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A Method to Determine Levels Of Immunization, Medical, and Nursing Services In Prenatal and Infant Care

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Accurate data on critical indices of public health accomplishment and activity, such as the level of immunization and medical and public health nursing services to expectant mothers and infants, are of immediate and extensive use to the conscientious health officer. Since data are not generally available on these services—particularly those provided by private practitioners—this study presents an apparently practical and reliable method for obtaining this information.

The method involves the interrogation of mothers of children 1 year old. Thus, the sample is the total of a specific group of children (age 12 and 13 months) and their mothers rather than a random sample of some other group, say all infants.

This age group of children is chosen because: (a) They have all had a 6 months' opportunity to be protected by immunization by usual practice, and public health teaching stresses protection by this time; (b) the first birthday is a transition period from infant to preschool care in public health thinking and an appropriate time for check-up by public health organizations; (c) the mothers can still be expected to recall the details of the pregnancy.

Interrogation is done by (1) mailing a friendly questionnaire with a stamped, addressed return envelope, (2) telephone follow-up, (3) home visit.

Specific Experience

A specific experience is described in connection with a public health survey in Philadelphia, a city of 2 million.

In 1948 there were 41,746 resident births in Philadelphia. It was determined that the births occurring during a 2-month period one year previous to the study would provide a significant sample. February and March resident births were used, numbering 6,248 (illegitimate

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births and deaths removed) which is 15 percent of the total resident births. The name of the child, the name and address of the mother and the race were obtained by using slips from an existing system whereby the Child Health Division, Department of Public Health, was notified of all births. It was necessary to go back to the death certificates to check these names against the infant deaths—a step considered very important since the names of several hundred deceased babies were removed. For convenience in handling the material all the slips were classified by ward and race. In order to have a statistical check of the method, the February and March births were handled as separate groups.

In designing the questionnaire,¹ it was realized there was much information which would be useful in planning maternal and child health services, but if the questionnaire were to accomplish the desired results of accurately gaging levels of protection, it must be short, to the point, and so worded as to get completely unbiased answers which could be easily indicated by the respondent. The questionnaire was intended to be friendly and to enlist the interest and assistance of the parent in checking the health of her child and improving the services for all children. The questionnaire was addressed personally to each mother, and the first name of the child was used in the text. Reducing the content of the questionnaire to one typewritten page was considered necessary.

The effectiveness of the selection of questions and wording of the questionnaire was tested in a pilot study which was sent to 100 mothers selected at random from the February 1948 birth listings. Thirty questionnaires were returned within a 2-week period. The answers indicated that persons filling in the data experienced no serious difficulty, so realizing that the returns from a pilot study would be smaller than could be expected from the larger study when community interest was aroused through radio and newspaper publicity, and interested groups, it was decided to proceed immediately with sending out the entire study.

The number of favorable comments regarding the study returned on the pilot-study questionnaires suggested that a high degree of cooperativeness might be expected. This was borne out as the study progressed to its conclusion.

Public Preparation

The project was distinctly a community undertaking. It was authorized by the executive committee of the survey and planned with the help of the technical committee. The executive committee of the survey, composed of leading health executives and citizens, supported it and authorized the necessary funds. The planning of the

¹ See appendix A.

project was a joint activity of the survey technical committee, composed of health and other social statisticians, and the survey staff. Members of the technical committee furnished advice and assistance throughout the project. The constructive criticisms of this committee were distinctly helpful. They were closely identified with each step of planning, execution, and interpretation.

The study was conducted with the knowledge and support of the pediatricians practicing in Philadelphia. The study was fully discussed with as many agencies concerned as possible and brought to the attention of the members of the Health Division of the Health and Welfare Council.

A large contribution to the success of the undertaking is credited to the well-organized publicity which was supplied under the direction of the Community Chest Publicity Division. Intensive newspaper and radio publicity was used effectively throughout the study. Human-interest news stories and progress reports were furnished to the foreign-language and small community newspapers as well as to the large metropolitan newspapers. Daily spot announcements timed to reach the housewife were carried on most radio stations. Professional publications carried explanations of the purpose and objectives of the study and urged cooperation.

Comparison between the pilot mailing of 100 questionnaires without publicity and the main mailing suggests that these efforts increased the mailed replies by about 30 percent. This is most important from the point of view of expense and time.

