce respiration.

The infants were under direct observation only for the short period that they were in the hospital. Since the duration of the hospital

⁴ Infants with birth weights of 5 pounds, 8 ounces (2,500 grams), or less, were classed as premature, in accordance with the standard adopted by the American Pediatric Society.

stay varied, it seemed better to compare the weight of the infant at 7 days of age with his birth weight than to consider weights at the time of discharge from the hospital. Table 18 shows for the caudal and control groups the percentage of infants who had made a net gain of one or more ounces by the seventh day of life. Considering all infants, 11.9 percent of those in the caudal group made such a net gain in weight in the first 7 days of life, as compared with 9.2 percent in the control group (fig. 10). A difference of this magnitude is of doubtful or borderline significance in the statistical sense in that although probably real it may have been due to chance.

TABLE 18.—*Percentage of infants with a net gain in weight by the seventh day of life, by color and type of feeding*

Group	Total			White			Colored		
	All infants	Breast-fed	Bottle-fed	All infants	Breast-fed	Bottle-fed	All infants	Breast-fed	Bottle-fed
Percentage with net gain of one or more ounces									
Caudal.....	11.9	14.6	5.6	11.2	14.1	4.8	17.0	17.7	14.3
Control.....	9.2	12.5	4.9	8.9	12.4	4.6	13.2	14.3	10.5
Total number with known weights									
Caudal.....	2,487	1,753	734	2,187	1,516	671	300	237	63
Control.....	967	559	428	919	610	409	68	49	19

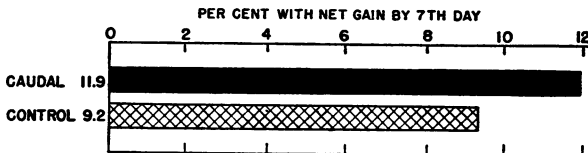


FIGURE 10.—Percentage of infants who made a net gain in weight by the seventh day of life in the caudal and control groups.

A higher proportion of the infants in the caudal group were breast-fed than in the control group; in the caudal group 70 percent of the infants were breast-fed as compared with 57 percent in the control group. Considering only breast-fed infants, 14.6 percent of the caudal group weighed more at the end of 7 days than at birth, as compared with 12.5 percent in the control group. Although the difference is small, the percentage is larger for both white and colored infants in the caudal than in the control group. Among bottle-fed infants, 5.6 percent of those in the caudal group weighed more at the end of 7 days than at birth, as compared with 4.9 percent of the infants in the control group. Again this small excess for the caudal group appeared for both white and colored infants.

Table 19 and figure 11 show the distribution of the infants in the

TABLE 19.—*Distribution of infants according to weight at birth*

Birth weight in pounds and ounces	Percentage				Number			
	Total infants (live and still)		Single live births		Total infants (live and still)		Single live births	
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
Total.....	100	100	100	100	2,544	1,030	2,464	990
Under 4-8.....	2.4	4.1	1.3	2.2	62	42	32	22
4-8 to 4-15.....	1.2	1.1	.9	.8	30	11	22	8
5-0 to 5-7.....	2.6	2.0	2.4	1.8	67	21	58	18
5-8 to 5-15.....	5.8	6.0	5.6	5.9	147	62	139	58
6-0 to 6-7.....	11.4	10.8	11.4	11.0	291	111	282	109
6-8 to 6-15.....	17.9	16.3	18.2	16.9	455	168	449	167
7-0 to 7-7.....	20.2	19.3	20.7	20.0	514	199	509	198
7-8 to 7-15.....	16.7	17.5	17.2	18.0	426	180	423	178
8-0 to 8-7.....	10.6	11.0	10.9	11.3	270	113	269	112
8-8 to 8-15.....	5.9	5.8	6.1	5.9	150	60	150	58
9-0 to 9-7.....	3.3	3.2	3.4	3.2	84	33	83	32
9-8 to 9-15.....	1.4	2.1	1.4	2.2	35	22	35	22
10 and over.....	.5	.8	.5	.8	13	8	13	8
<hr/>								
	Average weight (pounds)				Number of births			
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
All infants.....	7.14	7.11	7.21	7.22	2,544	1,030	2,464	990
Twins.....	4.76	4.92	4.77	4.92	59	18	57	18

¹ These figures refer to live twins; weight refers to that of each twin.

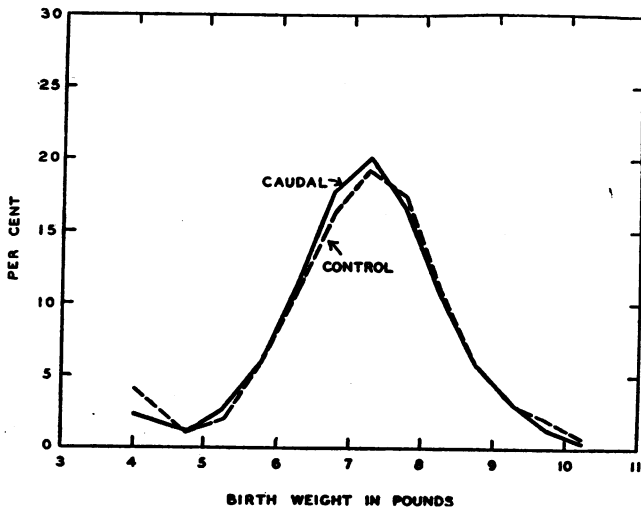


FIGURE 11.—Percentage distribution of infants according to weight at birth in the caudal and control groups.

caudal and control groups according to weight at birth. The average weights at birth were 7.14 pounds for the caudal and 7.11 pounds for the control group, and the distributions of birth weights in the two groups were similar. In the caudal group the average weight at birth for infants who were breast-fed was 7.21 pounds, as compared with 7.30 pounds in the control group. During the first week of life there was a net loss of 3.75 ounces per infant for the caudal group as compared

with 3.39 ounces for the control group. For bottle-fed infants the corresponding average weights at birth were 7.02 pounds and 7.05 pounds, respectively, and during the first week of life there was a net loss of 5.52 ounces per infant for the caudal group as compared with 5.77 ounces for the control group.

Thus a higher percentage of infants in the caudal group showed a net gain during the first week of life, but in terms of average ounces lost for all infants in the two categories, the differences between the caudal and control groups were very small and not consistently in favor of either group.

Among infants in the caudal group, stillbirths amounted to 9.1 per 1,000 live births, as compared with 24.8 per 1,000 in the control group, a difference which is definitely significant (fig. 12). Corresponding ratios for white stillbirths were 8.1 per 1,000 live births for the caudal and 23.4 per 1,000 for the control group; and for the few colored stillbirths, 16.1 per 1,000 live births for the caudal and 42.9 per 1,000 for the control group (table 20). The difference between caudal and control groups is statistically significant for white stillbirths, but in the small colored groups even this large difference may have resulted from chance.

TABLE 20.—*Stillbirth and neonatal mortality¹ per 1,000 live births among mothers of different ages, by color*

Group	Rate per 1,000 live births						Number				
	All infants			Infants of mothers			All infants		Infants of mothers		
	Total	White	Colored	Under 25	25-29	30 and over	White	Colored	Under 25	25-29	30 and over
Stillbirths and neonatal mortality: ¹											
Caudal.....	20.6	17.2	45.2	14.2	13.6	35.4	38	14	12	12	28
Control.....	45.6	43.7	71.4	47.8	30.6	59.0	41	5	14	11	21
Neonatal mortality ¹											
Caudal.....	11.5	9.0	29.0	8.3	11.3	15.2	20	9	7	10	12
Control.....	20.8	20.2	28.6	20.5	11.1	30.9	19	2	6	4	11
Stillbirths											
Caudal.....	9.1	8.1	16.1	5.9	2.3	20.2	18	5	5	2	16
Control.....	24.8	23.4	42.9	27.3	19.4	28.1	22	3	8	7	10
Total live births											
Caudal.....							2,213	310	847	884	792
Control.....							939	70	293	360	356

¹ Neonatal mortality includes deaths within the first week of life only.

Since the infants were under observation only for the short time in the hospital, and since the hospital stay varied for different mothers and infants, neonatal deaths were defined as those which occurred within the first week of life, practically all mothers being in the hospital for that minimum period.

Deaths in the first week of life in the caudal group amounted to 11.5 per 1,000 live births, as compared with 20.8 per 1,000 in the control

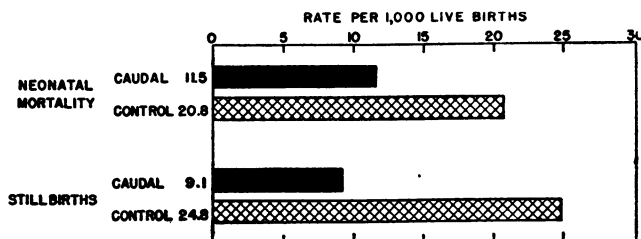


FIGURE 12.—Stillbirths and neonatal mortality per 1,000 live births in the caudal and control groups.

group (fig. 12). The corresponding figures in the white group were 9.0 per 1,000 live births for the caudal and 20.2 per 1,000 for the control group, and for the colored, 29.0 per 1,000 live births for the caudal and 28.6 per 1,000 for the control group (table 20). A difference of such a magnitude as that between the rates for white infants in the caudal and control groups is statistically significant, but the two rates for colored infants are essentially the same. It may be noted that the mortality of the first week of life of 20.8 per 1,000 live births for all infants in the control group was approximately the same as that for the country as a whole—22.3, 20.8, and 19.9 per 1,000 live births for the years 1941, 1942, and 1943, respectively (ref. 9, pt. I, p. 18).