Follow-Up

Sixty-one percent of the 6,248 questionnaires mailed were returned within the first 3 weeks. At this point, a list of all questionnaires not returned was turned over to the Council on Volunteers of the Community Chest in order that an attempt could be made to reach each mother by telephone. Phone listings were found for about 10 percent of those sought. This was obviously a time-consuming task and required patience and skill since telephone listings were not always the same as appeared on the birth record. The mothers were approached on a friendly basis of interest in their children with an inquiry as to whether the questionnaire had been received. They were urged to return it. The most frequent reasons for not having sent it in were procrastination, delay in receiving mail through change of address or third person, and the misunderstanding that there was still reason for returning the sheet even though the child had been protected. The telephoning appeared to bring in about 6 percent of the returns.

After 3 weeks and with 33 percent of the questionnaires not returned, the home visits were begun. They were all made by public health

nurses who had duplicate questionnaires of those already mailed to the parent. The public health nurses of the Child Health Division of the Department of Public Health, the Visiting Nurse Society, and other voluntary agencies each took their share. Difficulty with changed addresses was the only serious problem encountered. Obviously the visits did not need to be sterile data-gathering events but often presented excellent opportunities for public health teaching, especially since the questionnaire served to establish good rapport. Particularly important was the chance to learn specifically why children were not protected.

Returns

Of the 6,248 questionnaires mailed, adequate returns were completed for 5,260 or 84 percent. Of the 982 parents who could not be located, 695 were white (13.8 percent of total white questionnaires) and 287 were Negro (24 percent of total Negro questionnaires). Only six parents were uncooperative. The 5,260 completed questionnaires represent 12.6 percent of the total 1948 resident births. The accuracy of the study could be increased if information were obtainable from the 982 questionnaires where the family could not be located at the address on the birth record, and efforts to obtain a new address were unsuccessful. However, in a period of postwar housing shortage and general unrest, the 982 (16 percent) not located is not considered excessively high.

Reliability

There are several considerations which are seen as making the special sampling study statistically accurate:

1. The group selected is truly a representative cross section of the city—all babies were the same age, and no racial, social, or economic group was excluded.

2. The data were collected with care. The device used for the collection of data, and the techniques employed, were not changed during the survey.

3. The large number of completed questionnaires, with no excessive numbers of any one question or part of a question omitted, indicated that the mothers were able to complete it with no apparent serious difficulty.

4. By sorting punched cards by month (March and February) rather than by totals for both months, we found that the questionnaires from the February group were filled in precisely in the same pattern of percent distributions as the March group. This is significant for it seems to indicate that the sample was large enough and that the respondents were truthful and reasonably reliable.

5. A rather subjective item which increased the confidence of the

staff in the data was their consistency. In the coding, punching, and tabulating no bizarre results were found. Some further evidence of the honest interest of the parents in the questionnaires was revealed in the number who spontaneously wrote notes of comment of all sorts. A study of these comments was a useful byproduct.

Since the pattern of service was of more importance to the staff and the potential users than the absolute levels of protection or service, the data are presented omitting those who could not be located. It is recognized that this probably results in a somewhat abnormally high rate of protection and private medical services and a somewhat low rate of public medical and nursing services. It would be possible to redistribute those not found, according to the distribution of the white and Negro pattern or some other method if desired.

Cost

The cost of such a project is difficult to assess. The cash outlay for this study on postage and mailing was about \$750. One clerk worked practically full time for 3 months at a cost of about \$450. The statistical analyst on the survey devoted an equivalent of about 2 months on this project for which approximately \$900 should be prorated. Telephoning was done by volunteers, and the radio time and newspaper space were donated, although the publicity staff of the Community Chest gave considerable time to these phases. Machine tabulation of results was supplied by the Department of Public Health's Division of Vital Statistics and interpretation was a function of the survey staff. The largest cost was the home visit follow-up. It was done by the public health nurses in this instance. About 2,000 visits were made which, if prorated at \$1.50 per visit, amounted to \$3,000. Considering all "hidden costs" and calculating the nursing visits as noted, the project may have cost about \$5,100. Note that this was in a city of 2 million spending \$4,300,000 on its public health program.

Machine Tabulation

In preparing the questionnaire, consideration was given to arranging the data in such a manner as to facilitate key punching for mechanical tabulation of results. In the upper right hand corner, the ward in which the parent lived was typed at the time the inside address was filled in. Sex was not considered as a factor in determining the level of immunization and was, therefore, not coded.

Completed questionnaires were examined and answers needing interpretation for the key punch operator were coded, and a serial number affixed for later reference if desired.

Since it could not be determined precisely what data, or combina-

tions of data, would be needed to properly interpret the results of the study, the use of mechanical tabulation immensely increased the usefulness of the answers obtained.

Interpretation

The questionnaire contained six major questions with nine sub-questions. The over-all results obtained for the City of Philadelphia are tabulated in table 1.

The results are extremely interesting.

Table 1. Results of special sampling study

Question 1: Has this child received vaccination against diphtheria?

	<i>Total</i>	<i>Percent</i>	<i>Negro</i>	<i>Percent</i>	<i>White</i>	<i>Percent</i>
Yes.....	4,066	77.3	536	59.0	3,530	81.1
No.....	1,139	21.7	358	39.4	781	18.0
Not stated.....	55	1.0	14	1.6	41	.9
	5,260	100.0	908	100.0	4,352	100.0

By whom?

Own doctor.....	3,101	76.3	81	15.1	3,020	85.6
Health center.....	610	15.0	309	57.6	301	8.5
Hospital.....	224	5.5	118	22.0	106	3.0
Other.....	6	.1	-----	-----	6	.2
Not stated.....	125	3.1	28	5.3	97	2.7
	4,066	100.0	536	100.0	3,530	100.0

Number of doses?

1.....	511	12.6	97	18.1	414	11.7
2.....	773	19.0	165	30.8	608	17.3
3.....	2,238	55.0	183	34.2	2,055	58.2
4.....	69	1.7	12	2.2	57	1.6
5.....	24	.6	6	1.1	18	.5
6.....	15	.4	4	.7	11	.3
7.....	1	.1	1	.1	-----	-----
8 or more.....	3	.1	3	.6	-----	-----
Not stated or unknown.....	432	10.6	65	12.2	367	10.4
	4,066	100.0	536	100.0	3,530	100.0

Question 2: Has this child received vaccination against smallpox?

Yes.....	2,802	53.3	361	39.8	2,441	56.1
No.....	2,330	44.3	519	57.1	1,811	41.6
Not stated.....	128	2.4	28	3.1	100	2.3
	5,260	100.0	908	100.0	4,352	100.0

By whom?

Own doctor.....	2,185	78.0	58	16.1	2,127	87.1
Health center.....	399	14.2	197	54.6	202	8.3
Hospital.....	147	5.3	78	21.6	69	2.8
Not stated.....	71	2.5	28	7.7	43	1.8
	2,802	100.0	361	100.0	2,441	100.0

Question 3: Who took care of you during this pregnancy?

Own doctor.....	3,692	70.2	144	15.9	3,548	81.5
Hospital.....	1,468	27.9	716	78.8	752	17.3
No one.....	49	.9	29	3.2	20	.5
Other.....	13	.3	4	.4	9	.2
Not stated.....	38	.7	15	1.7	23	.5
	5,260	100.0	908	100.0	4,352	100.0

How many months were you pregnant before you saw your doctor?

2.....	2,061	39.3	132	14.5	1,929	44.3
3.....	1,657	31.5	216	23.8	1,441	33.1
4.....	727	13.8	209	23.0	518	11.9
5.....	390	7.4	145	16.0	245	5.6
6.....	156	3.0	82	9.0	74	1.7
7.....	95	1.8	46	5.1	49	1.1
8.....	44	.8	20	2.2	24	.6
9.....	55	1.0	31	3.4	24	.6
10.....	2	.0	-----	-----	2	.0
Not stated.....	73	1.4	27	3.0	46	1.1
	5,260	100.0	908	100.0	4,352	100.0