Taking into account both stillbirths and neonatal deaths, the total loss of infants amounted to 20.6 per 1,000 live births in the caudal group, as compared with 45.6 per 1,000 in the control group, a difference which is definitely significant (table 20). Among white infants the corresponding rates were 17.2 per 1,000 live births for the

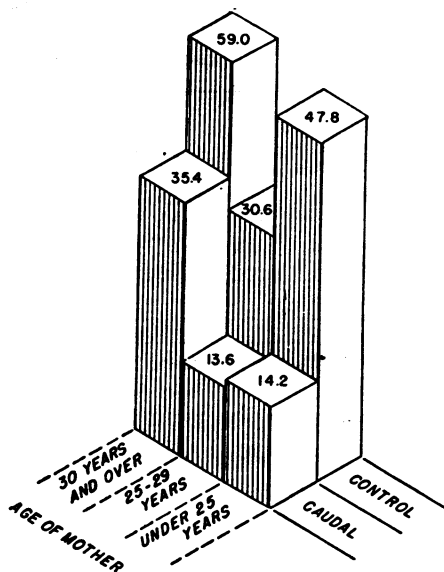


FIGURE 13.—Stillbirths and neonatal mortality per 1,000 live births among mothers of different ages in the caudal and control groups.

caudal and 43.7 per 1,000 for the control group, a difference which is also definitely significant. Among the colored infants the corresponding rates were 45.2 per 1,000 live births in the caudal group and 71.4 per 1,000 in the control group. In the small group of colored mothers, even this large difference between the rates for the caudal and control groups may have occurred by chance; that is, it is not statistically significant.

Figure 13 shows stillbirth and neonatal mortality in the caudal and control groups among infants of mothers of three age groups: under 25 years, 25-29, and 30 years and over. The higher stillbirth and neonatal mortality rates in the control group are consistent for all three age groups of mothers.

It is generally recognized that premature infants have a high neonatal mortality but there are few data on actual death rates among premature as compared with full-term infants. In this study there were 167 premature infants in the caudal group and 66 in the control. In the caudal group neonatal mortality was 132 per 1,000 premature live births, as compared with 227 per 1,000 in the control group (fig. 14 and table 21). In this small group of premature infants, a difference of this magnitude or larger would occur by chance 7 times in 100 trials and cannot be considered as statistically significant. Among full-term infants the neonatal mortality rates were 3.0 and 6.4 per 1,000 full-term births in the caudal and control groups, respectively, but this difference also is not statistically significant.

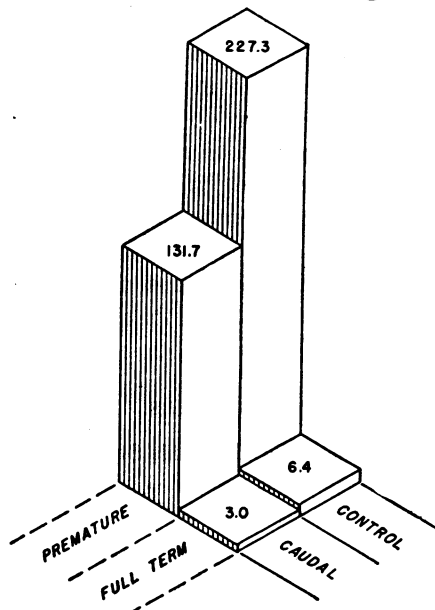


FIGURE 14.—Neonatal mortality per 1,000 live births among full-term and premature infants in the cauda and control groups.

TABLE 21.—*Neonatal mortality¹ among full-term and premature infants*

Group	Neonatal mortality ¹ per 1,000 live births			Number of neonatal deaths ¹			Number of live births		
	All infants	Full- term	Prema- ture ²	All infants	Full- term	Prema- ture ²	All ³ infants	Full- term	Prema- ture ³
Caudal.....	11.5	3.0	131.7	29	7	22	2,523	2,354	167
Control.....	20.8	6.4	227.3	21	6	15	1,009	942	66

¹ Neonatal mortality includes deaths within the first week of life only.² Premature includes infants weighing 5 pounds 8 ounces (2,500 grams) or less.³ Includes a few unknown for maturity.

SUMMARY

This paper presents the results of the delivery with continuous caudal analgesia of 2,516 mothers as compared with a control group of 1,024 mothers delivered with the usual anesthetics and sedatives. All of the deliveries took place at the Philadelphia Lying-in Unit of the Pennsylvania Hospital. Data about mothers in the two groups indicate that when they came to delivery they were comparable with respect to age, parity, state of health, and many other factors that might influence the outcome of childbirth.

There was no evidence of danger to the mothers delivered with continuous caudal analgesia, although a third of them showed a marked drop in systolic blood pressure during the administration of the drug. Complete relief was obtained for 90 percent of the mothers during labor and delivery. The postpartum action of the uterus was better in the caudal than in the control group.

There were fewer stillbirths and fewer deaths of infants during the first week of life in the caudal than in the control group. Thus more favorable results for the caudal group were indicated in terms of the comfort of the mother during labor and the survival of the infant during the dangerous first week of life.

If the method of continuous caudal analgesia could be applied to all deliveries in the United States with the same results as in the Philadelphia Lying-in Hospital, the present estimated loss of about 125,000 viable infants through stillbirth and death within the first week of life could be cut in half.

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PUBLIC HOUSING DESIGN

The Federal Public Housing Authority has recently announced the publication of *Public Housing Design*, a 300-page volume summarizing a decade of experience in the design and construction of low-rent housing developments. The announcement states:

Appearing when more large-scale private developments are being undertaken than ever before, [it] is expected to be of interest to many commercial home builders. It covers the entire scope of community development from preliminary surveys through planning and actual construction to final landscaping around the new home . . .

A large number of sources were tapped for data and experiences to give *Public Housing Design* a broad approach encompassing conditions found in all sections of the Nation. The criticisms of methods and techniques are based on results obtained in actual community developments with comments by qualified technical observers on local, State, and regional planes.

Among the subjects discussed are the general considerations of project design; site selection, planning and engineering; dwelling types and plans; community buildings; service structures; materials; utilities; mechanical and electrical design; lawns and planting.

Photographs, diagrams, and charts are used profusely to illustrate the text. An index of nearly 500 subjects makes the volume useful as a handbook for reference and study.

Both illustrations and text point forcefully to the wide variety of solutions which the public low-rent housing program has found to exist in the problem of community development planning . . .

Public Housing Design was produced by the FPHA's Development and Reutilization Branch headed by William P. Seaver, Assistant Commissioner. Gilbert L. Rodier, Director of the FPHA Technical Division, was in charge of preparing the report.

Copies may be obtained from the Superintendent of Documents, United States Government Printing Office, Washington 25, D. C., for \$1.25 each.

AUSTRALIAN QUARANTINE REQUIREMENT ¹

The following circular of information regarding Austrian quarantine measures against smallpox has been sent to the United States Public Health Service by the United States State Department. The Austrian Embassy has informed the State Department that the circular has been distributed to the United States War Department, commercial air lines, and certain travel agencies.

Passengers by Air to Australia—Quarantine Regulations

The Australian Department of Health has drawn attention to the fact that the Australian Quarantine (Air Navigation) regulations require that persons arriving in Australia by air shall produce, at the first landing place, a certificate of vaccination issued within three years of arrival in Australia, or shall submit to vaccination.

The Department advises that it is intended in future to apply these regulations strictly and to institute legal proceedings where breaches are detected.

It is intended also that persons who can not produce a vaccination certificate issued less than three years and *more than twelve days* before arrival in Australia shall be subject to surveillance under the Quarantine Act for the full period of fourteen days after arrival in Australia. This will entail a daily visit to a medical officer of this Department at one of the capital cities, and will of necessity somewhat restrict the movements of the persons concerned.

¹From the Foreign Quarantine Division, U. S. Public Health Service.

PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

October 6—November 2, 1946

The accompanying table (table 1) summarizes the prevalence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State for each week are published in the PUBLIC HEALTH REPORTS under the section "Prevalence of Disease." The table gives the number of cases of these diseases for the 4 weeks ended November 2, 1946, the number reported for the corresponding period in 1945, and the median number for the years 1941-45.