Table 1. Results of special sampling study—Continued

About how many times did you see the doctor?						
	Total	Percent	Negro	Percent	White	Percent
Weekly.....	124	2.3	48	5.3	76	1.8
Monthly.....	4,794	91.1	733	80.7	4,061	93.3
Quarterly.....	6	.1	1	.1	5	.1
Less often.....	82	1.6	29	3.2	53	1.2
Not seen.....	30	.6	12	1.3	18	.4
Not stated.....	224	4.3	85	9.4	139	3.2
	5,260	100.0	908	100.0	4,352	100.0
Question 4: Were you visited by a public health nurse before this child was born?						
Yes.....	510	9.7	196	21.6	314	7.2
No.....	4,713	89.6	700	77.1	4,013	92.2
Not stated.....	37	.7	12	1.3	25	.6
	5,260	100.0	908	100.0	4,352	100.0
How many times did the nurse visit you?						
1.....	152	29.8	43	21.9	109	34.7
2.....	84	16.5	36	18.3	48	15.3
3.....	73	14.3	24	12.3	49	15.6
4.....	76	14.9	36	18.4	40	12.7
5.....	41	8.0	27	13.8	14	4.5
6.....	30	5.9	12	6.1	18	5.7
7.....	23	4.5	9	4.6	14	4.5
8 or more.....	28	5.5	7	3.6	21	6.7
Not stated.....	3	.6	2	1.0	1	.3
	510	100.0	196	100.0	314	100.0
Question 5: Did a public health nurse visit you in your home after this child was born?						
Yes.....	3,978	75.6	829	91.3	3,149	72.4
No.....	1,242	23.6	70	7.7	1,172	26.9
Not stated.....	40	.8	9	1.0	31	.7
	5,260	100.0	908	100.0	4,352	100.0
How old was this child at the first visit?						
Within first 2 weeks.....	639	16.1	233	28.1	406	12.9
Within first month.....	1,768	44.4	372	44.9	1,396	44.3
Within first 3 months.....	1,325	33.3	191	23.0	1,134	36.0
Within first 6 months.....	155	3.9	17	2.1	138	4.4
Within second 6 months.....	13	.3	7	.8	6	.2
Not stated.....	78	2.0	9	1.1	69	2.2
	3,978	100.0	829	100.0	3,149	100.0
How many visits were there?						
1.....	1,952	49.1	232	28.0	1,720	54.6
2.....	746	18.8	189	22.8	557	17.7
3.....	510	12.8	145	17.5	365	11.6
4.....	282	7.1	80	9.6	202	6.4
5.....	135	3.4	51	6.2	84	2.7
6.....	100	2.5	38	4.6	62	2.0
7.....	29	.7	6	.7	23	.7
8 or more.....	104	2.6	60	7.2	44	1.4
Not stated.....	120	3.0	28	3.4	92	2.9
	3,978	100.0	829	100.0	3,149	100.0
Question 6: About how many times has this child received regular medical check-ups?						
None.....	115	2.2	57	6.3	58	1.3
1 to 5.....	796	15.1	295	32.5	501	11.5
6 to 10.....	1,047	19.9	211	23.2	836	19.2
11 to 15.....	2,948	56.1	270	29.7	2,678	61.6
16 to 20.....	90	1.7	7	.8	83	1.9
22 to 25.....	43	.8	8	.9	35	.8
28 to 52.....	18	.3	6	.7	12	.3
Not stated.....	203	3.9	54	5.9	149	3.4
	5,260	100.0	908	100.0	4,352	100.0
By whom?						
Own doctor.....	3,852	73.2	160	17.6	3,692	84.8
Hospital.....	462	8.8	285	31.4	177	4.1
Health center.....	525	10.0	305	33.6	220	5.1
Own doctor, hospital, health center.....	196	3.7	67	7.4	129	2.9
Not stated.....	225	4.3	91	10.0	134	3.1
	5,260	100.0	908	100.0	4,352	100.0

From question 1 of table 1, it can be calculated that the net level of protection against diphtheria—those known to have had two or more doses—is 63 percent among white children and 41 percent among Negro children. Of great importance in planning public health services is the observation that 86 percent of white children received this service from their private physician but only 15 percent of Negro children did. Conversely 58 percent of Negro children were immunized in health centers and only 8.5 percent of white children.

Table 2. Results of sample study by wards

Wards	Questionnaires							Protection against diphtheria			Protection against smallpox					
	Total mailed			Not delivered			Returned uncooperative *	Completed			Yes	No	Not stated	Yes	No	Not stated
	Total	White	Negro	Total	White	Negro		Total	White	Negro						
1.	86	83	3	7	6	1	79	77	2	65	14	46	33	1		
2.	34	23	11	6	4	2	28	19	9	23	5	20	7	1		
3.	32	22	10	8	4	4	24	18	6	19	5	17	7	3		
4.	13	8	5	3	1	2	10	7	3	8	2	7	3	1		
7.	51	32	19	10	7	3	41	25	16	29	12	23	18	1		
8.	14	14	0	4	4	0	10	10	0	8	2	5	5	1		
11.	15	7	8	4	1	3	11	6	5	8	3	4	7	1		
12.	32	19	13	9	1	8	23	18	5	17	4	14	7	2		
13.	43	13	30	8	1	7	35	12	23	19	16	16	19	1		
14.	50	10	40	7	2	5	43	8	35	25	17	17	25	1		
15.	169	139	30	60	50	10	109	89	20	84	25	62	45	2		
16.	24	21	3	3	3	0	21	18	3	14	7	13	8	1		
17.	33	33	0	7	7	0	26	26	0	19	6	12	14	1		
18.	71	71	0	10	10	0	61	61	0	41	20	18	41	2		
19.	156	146	10	38	36	2	118	110	8	80	38	51	64	3		
20.	150	73	77	39	20	19	111	53	58	73	38	50	59	2		
21.	141	137	4	14	12	2	127	125	2	103	23	53	72	2		
22.	326	283	43	32	30	2	293	252	41	238	45	160	120	13		
23.	180	173	7	24	22	2	156	151	5	129	24	89	60	7		
24.	214	84	130	58	19	39	156	65	91	101	53	74	78	4		
25.	116	116	0	18	18	0	98	98	0	66	32	42	54	2		
26.	195	173	22	24	21	3	171	152	19	146	24	112	56	3		
27.	87	77	10	25	22	3	61	54	7	51	7	39	20	2		
28.	168	104	64	29	15	14	138	88	50	98	39	77	58	3		
29.	105	61	44	25	10	15	80	51	29	51	29	34	46	1		
30.	80	14	66	18	1	17	62	13	49	39	23	28	33	1		
31.	78	77	1	8	8	0	70	69	1	42	28	26	42	2		
32.	227	55	172	61	12	49	166	43	123	113	52	83	79	4		
33.	194	192	2	21	20	1	173	172	1	137	31	79	88	6		
34.	139	119	20	16	14	2	122	104	18	103	19	65	51	6		
35.	445	443	2	36	35	1	408	407	1	352	55	237	158	13		
36.	181	114	67	24	11	13	157	103	54	98	54	70	82	5		
37.	63	50	13	19	12	7	44	38	6	34	10	23	19	2		
38.	284	269	15	46	44	2	238	225	13	192	41	120	111	5		
39.	189	180	9	17	17	0	172	163	9	151	17	40	46	6		
40.	145	131	14	16	13	3	129	118	11	86	43	60	65	4		
41.	191	191	0	15	15	0	176	176	0	151	24	101	70	5		
42.	140	140	0	13	13	0	127	127	0	112	14	84	40	3		
43.	123	120	3	18	18	0	105	102	3	78	26	56	46	3		
44.	118	49	69	32	14	18	85	34	51	52	31	30	52	3		
45.	117	116	1	12	12	0	105	104	1	77	28	48	55	2		
46.	242	239	3	46	46	0	196	193	3	176	18	124	70	2		
47.	110	37	73	22	9	13	88	28	60	47	40	31	57	1		
48.	110	102	8	16	15	1	94	87	7	70	24	59	35	1		
49.	138	135	3	12	10	2	126	125	1	110	15	85	40	1		
50.	157	157	0	9	9	0	148	148	0	138	10	97	48	3		
51.	141	115	26	12	9	3	129	106	23	102	27	53	75	1		
52.	131	86	45	21	12	9	110	74	36	91	19	66	42	2		
Total	6,248	5,053	1,195	982	695	287	6,520	4,352	908	4,066	1,139	552	2,330	128		

*All white.