TABLE 1.—Number of reported cases of nine communicable diseases in the United States during the 4-week period October 5–November 2, 1946, the number for the corresponding period in 1945, and the median number of cases reported for the corresponding period, 1941–45

Division	Current period	1945	5-year median	Current period	1945	5-year median	Current period	1945	5-year median
	Diphtheria			Influenza ¹			Measles ²		
United States.....	1,463	2,809	2,480	5,759	8,390	5,543	4,052	4,682	5,194
New England.....	96	32	25	10	48	25	1,154	698	725
Middle Atlantic.....	149	101	101	35	29	42	1,022	696	862
East North Central.....	144	274	238	90	162	162	582	867	702
West North Central.....	138	137	133	51	25	33	65	137	297
South Atlantic.....	299	998	946	1,150	2,610	1,638	334	235	235
East South Central.....	274	553	355	143	236	236	44	153	153
West South Central.....	208	471	449	3,850	4,918	2,977	216	188	186
Mountain.....	42	65	65	381	305	395	280	485	485
Pacific.....	113	178	160	49	57	157	355	1,221	861
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States.....	265	331	331	3,298	2,045	1,555	5,754	9,009	8,970
New England.....	14	18	31	232	164	123	401	540	715
Middle Atlantic.....	49	83	85	343	436	432	1,053	1,264	1,281
East North Central.....	46	74	74	974	520	319	1,774	2,133	2,133
West North Central.....	30	33	33	900	255	165	421	815	899
South Atlantic.....	29	27	39	136	146	146	747	1,602	1,504
East South Central.....	23	20	20	66	111	71	367	670	670
West South Central.....	36	29	29	177	125	64	179	683	355
Mountain.....	11	10	9	133	90	19	234	345	345
Pacific.....	27	37	37	337	198	117	578	957	866
	Smallpox			Typhoid and paratyphoid fever			Whooping cough ²		
United States.....	15	16	20	304	423	423	6,333	7,536	9,242
New England.....	0	0	0	14	23	24	759	929	926
Middle Atlantic.....	0	0	0	46	71	71	1,530	2,288	2,288
East North Central.....	3	1	7	55	43	51	2,023	1,627	2,416
West North Central.....	2	5	6	27	22	22	165	191	446
South Atlantic.....	1	0	0	35	83	120	643	913	966
East South Central.....	2	7	3	28	66	63	152	257	291
West South Central.....	1	2	2	56	71	90	565	426	426
Mountain.....	6	0	2	12	26	30	170	259	292
Pacific.....	0	1	1	31	18	27	326	646	801

¹ Mississippi and New York excluded; New York City included.

² Mississippi excluded.

DISEASES ABOVE MEDIAN PREVALENCE

Poliomyelitis.—The number of cases of poliomyelitis dropped from 5,488 during the 4 weeks ended October 5 to 3,298 during the current 4 weeks. However, each section of the country except the South Atlantic and East South Central still reported a relatively high incidence. For the country as a whole the number of cases (3,298) was 1.6 times the number reported for the corresponding period in 1945 and 2.1 times the 1941–45 median. Table 2 shows the total reported cases of poliomyelitis in geographic sections since the beginning of the year and the incidence by weeks since the week ended August 24 which was the first week to show a decline in the current epidemic. While the 1946 epidemic started in June in the South Atlantic section, the highest incidence was not reached in the North Atlantic sections until the latter part of September and early October. However, reports indicate that the peak has now been passed in all sections.

TABLE 2.—Number of cases of poliomyelitis reported in each geographic area during 1946, 1945, 1944 and 1943¹

Geographic area	Total Jan. 1— Nov. 2	Week ended—										
		Aug. 24	Aug. 31	Sept. 7	Sept. 14	Sept. 21	Sept. 28	Oct. 5	Oct. 12	Oct. 19	Oct. 26	Nov. 2
All regions:												
1946.....	22,954	1,808	1,781	1,721	1,623	1,427	1,295	1,143	1,042	976	716	564
1945.....	15,572	931	917	891	965	864	774	639	549	617	489	390
1944.....	22,346	1,529	1,680	1,498	1,440	1,159	976	877	710	721	582	451
1943.....	14,411	872	956	906	1,020	818	679	515	495	438	363	259
New England:												
1946.....	753	41	37	41	57	42	65	67	71	70	54	37
1945.....	1,115	62	63	59	69	78	59	56	44	48	34	38
1944.....	931	74	75	64	49	71	38	41	38	50	29	19
1943.....	1,083	62	77	63	91	85	84	28	52	33	20	18
Middle Atlantic:												
1946.....	1,769	139	124	136	122	113	146	106	102	80	100	61
1945.....	4,337	344	295	236	330	213	207	155	127	146	96	67
1944.....	9,844	756	895	761	674	505	470	381	320	333	248	196
1943.....	1,188	57	72	83	91	83	67	63	50	46	36	23
East North Central:												
1946.....	5,402	422	542	483	472	441	365	338	300	292	209	173
1945.....	2,971	189	177	222	160	201	190	148	136	150	135	99
1944.....	3,955	271	321	255	329	236	174	167	142	113	84	90
1943.....	3,077	241	249	273	288	207	171	145	101	102	75	41
West North Central:												
1946.....	6,827	604	490	550	480	371	348	331	311	287	161	141
1945.....	1,331	49	97	83	122	69	82	70	69	68	61	57
1944.....	1,395	104	77	112	76	85	73	79	64	56	62	36
1943.....	1,900	131	183	138	148	114	88	80	67	38	36	24
South Atlantic:												
1946.....	1,184	63	52	55	53	38	39	36	30	50	33	23
1945.....	1,471	86	80	71	60	82	69	57	31	57	30	28
1944.....	3,283	214	205	187	169	149	114	96	88	102	95	66
1943.....	284	10	8	10	23	14	18	9	9	6	5	6
East South Central:												
1946.....	927	72	68	46	35	38	24	20	28	24	13	11
1945.....	815	37	30	39	23	33	27	29	33	30	36	20
1944.....	1,259	56	48	57	59	63	43	40	20	14	24	13
1943.....	254	20	14	12	9	6	10	4	6	3	9	2
West South Central:												
1946.....	1,949	103	76	102	79	81	69	59	47	55	37	28
1945.....	1,518	86	60	52	75	66	46	29	32	39	26	20
1944.....	509	11	14	17	15	13	14	13	7	9	12	10
1943.....	2,088	117	81	90	87	67	49	23	38	28	27	27

See footnote at end of table.

TABLE 2.—*Number of cases of poliomyelitis reported in each geographic area during 1946, 1945, 1944 and 1943*¹—Continued

Geographic area	Total Jan. 1— Nov. 2	Week ended—										
		Aug. 24	Aug. 31	Sept. 7	Sept. 14	Sept. 21	Sept. 28	Oct. 5	Oct. 12	Oct. 19	Oct. 26	Nov. 2
Mountain:												
1946.....	1,587	126	131	122	115	121	79	52	44	28	33	28
1945.....	714	35	55	59	54	46	34	38	29	17	24	20
1944.....	252	16	12	15	18	21	12	8	5	8	1	3
1943.....	1,145	47	123	93	92	85	46	51	36	38	33	26
Pacific:												
1946.....	2,556	238	261	186	210	182	160	134	109	90	76	62
1945.....	1,300	43	60	70	72	76	70	57	48	62	47	41
1944.....	918	27	33	30	51	26	38	52	26	36	27	28
1943.....	3,392	187	149	144	191	157	146	112	136	144	122	92

¹ Similar tables for earlier weeks appeared in Public Health Reports for Sept. 6 and Oct. 4, 1946.

Influenza.—For the 4 weeks ended November 2 there were 5,759 cases of influenza reported; in 1945 there were 8,390 reported for the corresponding 4 weeks and the 1941–45 median was 5,543 cases. Of the total cases the South Atlantic section reported 1,150, and 3,850 were reported from the West South Central section; in the former section the incidence was below the median, but in the latter section the number of cases was about 30 percent above the preceding 5-year median. In other sections the incidence either closely approximated the median or fell considerably below it.

DISEASES BELOW MEDIAN PREVALENCE

Diphtheria.—The number of cases of diphtheria rose from 1,232 during the preceding 4 weeks to 1,463 during the 4 weeks ended November 2. The rate of increase was, however, somewhat lower than in preceding years and the number of cases during the current period was only about 50 percent of the number for the corresponding period in 1945 and less than 60 percent of the 1941–45 median. Prior to 1944 there had been a consistent decline in the incidence of this disease, but from October of that year until July 1946, inclusive, the number of cases for each 4-week period was higher than for the corresponding period in the preceding year, as well as higher than the preceding 5-year median for each period. Since July of 1946 the incidence has been relatively low, the number of cases reported during each 4-week period being lower than in the corresponding period of 1945, with the last two 4-week periods showing fewer cases than in any corresponding period in the 18 years for which these data are available.