Table 2. Results of sample study by wards—Continued

Wards	Care during pregnancy					Visit by public health nurse before child was born			Visit by public health nurse after child was born			From whom child received check-ups					
	Own doctor	Hospital	No one	Other	Not stated	Yes	No	Not stated	Yes	No	Not stated	Own doctor	Hospital	Health center	Own doctor, hospital, or health center	Not stated	
1	46	33				20	57	2	73	6		57	9	5	2	6	
2	11	17				9	19		27		1	16	4	6	1	1	
3	18	5	1			4	20		21	3		16		6	2		
4	2	7	1			5	5		10	5		3	4	2		1	
7	22	16		1	2	6	34	1	28	13		20	7	12	2		
8	8	2				2	3		10	3	1	8	1	1			
11	2	9				5	6		11			1	2	7		1	
12	10	10	2	1		3	18	2	23			13	2	6	1		
13	12	20	3			5	29	1	32	3		13	5	13	1	3	
14	11	30	2			10	33		41	2		11	14	14	3		
15	48	59	2			8	101		99	9	1	71	16	11	7	4	
16	11	9	1			3	16	2	20	1		12	3	5	1		
17	16	10				1	25		23	3		19	3	2			
18	47	14				4	57		55	6		49	1	6	4	1	
19	76	39	3			5	113		112	6		79	16	3	9	11	
20	42	67	1	1		13	98		99	11	1	48	35	16	4	8	
21	106	18	1		2	17	110		116	11		102	2	16	6	1	
22	233	55	1	1	3	23	269	1	220	71	2	221	6	44	9	13	
23	139	13	1	1	2	3	153		134	22		134	1	10	2	9	
24	68	82	4		2	24	131	1	142	14		71	38	22	10	15	
25	72	23		2	1	3	94	1	79	18	1	80	5	6	4	3	
26	105	61	1	1	3	32	139		152	17	2	119	16	25	10	1	
27	49	12				2	59		24	36	1	46	5	3	5	2	
28	68	67	1		2	20	118		112	26		78	25	20	4	11	
29	35	38	3	2	2	6	74		75	5		53	11	11	2	3	
30	17	43	2			12	50		58	3	1	17	14	22	5	4	
31	45	22	2	1		5	65		65	5		51	6	5	5	3	
32	53	110	2		1	29	134	3	133	32	1	55	37	46	8	20	
33	132	39			2	7	166		153	18	2	133	8	17	7	8	
34	85	36			1	13	109		63	55	4	103	9	3	1	6	
35	390	15			3	13	393	2	134	272	2	384	1	10	4	9	
36	69	78	3		7	20	131	6	128	28	1	75	27	34	8	13	
37	29	15				3	41		38	5	1	30	4	5	1	4	
38	187	49		2		22	215	1	203	33	2	204	16	9	7	2	
39	120	51	1			34	136	2	165	5	2	133	9	19	7	4	
40	97	28	3		1	16	113		104	24	1	98	4	15	4	8	
41	163	13				23	152	1	77	95	4	155	3	7	5	6	
42	120	7				5	121	1	109	16	2	119		4	2	2	
43	88	15	2			10	95		92	12	1	87	6	4	1	7	
44	26	57	2			8	76	1	71	13	1	35	16	10	8	1	
45	90	15				2	101	2	64	41	1	99	3	1	1	1	
46	182	14				8	187	1	90	105	1	182	6	1	4	3	
47	30	57	1			11	77		74	14		27	32	13	9	7	
48	68	23	1		2	11	83		62	30	2	67	6	13	4	4	
49	119	7				3	122	1	98	28		120	4		2		
50	141	7				3	145		108	40		140	2		4	2	
51	108	20	1			13	113	3	105	23	1	111	6	3	3	6	
52	76	31	1		2	8	100	2	53	56	1	86	12	6	3	3	
Total	3,692	1,468	49	13	38	510	4,713		37	3,978	1,242	40	3,851	462	525	196	22

The question about smallpox vaccination added very little new information except that it showed the level of vaccination was slightly lower than the level of diphtheria immunization. In this instance the question could have been omitted from the questionnaire without great loss.

The pattern seen in diphtheria protection was repeated for medical antepartum services and for medical check-ups of infants. Thus, in general, white mothers and their infants received extensive preventive services primarily from their own doctors while Negro mothers and

their babies received much less both in quantity and quality, and the services were provided primarily by health centers and hospitals.

Public health nursing services present a different pattern, which is the result of case selection by the agency presumably on the basis of need rather than from the choice of the parent. Ninety-one percent of Negro infants and 76 percent of white infants were visited at least once by a public health nurse. Only 7 percent of white mothers and 22 percent of Negro mothers received prenatal care. Both Negro mothers and infants were visited more frequently and earlier than those in white families. A great many of the visits to both mothers and infants were single visits. How valuable single visits are could not be answered by this study.

Study of the critical services on a basis other than racial selection can be illustrated by two examples:

Wards 17, 18, 25, 31 (table 2) were grouped and compared with wards 42 and 50 combined, and with the total Negro experience. There was a statistically significant difference in level of protection against diphtheria between the presumed more prosperous white

Table 3. Level of protection of 1,468 children whose mothers received prenatal care from hospitals

Question 1: Has this child received vaccination against diphtheria?