An examination of diphtheria cases by geographic section shows a decline in each section of the country except the New England, Middle Atlantic and West North Central sections; in the North Atlantic

section the incidence was considerably above the median, but in the West North Central section the incidence was about the same as the median. This disease has been unusually prevalent in the South Atlantic and South Central regions and the relatively low incidence is largely due to important decreases in the number of cases reported from those sections.

Measles.—For the 4 weeks ended November 2 there were 4,052 cases of measles reported, as compared with 4,682 during the corresponding 4 weeks in 1945 and a 5-year (1941-45) median of 5,194 cases. The number of cases was higher than the median in the Atlantic Coast and West South Central sections, but in all other regions the incidence was relatively low.

Meningococcus meningitis.—The number of cases (265) of meningococcus meningitis reported during the current 4-week period was only 80 percent of the number reported for the corresponding weeks in 1945, which number (331 cases) also represented the 1941-45 median for this period. The numbers of cases in the South Central and Mountain regions were slightly above the median expectancy, but in all other sections the incidence was below the preceding 5-year median.

Scarlet fever.—The number of cases (5,754) of scarlet fever reported for the 4 weeks ended November 2 was the lowest reported for the corresponding period in the 18 years for which these data are available. For the corresponding weeks in 1945 there were 9,009 cases reported and the 1941-45 median for the same period was 8,970 cases. The incidence was relatively low in all sections of the country. In the New England, West North Central, South Atlantic, East South Central and West South Central sections the numbers of cases were approximately 50 percent of the 1941-45 median figures; in the Mountain and Pacific sections the incidence was less than 70 percent of the median; and in the Middle Atlantic and East North Central sections the numbers of cases were about 80 percent of the preceding 5-year medians.

Smallpox.—For the current 4-week period there were 15 cases of smallpox reported, as compared with 16 for the corresponding period in 1945 and a 5-year median of 20 cases. Six of the total cases occurred in the Mountain section where the 1941-45 median was 2 cases. In other sections where cases occurred the current incidence was below the preceding 5-year median.

Typhoid and paratyphoid fever.—The number of cases of these diseases was also the lowest in recent years. For the current 4 weeks the number of cases (304) was less than 75 percent of the 1941-45 median which was represented by the 1945 figure (423 cases). In the North Central and Pacific sections the current incidence was about

normal, but all other sections showed very considerable declines in the incidence of these diseases.

Whooping cough.—For the 4 weeks ended November 2 there were 6,333 cases of whooping cough reported. The current incidence was about 85 percent of the number of cases reported during the same weeks in 1945 and less than 70 percent of the 1941–45 median. The incidence was below the median in all sections of the country except the West South Central.

MORTALITY, ALL CAUSES

For the 4 weeks ended November 2 there were 34,683 deaths reported to the Bureau of the Census by 93 large cities. The average number of deaths reported for the same weeks in the years 1943–45 was 35,362. During the first week of the 4-week period the number of deaths was higher than the 3-year average, but in each of the 3 succeeding weeks the numbers were below the 1943–45 average.

DEATHS DURING WEEK ENDED NOV. 2, 1946

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

	Week ended Nov. 2, 1946	Correspond- ing week, 1945
Data for 93 large cities of the United States:		
Total deaths.....	8,616	9,023
Average for 3 prior years.....	8,919	
Total deaths, first 44 weeks of year.....	397,205	393,890
Deaths under 1 year of age.....	747	598
Average for 3 prior years.....	635	
Deaths under 1 year of age, first 44 weeks of year.....	28,923	26,696
Data from industrial insurance companies:		
Policies in force.....	67,324,567	67,298,147
Number of death claims.....	11,189	12,302
Death claims per 1,000 policies in force, annual rate.....	8.7	9.5
Death claims per 1,000 policies, first 44 weeks of year, annual rate.....	9.5	10.1

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 NOVEMBER 9, 1946

Summary

A total of 489 cases of poliomyelitis was reported for the week, as compared with 564 last week and a 5-year (1941-45) median of 243. The decrease represents a decline of 13 percent, as compared with 21 percent for the preceding week and 30 percent for the corresponding week of 1944. Decreases occurred in all sections of the country except the South Central area. Of 23 States reporting 5 or more cases, 15 showed a decline (386 to 288), while 6 reported an increase (46 to 106). States reporting currently more than 10 cases each are as follows (last week's figures in parentheses): *Increases*—Indiana 20 (13), Missouri 31 (17), North Dakota 11 (5), Oklahoma 13 (3), Texas 26 (7); *decreases*—Massachusetts 14 (19), New York 31 (39), Ohio 15 (17), Illinois 49 (72), Michigan 27 (30), Wisconsin 31 (41), Minnesota 27 (32), Nebraska 14 (17), Kansas 15 (33), California 34 (41); *no change*—Pennsylvania 12, Iowa 29. The cumulative total to date is 23,427, as compared with 18,202 for the corresponding period in 1944 and a 5-year median of 11,622.

Since the approximate date of lowest seasonal incidence, the cumulative figures for certain diseases for the current year, the corresponding period of last year, and 5-year medians for the period, in the order stated, are as follows: Diphtheria 3,771, 6,459, 5,533; influenza 12,836, 17,700, 12,511; measles 9,698, 10,819, 11,571; meningococcus meningitis 735, 1,031, 1,031; poliomyelitis 22,961, 12,275, 11,320; scarlet fever 12,418, 19,362, 18,752; smallpox 39, 39, 54; typhoid and paratyphoid fever 3,203, 3,842, 4,405; whooping cough 5,225, 6,437, 6,923. Of these diseases current incidence above the median is reported for only influenza, poliomyelitis, and smallpox.

A total of 29 cases of tularemia was reported for the current week (3 in the Mountain and Pacific States, 15 in the midwestern States, and 11 in the eastern States), as compared with 9 last week and 8 for the corresponding week last year. The total to date is 813, as compared with 640 for the same period last year and an average of 649 for the period in the past 4 years.

Deaths registered during the week in 93 large cities of the United States totaled 8,663, as compared with 8,616 last week, 8,974 and 8,607, respectively, for the corresponding periods of 1945 and 1944, and a 3-year (1943-45) average of 8,732. The cumulative figure is 405,868, as compared with 402,864 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Nov. 9, 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
	Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945	
NEW ENGLAND												
Maine.....	*2	2	0	-----	-----	-----	127	-----	2	0	1	0
New Hampshire.....	0	3	0	-----	-----	-----	44	-----	12	0	0	0
Vermont.....	1	0	0	-----	-----	-----	32	-----	-----	0	0	0
Massachusetts.....	18	7	6	-----	-----	-----	135	198	166	3	3	3
Rhode Island.....	1	1	1	-----	-----	-----	2	-----	1	0	0	1
Connecticut.....	0	0	0	1	-----	1	16	9	12	2	1	3
MIDDLE ATLANTIC												
New York.....	16	10	16	12	12	12	156	80	116	3	16	17
New Jersey.....	7	2	4	4	5	4	27	9	18	3	3	3
Pennsylvania.....	17	7	9	1	3	2	159	374	207	5	11	11
EAST NORTH CENTRAL												
Ohio.....	17	27	19	3	6	6	80	8	27	4	3	3
Indiana.....	10	16	7	9	21	13	13	5	6	0	2	2
Illinois.....	8	9	11	1	1	9	8	150	36	2	12	8
Michigan ¹	6	11	11	-----	-----	1	16	112	93	2	4	4
Wisconsin.....	3	2	2	26	32	18	29	20	56	0	6	1
WEST NORTH CENTRAL												
Minnesota.....	12	9	9	-----	-----	-----	5	4	5	1	1	1
Iowa.....	6	20	6	-----	4	-----	3	2	18	1	0	0
Missouri.....	5	11	4	1	1	2	-----	10	5	3	0	0
North Dakota.....	4	8	3	-----	-----	-----	1	-----	2	0	1	0
South Dakota.....	0	3	3	-----	7	-----	2	2	2	0	1	0
Nebraska.....	2	9	4	-----	4	5	2	4	5	0	1	0
Kansas.....	6	1	2	1	1	-----	9	15	9	0	0	0
SOUTH ATLANTIC												
Delaware.....	1	0	0	-----	-----	-----	1	-----	1	0	1	1
Maryland ¹	9	14	11	4	1	1	9	3	9	1	0	3
District of Columbia.....	0	1	0	-----	2	2	-----	3	3	0	1	1
Virginia.....	15	31	28	282	159	159	78	5	7	3	1	2
West Virginia.....	3	7	7	15	64	9	13	-----	16	0	0	1
North Carolina.....	16	68	59	-----	-----	1	23	3	7	0	0	0
South Carolina.....	13	23	23	196	506	293	12	38	22	0	0	0
Georgia.....	9	36	26	19	7	19	30	8	8	3	1	0
Florida.....	16	2	5	7	3	3	-----	1	1	1	1	1
EAST SOUTH CENTRAL												
Kentucky.....	31	28	12	1	1	3	-----	74	13	1	4	4
Tennessee.....	23	19	18	20	26	22	24	-----	4	4	2	4
Alabama.....	7	18	28	27	21	27	4	1	2	1	3	1
Mississippi ¹	19	50	16	-----	-----	-----	-----	-----	-----	0	3	3
WEST SOUTH CENTRAL												
Arkansas.....	17	22	15	39	116	35	40	15	9	3	0	0
Louisiana.....	12	16	12	3	37	11	-----	1	1	0	0	1
Oklahoma.....	2	5	10	41	44	38	4	1	3	0	0	0
Texas.....	27	80	62	1,042	1,609	630	52	42	27	2	2	3
MOUNTAIN												
Montana.....	2	13	2	2	13	1	18	30	15	0	0	0
Idaho.....	0	4	1	4	18	-----	1	99	5	0	1	1
Wyoming.....	1	1	1	1	1	7	4	-----	2	1	0	0
Colorado.....	5	5	16	11	37	21	7	82	21	1	1	0
New Mexico.....	1	5	2	2	6	1	9	5	-----	0	0	0
Arizona.....	4	4	3	51	62	62	13	2	2	0	1	1
Utah ¹	0	0	0	-----	4	1	6	32	11	0	0	0
Nevada.....	0	0	0	-----	-----	-----	-----	-----	-----	0	0	0
PACIFIC												
Washington.....	5	11	5	-----	-----	-----	9	229	45	1	4	2
Oregon.....	2	0	2	12	1	7	25	11	25	0	0	0
California.....	24	24	24	6	12	14	72	223	135	7	12	11
Total.....	405	645	551	1,834	2,837	1,596	1,320	1,910	1,910	58	104	104
45 weeks.....	*13,673	14,751	12,969	204,658	88,432	94,209	648,340	112,066	557,876	5,192	7,207	7,207

¹ New York City only.

² Period ended earlier than Saturday.

*Delayed reports: Maine, diphtheria 5 cases, included in cumulative total only.

Telegraphic morbidity reports from State health officers for the week ended Nov. 9, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Polio-myelitis			Scarlet fever			Smallpox			Typhoid and para-typhoid fever ²		
	Week ended—		Med-ian 1941-45	Week ended—		Med-ian 1941-45	Week ended—		Med-ian 1941-45	Week ended—		Med-ian 1941-45
	Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945		Nov. 9, 1946	Nov. 10, 1945	
NEW ENGLAND												
Maine.....	0	0	0	37	11	11	0	0	0	2	2	1
New Hampshire.....	4	1	0	1	0	2	0	0	0	0	0	0
Vermont.....	2	1	0	1	10	9	0	0	0	0	0	0
Massachusetts.....	14	14	9	48	121	145	0	0	0	4	3	1
Rhode Island.....	2	0	0	8	4	8	0	0	0	0	0	0
Connecticut.....	5	5	1	17	21	23	0	0	0	1	2	1
MIDDLE ATLANTIC												
New York.....	31	34	34	159	228	224	0	0	0	4	14	7
New Jersey.....	4	9	9	46	49	62	0	0	0	2	0	1
Pennsylvania.....	12	19	6	91	175	153	0	0	0	0	6	6
EAST NORTH CENTRAL												
Ohio.....	15	7	7	205	227	223	0	0	0	3	4	4
Indiana.....	20	2	1	68	63	53	1	0	0	4	0	0
Illinois.....	49	31	15	98	139	155	0	0	1	1	2	2
Michigan ²	27	8	6	108	124	105	1	0	0	0	3	2
Wisconsin.....	31	53	7	51	68	115	0	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota.....	27	10	10	28	44	49	0	0	0	0	1	1
Iowa.....	29	12	2	30	46	45	0	0	0	0	0	0
Missouri.....	31	5	3	30	37	39	0	0	0	4	1	2
North Dakota.....	11	0	0	1	7	7	0	0	0	0	0	0
South Dakota.....	7	0	0	2	4	12	0	0	0	0	0	0
Nebraska.....	14	6	3	7	14	15	0	0	0	0	0	0
Kansas.....	15	1	1	32	72	72	0	0	0	2	1	1
SOUTH ATLANTIC												
Delaware.....	0	0	0	7	5	5	0	0	0	0	2	0
Maryland ²	4	0	0	15	48	48	0	0	0	0	2	2
District of Columbia.....	2	1	0	0	16	15	0	0	0	2	0	0
Virginia.....	1	3	3	30	124	76	0	0	0	1	1	1
West Virginia.....	1	0	1	37	84	84	0	0	0	1	0	1
North Carolina.....	4	2	1	24	80	92	0	0	0	0	2	2
South Carolina.....	0	0	0	3	13	13	0	1	0	1	3	3
Georgia.....	4	2	1	18	22	31	0	0	0	1	1	3
Florida.....	4	6	1	6	0	5	0	0	0	1	1	1
EAST SOUTH CENTRAL												
Kentucky.....	2	1	5	56	76	53	0	0	0	1	0	3
Tennessee.....	5	7	2	30	51	55	2	0	0	4	1	2
Alabama.....	2	1	2	10	32	32	0	0	0	0	4	2
Mississippi ²	4	2	2	15	41	20	0	0	0	4	1	1
WEST SOUTH CENTRAL												
Arkansas.....	5	2	2	7	18	13	0	0	0	2	6	6
Louisiana.....	4	4	0	3	12	12	0	0	0	4	4	4
Oklahoma.....	13	3	3	10	11	23	0	0	0	1	1	1
Texas.....	26	9	9	33	116	55	3	0	0	10	19	10
MOUNTAIN												
Montana.....	1	0	1	1	14	17	0	1	0	0	2	0
Idaho.....	3	2	1	18	7	8	0	0	0	2	0	0
Wyoming.....	1	0	0	2	0	0	0	0	0	0	0	0
Colorado.....	5	5	2	12	28	28	0	0	0	0	1	1
New Mexico.....	1	1	1	4	10	10	0	0	0	0	4	2
Arizona.....	0	1	0	5	6	6	0	0	0	3	0	1
Utah ²	2	2	3	16	24	12	0	0	0	1	0	0
Nevada.....	0	0	0	0	0	3	0	0	0	0	0	0
PACIFIC												
Washington.....	9	13	6	36	58	52	0	0	0	2	1	0
Oregon.....	2	1	1	19	18	22	0	0	0	2	1	1
California.....	34	44	17	99	248	152	0	0	0	6	5	3
Total.....	489	330	243	1,584	2,626	2,609	7	2	5	76	101	98
45 weeks.....	23,427	12,672	11,622	99,257	153,910	118,943	317	304	663	3,678	4,466	4,990

¹ Period ended earlier than Saturday.

² Including paratyphoid fever reported separately, as follows: Massachusetts 2 (salmonella infection); Connecticut 1; New Jersey 1; Florida 1; Texas 3; Arizona 1; California 3.

³ Delayed report: Arkansas, poliomyelitis, week ended August 17, 1 case, included in cumulative total only.

Telegraphic morbidity reports from State health officers for the week ended Nov. 9, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Nov. 9, 1946							
	Week ended—		Me- dian 1941- 45	Dysentery			En- ceph- alitis, infectious	Rocky Mt. spot- ted fever	Typh- us fever, en- demic	Typh- oid fever	Un- du- lant fever
	Nov. 9, 1946	Nov. 10, 1945		Ame- bic	Bacil- lary	Un- speci- fied					
NEW ENGLAND											
Maine.....	11	15	16								1
New Hampshire.....		9	3								
Vermont.....	14	27	31								1
Massachusetts.....	141	168	168	1			1				2
Rhode Island.....	38	19	19								
Connecticut.....	26	74	66								1
MIDDLE ATLANTIC											
New York.....	211	357	357	8	6		2				4
New Jersey.....	132	177	173	1		1					1
Pennsylvania.....	180	254	250	1	2						
EAST NORTH CENTRAL											
Ohio.....	80	168	168								2
Indiana.....	37	26	21	1			3		1		7
Illinois.....	92	151	151	1				1	1		6
Michigan ¹	132	106	180		2						3
Wisconsin.....	184	61	143				1				3
WEST NORTH CENTRAL											
Minnesota.....	16	16	40	2							
Iowa.....	18	11	18								25
Missouri.....	8	4	5						1		
North Dakota.....	1		8								
South Dakota.....	2		3								
Nebraska.....	3	3	6								
Kansas.....	3	17	17						3		23
SOUTH ATLANTIC											
Delaware.....	8	3	1								
Maryland ¹	23	45	51								1
District of Columbia.....	15	6	6								
Virginia.....	43	35	50			21			1		3
West Virginia.....	14	17	16						1		
North Carolina.....	33	49	49	1				1		1	
South Carolina.....	30	72	34	1	13				4		
Georgia.....		11	18	1	2					17	1
Florida.....	26	2	16	1						6	1
EAST SOUTH CENTRAL											
Kentucky.....	19	113	88								
Tennessee.....	25	14	15	1	1	2	1		2	2	7
Alabama.....	2	11	9					1		5	
Mississippi ¹									3	3	7
WEST SOUTH CENTRAL											
Arkansas.....	21	12	16	1					7	1	1
Louisiana.....	1	1	4							1	
Oklahoma.....	5		3								
Texas.....	140	113	113	18	268	35			2	14	12
MOUNTAIN											
Montana.....	1	2	2								2
Idaho.....	2	12	4		2						
Wyoming.....	3	3	3								
Colorado.....	7	16	16								5
New Mexico.....	8	2	4	1	2						
Arizona.....	17	6	14			8					2
Utah ¹	7	13	13			1			2		1
Nevada.....		4									
PACIFIC											
Washington.....	25	26	26								
Oregon.....	6	10	10								
California.....	53	98	98	4	3		4		1	1	3
Total.....	1,863	2,359	2,367	44	301	68	12	3	29	51	125
Same week, 1945.....	2,359			51	319	95	10	4	8	196	80
Average, 1943-45.....	2,129			42	404	124	10	1	7	102	
45 weeks: 1946.....	85,663			2,095	14,303	5,670	568	555	813	3,064	4,593
45 weeks: 1945.....	109,239			1,714	22,298	9,725	574	460	640	4,481	4,138
Average, 1943-45.....	117,867		155,529	1,727	19,323	8,173	587	450	612	3,820	