	Total	Percent	Negro	Percent	White	Percent
Yes.....	901	61.4	429	59.9	472	62.8
No.....	547	37.3	275	38.4	272	37.2
Not stated.....	20	1.3	12	1.7	8	1.0
	1,468	100.0	716	100.0	752	100.0

By whom?

Own doctor.....	251	27.9	30	7.0	221	46.8
Health center.....	784	20.4	110	25.6	74	15.7
Hospital.....	425	47.2	267	62.2	158	33.5
Other.....	4	.4			4	.8
Not stated.....	37	4.1	22	5.2	15	3.2
	901	100.0	429	100.0	472	100.0

Visited by public health nurse before child was born?

Yes.....	309	21.1	164	22.9	145	19.3
No.....	1,144	77.9	545	76.1	599	79.6
Not stated.....	15	1.0	7	1.0	8	1.1
	1,468	100.0	716	100.0	752	100.0

Visited by public health nurse after child was born?

Yes.....	1,333	90.8	663	92.6	670	89.1
No.....	125	8.5	46	6.4	79	10.5
Not stated.....	10	.7	7	1.0	3	.4
	1,468	100.0	716	100.0	752	100.0

Regular medical check-ups by whom?*

Own doctor.....	431	29.4	65	9.1	366	48.7
Hospital.....	404	27.5	262	36.6	142	18.8
Health center.....	391	26.6	262	36.6	129	17.2
Own doctor, hospital, or health center.....	123	8.4	55	7.7	68	9.0
Not stated.....	119	8.1	72	10.0	47	6.3
	1,468	100.0	716	100.0	752	100.0

*The answers to this question should be studied in relation to question 6 in table 1 in order that "not stated" totals can be adjusted.

children and the less advantaged. There was no difference between the latter group and the Negro experience.

In table 3 is recorded the results of a partial study of the mothers who received prenatal care by the hospitals and hence were presumed to have been screened by a means test. The white mothers in this group received three times the public health nursing services of the total white mothers, but their children were significantly less well protected against diphtheria than the total white infants. Half of these children received the service by hospitals in contrast to only 5 percent of all white children. Another pertinent detail is that, while all these mothers depended on the hospital for prenatal care, 47 percent of white parents obtained immunization and check-ups for the baby from their own doctor. No significant differences were observed between the Negroes in this group and the total Negroes.

The pattern of use of the present facilities of the city can be outlined. The present health centers do not see more than 7 percent of all white infants and about a third of the Negro infants. Hospitals furnish practically all the public prenatal medical services. The hospitals provide about the same amount of medical supervision of infants as the health centers, but they immunize fewer.

A detailed analysis of the data by proposed health center service areas contributed significantly to the development of that program. Table 4 and the chart illustrate the manner in which these data were studied. The use of the "minimum level of protection" and "maximum level of protection" and the "standard error" in table 4 was considered of importance because of the inability to locate 15 percent