¹ Period ended earlier than Saturday.

² 5-year median, 1941-45.

Anthrax: New York 1 case; New Jersey 1 case.

Leprosy: California 1 case.

WEEKLY REPORTS FROM CITIES¹

City reports for week ended Nov. 2, 1946

This table lists the reports from 85 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.

Division, State, and city	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Pollomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland.....	0	0	-----	0	1	0	0	1	6	0	0	6
New Hampshire:												
Concord.....	0	0	-----	0	7	0	0	1	1	0	0	-----
Vermont:												
Barre.....	0	0	-----	0	-----	0	0	0	1	0	0	2
Massachusetts:												
Boston.....	9	0	-----	0	11	1	10	7	12	0	0	21
Fall River.....	0	0	-----	0	-----	0	1	0	1	0	0	1
Springfield.....	0	0	-----	0	7	1	0	1	0	0	0	10
Worcester.....	0	0	-----	0	-----	0	7	4	3	0	0	14
Rhode Island:												
Providence.....	0	0	1	0	-----	0	1	0	3	0	0	14
Connecticut:												
Bridgeport.....	0	1	-----	0	1	0	1	0	0	0	0	1
Hartford.....	0	0	-----	0	2	0	0	0	1	0	0	2
New Haven.....	0	0	-----	0	4	0	0	0	2	0	0	1
MIDDLE ATLANTIC												
New York:												
Buffalo.....	2	0	-----	0	-----	1	3	0	10	0	0	6
New York.....	8	1	7	0	28	5	41	27	39	0	4	60
Rochester.....	0	0	-----	0	14	0	2	0	8	0	0	3
Syracuse.....	0	0	-----	0	-----	0	1	2	7	0	0	11
New Jersey:												
Camden.....	0	0	-----	0	-----	0	2	0	1	0	0	3
Newark.....	1	0	-----	0	2	0	5	1	10	0	0	17
Trenton.....	0	0	-----	0	3	0	3	0	2	0	0	-----
Pennsylvania:												
Philadelphia.....	1	0	4	1	7	6	16	2	20	0	0	30
Pittsburgh.....	1	0	1	1	61	0	6	3	10	0	0	3
Reading.....	0	0	-----	0	1	0	0	0	0	0	0	16
EAST NORTH CENTRAL												
Ohio:												
Cincinnati.....	3	0	-----	0	-----	0	2	34	21	0	0	2
Cleveland.....	3	0	-----	0	37	2	8	5	22	0	1	10
Columbus.....	2	0	-----	0	1	0	2	0	9	0	0	6
Indiana:												
Fort Wayne.....	0	0	-----	0	-----	0	1	0	0	0	0	-----
Indianapolis.....	0	0	-----	0	-----	1	4	3	8	0	0	5
South Bend.....	0	0	-----	0	1	0	0	0	1	0	0	-----
Terre Haute.....	0	0	-----	0	-----	0	2	1	0	0	0	-----
Illinois:												
Chicago.....	0	0	-----	0	2	1	20	20	22	0	0	51
Michigan:												
Detroit.....	2	0	-----	0	1	0	4	6	33	0	0	48
Flint.....	0	0	-----	0	1	0	6	0	3	0	0	3
Grand Rapids.....	0	0	-----	0	-----	0	2	0	0	0	0	4
Wisconsin:												
Kenosha.....	0	0	-----	0	-----	0	0	0	3	0	0	-----
Milwaukee.....	0	0	-----	0	6	0	1	5	9	0	0	74
Racine.....	0	0	-----	0	1	0	1	1	2	0	0	2
Superior.....	0	0	-----	0	-----	0	0	3	1	0	0	-----
WEST NORTH CENTRAL												
Minnesota:												
Duluth.....	0	0	-----	0	-----	0	0	4	1	0	0	1
Minneapolis.....	2	0	-----	0	2	0	5	2	5	0	0	-----
Missouri:												
Kansas City.....	0	0	-----	0	-----	0	3	1	4	0	0	1
St. Joseph.....	0	0	-----	0	1	0	0	0	0	0	0	-----
St. Louis.....	3	0	-----	0	-----	1	11	7	4	0	3	5

¹ In some instances the figures include nonresident cases.

City reports for week ended Nov. 2, 1946—Continued

Division, State, and City	Diphtheria cases	Etiology, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Polymyellitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha.....	0	0		0		0	1	4	1	0	0	1
Kansas:												
Topeka.....	0	0		0	1	0	1	0	2	0	0	
Wichita.....	0	0		0		0	3	2	8	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington.....	0	0		0		0	1	0	3	0	0	
Maryland:												
Baltimore.....	5	0		0	4	0	4	4	10	0	1	25
Cumberland.....	0	0		0	5	0	0	0	0	0	0	
Frederick.....	0	0		0	4	0	0	0	0	0	0	
District of Columbia:												
Washington.....	4	0		0	6	0	4	4	9	0	0	5
Virginia:												
Richmond.....	0	0		0	18	0	2	1	6	0	0	2
Roanoke.....	1	0		0		0	1	0	1	0	0	
West Virginia:												
Charleston.....	0	0		0		0	0	0	3	0	0	
Wheeling.....	0	0		0		0	0	0	2	0	0	
North Carolina:												
Raleigh.....	0	0		0		0	2	0	0	0	0	2
Wilmington.....	0	0		0		0	1	0	0	0	0	
Winston-Salem.....	0	0		0	42	0	0	0	9	0	0	4
South Carolina:												
Charleston.....	1	0	15	0		0	0	0	0	0	0	1
Georgia:												
Atlanta.....	0	0		0		0	2	0	0	0	0	
Brunswick.....	0	0		0		0	0	0	0	0	0	
Savannah.....	0	0		0	6	0	0	0	0	0	0	
Florida:												
Tampa.....	5	0		0		0	5	0	2	0	0	
EAST SOUTH CENTRAL												
Tennessee:												
Memphis.....	1	0		0	1	0	3	4	3	0	1	6
Nashville.....	0	0		0		0	4	0	0	0	0	1
Alabama:												
Birmingham.....	1	0	3	2	1	0	4	0	0	0	1	
Mobile.....	0	0		1		0	0	0	1	0	0	
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock.....	0	0		1		0	0	1	1	0	0	
Louisiana:												
New Orleans.....	2	0		0		0	1	3	2	0	1	1
Shreveport.....	0	0		0		0	1	0	0	0	0	
Texas:												
Dallas.....	1	0		1		0	4	0	3	0	0	
Galveston.....	1	0		0		0	0	0	0	0	0	
Houston.....	2	0		0		0	4	4	2	0	0	1
San Antonio.....	1	0		0		0	6	1	0	0	0	
MOUNTAIN												
Montana:												
Billings.....	0	0		0		0	0	0	0	0	0	
Great Falls.....	0	0		0		0	1	6	0	0	0	
Helena.....	0	0		0		0	0	0	0	0	0	
Missoula.....	0	0		0		0	2	0	0	0	0	
Idaho:												
Boise.....	0	0		0		0	1	1	0	0	0	
Colorado:												
Denver.....	3	0	4	0	2	1	8	2	17	0	0	3
Pueblo.....	0	0		0		0	2	0	0	0	0	
Utah:												
Salt Lake City.....	0	0		0	2	0	2	0	3	0	0	2

City reports for week ended Nov. 2, 1946—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Pollomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle.....	0	0		0	1	0	4	0	2	0	1	12
Spokane.....	0	0		0		0	3	7	0	0	0	
California:												
Los Angeles.....	7	0	6	0	4	1	1	7	17	0	0	6
Sacramento.....	0	0		0		0	1	0	0	0	1	
San Francisco.....	0	2	1	0	2	5	5	2	2	0	0	4
Total.....	72	4	42	7	301	20	255	188	399	0	14	516
Corresponding week, 1945.....	99		55	7	377		279		628	0	15	684
Average, 1941-45.....	92		71	18	398		328		635	0	19	760

* 3-year average, 1943-45.

* 5-year median, 1941-45.

Dysentery, amebic.—Cases: Buffalo 3; New York 1; Chicago 2; Los Angeles 1.*Dysentery, bacillary.*—Cases: Worcester 2; New York 1; Chicago 1; Charleston, S. C., 1; Los Angeles 3; San Antonio 2.*Dysentery, unspecified.*—Cases: San Antonio 11.*Tularemia.*—Cases: Omaha 2.*Typhus fever, endemic.*—Cases: Baltimore 2; Atlanta 1; Tampa 4; Nashville 1; Mobile 1; New Orleans 4; Houston 1; Los Angeles 2.

Rates (annual basis) per 100,000 population by geographic groups, for the 85 cities in the preceding table (estimated population, 1943, 33,848,600)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis meningococcus, case rates	Pneumonia death rates	Polymyellitis 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.....	23.5	2.6	2.6	0.0	86	5.2	52.3	36.6	78	0.0	0.0	188
Middle Atlantic.....	6.0	0.5	5.6	0.9	54	2.8	36.6	16.2	50	0.0	1.9	69
East North Central.....	6.1	0.0	0.0	0.0	31	2.5	32.5	47.8	82	0.0	0.6	126
West North Central.....	11.3	0.0	0.0	0.0	9	2.3	54.1	45.1	56	0.0	6.8	23
South Atlantic.....	26.5	0.0	24.8	0.0	141	0.0	36.4	14.9	74	0.0	1.7	65
East South Central.....	11.8	0.0	17.7	17.7	12	0.0	64.9	23.6	24	0.0	11.8	41
West South Central.....	20.1	0.0	0.0	5.7	0	0.0	45.9	25.8	23	0.0	2.9	6
Mountain.....	23.8	0.0	31.8	0.0	32	7.9	127.1	23.8	199	0.0	0.0	79
Pacific.....	11.5	3.3	11.5	0.0	12	9.9	23.0	26.3	35	0.0	3.3	36
Total.....	11.1	0.6	6.5	1.1	46	3.1	39.4	29.0	62	0.0	2.2	80

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended October 19, 1946.—During the week ended October 19, 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.....		6		41	178	32	22	43	164	486
Diphtheria.....		2	4	32	16	9			1	64
Dysentery:										
Amebic.....					1					1
Bacillary.....					1					1
German measles.....				2	6		1	4	4	17
Influenza.....					16				6	22
Measles.....		4		58	38	28	55	49	33	265
Meningitis, meningo- coccus.....				1	2				1	4
Mumps.....				9	141	15	30	24	97	316
Poliomyelitis.....	8	4	5	48	35	1				101
Scarlet fever.....		16	6	69	63	13	1	3	10	181
Tuberculosis (all forms).....		18	5	117	52	19	10	4	30	255
Typhoid and paratyphoid fever.....				8	4			1	2	15
Veneral diseases:										
Gonorrhea.....	2	21	24	90	146	43	26	33	59	444
Syphilis.....		9	18	145	91	9	14	6	34	326
Whooping cough.....		11		21	48	3	1	3	7	94

NORWAY

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

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	13	Mumps.....	162
Diphtheria.....	278	Paratyphoid fever.....	4
Dysentery, unspecified.....	39	Pneumonia.....	879
Encephalitis, epidemic.....	2	Poliomyelitis.....	60
Erysipelas.....	363	Rheumatic fever.....	157
Gastroenteritis.....	4, 285	Scabies.....	2, 781
Gonorrhea.....	932	Scarlet fever.....	407
Hepatitis, epidemic.....	294	Syphilis.....	126
Impetigo contagiosa.....	3, 141	Tuberculosis (all forms).....	380
Influenza.....	1, 118	Typhoid fever.....	2
Malaria.....	1	Whooping cough.....	2, 918
Measles.....	324		

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, UNRRA, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place	Janu- ary- August 1946	Septem- ber 1946	October 1946—week ended—			
			5	12	19	26
ASIA						
Burma..... C	1, 264	20				
Bassein..... C	29					
Moulmein..... C	76					
Rangoon..... C	23					
Ceylon..... C	81	1			2	
China:						
Anhwei Province..... C	2, 425	233				
Chekiang Province..... C	3, 580	731				
Formosa, Island of..... C	1, 556					
Fukien Province..... C	1, 032	140				
Foochow..... C	645	40		1 14		
Honan Province..... C	1, 388	225				
Hopeh Province..... C	273	19				
Hunan Province..... C	1, 330	497		1 13		
Hupeh Province..... C	323	12				
Ichang Province..... C	147					
Kiangsi Province..... C	1, 487	67		1 16		
Kiangsu Province..... C	3 8, 173	291				
Shanghai..... C	4, 388	171				
Kwangsi Province..... C	867	19				
Kwangtung Province..... C	4, 289	216				
Canton..... C	1, 948	22				
Hong Kong..... C	496	8	1			
Kweichow Province..... C	8					
Macao, Island of..... C		2				
Shantung Province..... C	19	2				
Szechwan Province..... C	111			1 3		
Yunnan Province..... C	17					
India..... C	58, 672	4, 461	810			
Calcutta..... C	1, 684	83	10	17	10	
Chittagong..... C	8					
Madras..... C	3					
India (French)..... C	1					
Indochina (French):						
Cambodia..... C	272					
Cochinchina..... C	836					
Bien Hoa..... C	24					
Chaudok..... C	21					
Mytho..... C	142					
Saigon-Cholon..... C	37					
Vinh-long..... C	7					
Japan..... C	990	206	2			
Korea (Chosen)..... C	11, 351					
Malay States..... C	234					
Manchuria..... C	18, 408	42				
Mongolia..... C		16				
Siam (Thailand)..... C	3, 314	82		93		
Bangkok..... C	1, 416	23		10	6	12
Straits Settlements: Singapore..... C	4 1					

¹ For the period Oct. 1-10, 1946.

² Includes imported cases.

³ From the beginning of the outbreak in April or May to approximately Sept. 1, 1946.

⁴ Imported.

PLAGUE

[C indicates cases; P, present]

Place	Jan- ary- August 1946	Septem- ber 1946	October 1946—week ended—			
			5	12	19	26
AFRICA						
Algeria.....	C	2				
Bechuanaland.....	C	10				
Belgian Congo.....	C	126	2	2		
British East Africa:						
Kenya.....	C	27	4	1		
Uganda.....	C	12				
Egypt.....	C	213	3			
Alexandria.....	C	125	1			
Ismailiya.....	C	27				
Matariya.....	C	12				
Port Said.....	C	16	2			
Suez.....	C	32				
Libya: Tripolitania—Plague-infected rats.....		1				
Madagascar.....	C	141	19			3
Union of South Africa.....	C	2				
ASIA						
Burma.....	C	1,102	9	13		
Bassein.....	C	22	1			
Rangoon.....	C	146		4	3	
China:						
Chekiang Province.....	C	568	102			
Formosa, Island of.....	C	9				
Fukien Province.....	C	4,343				
Amoy.....	C	307				
Foochow.....	C	1,385	14			
Kiangsi Province.....	C	257				
Kwantung Province.....	C	415				
Yunnan Province.....	C	200	76			
India.....	C	13,272	1,212	422		
Indochina (French): Cochinchina.....	C	48				
Java.....	C	32				
Manchuria.....	C	52				
Palestine.....	C	16				
Siam (Thailand).....	C	22	1			
EUROPE						
Great Britain: Malta, Island of.....	C	6				
Portugal: Azores.....	C	15				
NORTH AMERICA						
Canada, ¹						
SOUTH AMERICA						
Bolivia:						
Chuquisaca Department.....	C	1				
Santa Cruz Department.....	C	12				
Tarija Department—Plague-infected rats.....	P					
Brazil:						
Alagoas State.....	C	2				
Bahia State.....	C	20				
Ceara State.....	C	40				
Parahyba State.....	C	1				
Pernambuco State.....	C	34				
Ecuador:						
Chimborazo Province.....	C	2				
Loja Province.....	C	10	5			
Peru:						
Lambayeque Department.....	C	14				
Lima Department.....	C	19				
Piura Department.....	C	15				
Tumbes Department.....	C	1				
OCEANIA						
Hawaii Territory: Plague-infected rats.....		6				

¹ Includes 13 cases of pneumonic plague.² Pneumonic plague.³ For the month of October 1946.⁴ Includes 2 cases of pneumonic plague.⁵ The imported suspected case previously reported has not been confirmed. Under date of Sept. 14, 1946, plague infection was reported in a pool of fleas from squirrels in Alaska and in a pool of fleas from squirrels in Superb, Saskatchewan.⁶ Plague infection was also proved positive in Hawaii Territory on Feb. 5, 1946, in a pool of 29 rats, and on Apr. 13, 1946, in a pool of 54 fleas and 15 lice recovered from 7 rats and 22 mice. Under date of July 3, 1946, plague infection was reported in a pool of 50 fleas recovered from 7 rats and 46 mice, and in a pool of 51 fleas recovered from 10 rats. Under date of July 17, 1946, plague infection was reported in a pool of 48 fleas recovered from 22 rats, and in a pool of 56 fleas recovered from 33 rats. Under date of Sept. 12, 1946, plague infection was reported in a pool of 48 fleas recovered from 22 rodents. Under date of Oct. 9, 1946, plague infection was reported in a pool of 36 rats found on Sept. 10, 1946.

SMALLPOX

[C indicates cases; P, present]

Place	Jan- uary- August 1946	Septem- ber 1946	October 1946—week ended—			
			5	12	19	26
AFRICA						
Algeria.....	C	236	10		1 5	
Basutoland.....	C	46				
Bechuanaland.....	C	11				
Belgian Congo.....	C	2,300	611			
British East Africa:						
Kenya.....	C	723	56	15		
Nyassaland.....	C	318	90	9	23	60
Tanganyika.....	C	4,917	108			
Uganda.....	C	529	7	11		
Cameroon (French).....	C	68	1			
Dahomey.....	C	1,411	112		1 23	
Egypt.....	C	379	1			
Eritrea.....	C	2	21			
French Equatorial Africa.....	C	161				
French Guinea.....	C	821	31		1 4	
French West Africa: Dakar District.....	C	40				
Gambia.....	C	7				
Gold Coast.....	C	916	78			
Ivory Coast.....	C	1,161	158		1 17	
Liberia.....	P	40	40		47	57
Libya.....	C	137	164			
Madagascar.....	C	1				
Mauritania.....	C	1				
Morocco (French).....	C	1,862	2		1 2	
Morocco (Int. Zone).....	C	175				
Morocco (Spanish).....	C	5				
Mozambique.....	C	4				
Nigeria.....	C	5,501				
Niger Territory.....	C	436	16		1 1	
Rhodesia:						
Northern.....	C	357	36		6	
Southern.....	C	4	5		1	1
Senegal.....	C	95				
Sierra Leone.....	C	397	10			
Somaland (Italian).....	C	1				
Sudan (Anglo-Egyptian).....	C	51	1			1
Sudan (French).....	C	1,925	33		1 2	
Togo (French).....	C	213	19			
Tunisia.....	C	33				
Union of South Africa.....	C	204	P		P	
ASIA						
Arabia.....	C	1				
Burma.....	C	1,883	47			
Ceylon.....	C	347	11			1 92
China.....	C	814	114	41	33	61
India.....	C	56,515	863	171		
India (French).....	C	3				
Indochina (French).....	C	1,646				
Iran.....	C	24				
Iraq.....	C	5	3			
Japan.....	C	17,647	9	2		
Malay States.....	C	528	85	37	4 552	295
Palestine.....	C	2				
Rhodes, Island of.....	C	1				
Siam (Thailand).....	C	16,243	391		162	
Straits Settlements.....	C	51	17			
Syria and Lebanon.....	C	8				
Turkey (See Turkey in Europe).....						
EUROPE						
Czechoslovakia.....	C	24				
France.....	C	15				
Germany.....	C	1				
Gibraltar.....	C	3				
Great Britain:						
England and Wales.....	C	53				
Malta, Island of.....	C	10				
Scotland.....	C	2				
Greece.....	C	114				
Italy.....	C	483				
Portugal.....	C	46				
Spain.....	C	5	2			
Turkey.....	C	16				
Yugoslavia.....	C	1				

See footnotes at end of table.

SMALLPOX—Continued
[C indicates cases; P, present]

Place	Janu- ary- August 1946	Septem- ber 1946	October 1946—week ended—			
			5	12	19	26
NORTH AMERICA						
Canada.....	C	2				
Guatemala.....	C	55				
Honduras.....	C	4				
Mexico.....	C	371				
SOUTH AMERICA						
Argentina.....	C	68				
Bolivia.....	C	558	69			
Brazil.....	C	29	1	2		
Colombia.....	C	670	68			
Ecuador.....	C	47				
Paraguay.....	C	252				
Peru.....	C	408				
Uruguay.....	C	40				
Venezuela.....	C	832	26	22		
OCEANIA						
Hawaii Territory.....	C	1				

¹ For the period Oct. 1-10, 1946.

² Includes alastrim.

³ For 2 weeks.

⁴ Includes delayed reports.

⁵ Includes 1 imported case.

⁶ Imported.

⁷ Includes imported cases.

⁸ Off-shipping.

TYPHUS FEVER *

AFRICA						
Algeria.....	C	712	46		15	
Basutoland.....	C	7				
Belgian Congo ¹	C	2,268	93			
British East Africa: Kenya ¹	C	21				
Egypt.....	C	1,330	16			8
Eritrea.....	C	558	183	47	40	122
French West Africa: Dakar District.....	C	7				
Libya.....	C	83				
Morocco (French).....	C	3,630	46		13	
Morocco (Int. Zone).....	C	53				
Morocco (Spanish).....	C	25				
Nigeria.....	C	26				
Rhodesia, Northern.....	C	1				
Sierra Leone ¹	C	3	2			
Tunisia ¹	C	183				
Union of South Africa ²	C	225	P			
ASIA						
Arabia ¹	C	2				
Burma ¹	C	1	1			
China ¹	C	339	1			
India.....	C	298				
Indochina (French).....	C	61				
Iran.....	C	137				
Iraq.....	C	173	9	3	4	
Japan.....	C	30,659	67	12		
Malay States.....	C	3				
Palestine ¹	C	49				
Philippine Islands ¹	C		3			
Straits Settlements.....	C	1				
Syria and Lebanon.....	C	78				
Trans-Jordan.....	C	21				
Turkey. (See Turkey in Europe).						
EUROPE						
Albania.....	C	96				
Austria.....	C	34				
Belgium ¹	C	12	2			
Bulgaria.....	C	954	3			
Czechoslovakia ¹	C	785				
France ¹	C	15	1			
Germany.....	C	1,867				
Great Britain:						
England and Wales.....	C	1				
Malta and Gozo ¹	C	20	1			

* Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

For footnotes, see page 1755.

TYPHUS FEVER—Continued

[C indicates cases]

Place	Janu- ary- August 1946	Septem- ber 1946	October 1946—week ended—			
			5	12	19	26
EUROPE—continued						
Greece ²	C	385	132	10	11	
Hungary.....	C	819	29	11	34	15
Italy.....	C	16				
Netherlands ²	C	24				
Poland.....	C	3,187	47	28	17	
Portugal.....	C	6	3			
Rumania.....	C	7,557	96			
Spain.....	C	16	10			
Canary Islands.....	C	2				
Sweden ²	C	1				
Switzerland ²	C	1		1		
Turkey.....	C	1,131	40	25	15	9
Yugoslavia.....	C	2,890				12
NORTH AMERICA						
Costa Rica ²	C	61	4			
Cuba ²	C	20				
Guatemala.....	C	580				
Jamaica ²	C	31	4			1
Mexico.....	C	1,165				
Panama (Republic).....	C	2				
Puerto Rico ²	C	80	6	2		
Virgin Islands ²	C	3				
SOUTH AMERICA						
Argentina.....	C	5				
Bolivia.....	C	237	11			
Chile.....	C	380				
Colombia.....	C	295	69			
Curacao ²	C	1				
Ecuador ²	C	765	112			
Paraguay.....	C	1				
Peru.....	C	655				
Venezuela ²	C	88	5			
OCEANIA						
Australia ²	C	129	4			
Hawaii Territory ²	C	36		4	7	4

¹ For the period Oct. 1-10, 1946.² Includes cases of murine type.³ Murine type.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA							
Nigeria:							
Ibadan	C	1	—	—	—	—	—
Ilorin	C	1	—	—	—	—	—
Kafanchan	C	2	—	—	—	—	—
Ogbomosho	C	41	—	—	—	—	—
Sierra Leone: Pujehun	C	1	—	—	—	—	—
SOUTH AMERICA							
Bolivia: Santa Cruz Department	D	140	—	—	—	—	—
Brazil: Para State	D	1	—	—	—	—	—
Colombia:							
Caqueta Territory	D	1	—	—	—	—	—
Magdalena Department	D	1	—	—	—	—	—
Santander Department	D	6	—	—	—	—	—
Peru: San Martin Department	D	3	—	—	—	—	—
Venezuela:							
Tachira State	C	4	—	—	—	—	—
Trujillo State	C	4	—	—	—	—	—
Zulia State	C	4	—	—	—	—	—

¹ Diagnosis confirmed in 14 cases and 10 deaths.