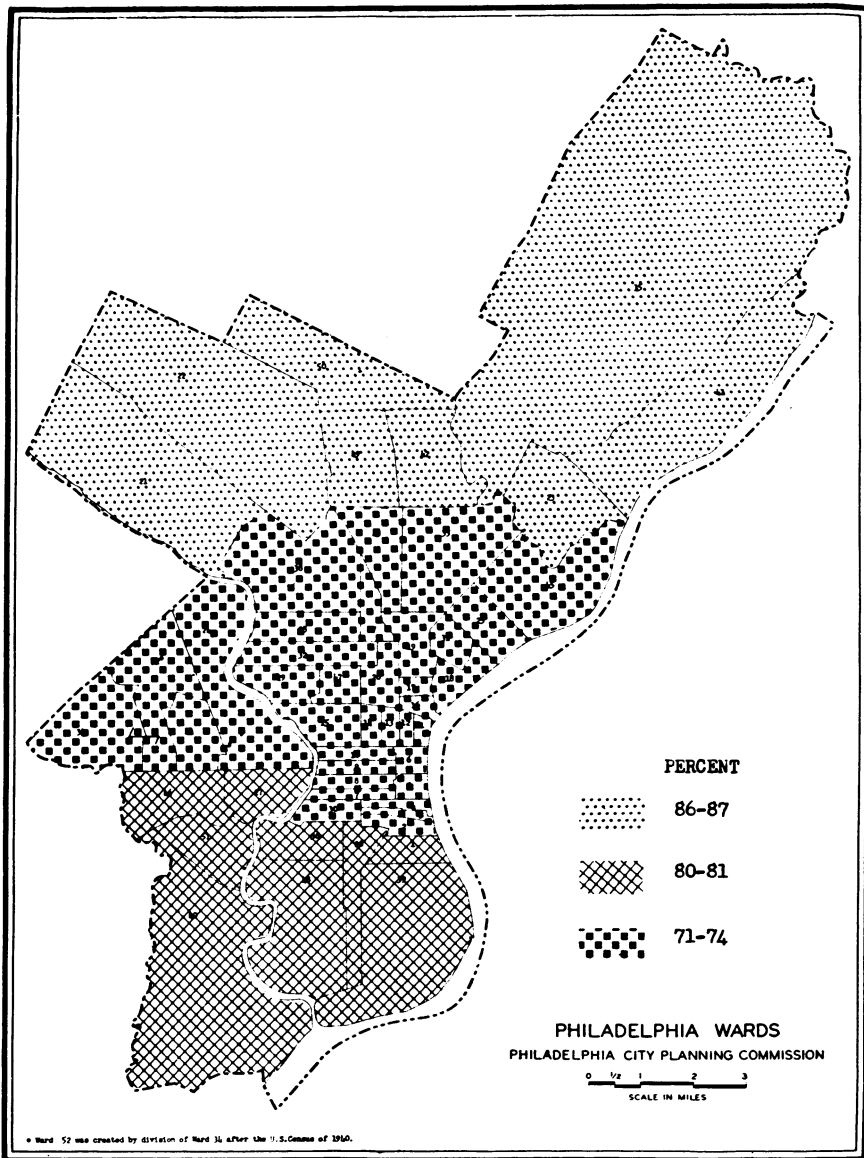
Table 4. Results of sample study by proposed health center service areas for diphtheria

Areas	Wards	Questionnaires mailed	Yes	No	Not stated	Undelivered ¹	Minimum level of protection ²	Sample level	Standard error	Maximum level of protection ³
Northeast.....	23, 35, and 41.....	816	632	103	5	76	77.5	0.86	Percent 0.2 .6	87.4
Kensington.....	43, 33, 45, 25, 37, 19, 31, 18, 17, 20, and 16.	1,126	661	264	7	194	58.7	.71		76.6
Germantown.....	21, 22, 50, 49, and 42.	902	701	107	13	81	77.7	.87	.4 .8	88.1
North Philadelphia, west.	38, 28, 32, 29, and 47.	894	501	201	8	184	56.0	.71		77.5
Central City, Phila- delphia.	15, 14, 13, 12, 11, 10, 9, 6, 8, 7, 5, 30, 2, 3, and 4.	533	279	114	3	137	52.3	.71	1.0	78.6
West Philadelphia, north.	24, 34, 52, and 44....	601	347	122	4	128	57.7	.74	.9	79.7
West Philadelphia, south.	46, 27, 51, and 40....	615	415	95	5	100	67.5	.81	.7	84.6
South Philadelphia.	36, 26, 48, 1, and 39..	761	530	133	10	88	69.6	.80	.5	82.5
Total .....	.....	6,248	4,066	1,139	55	988	65.1	.78	.2	81.8

¹ Uncooperative included with undelivered.

² Assuming "not stated" and "undelivered" were "no."

³ Assuming "not stated" and "undelivered" were "yes."



Level of protection of 1-year-old children against diphtheria by percent.

of the sample which was somewhat concentrated in disadvantaged sections. In this table the standard error is used to express the magnitude of the variation of the true percent protected from the percent obtained in the sample which results from failure to obtain response from the total population to whom questionnaires were mailed. It assumes (1) that people who did not respond differ in no way from people who did; (2) that the whole population under consideration is the same as the population of the 2-month period; (3)

that all answers are truthful. In an evaluation of the foregoing assumptions, it is very likely that the people who did not respond differ from those who did, and the true percent is probably lower than that obtained; however, without applying the standard error to the levels found in the study, the true percent can be no lower than the minimum level of protection expressed in the table, nor by the same line of reasoning, higher than the maximum level expressed in the table. Similar tables were prepared for nursing services (table 5) which provided possible ranges as indicated above.

It is recognized that these analyses barely scratch the surface of the potential contributions these data could make. Detailed specific data are at hand for exploring why some children are not immunized, the values of infrequent routine public health nursing visits, and relationships of public health services and medical care.

Table 5. Results of sample study by proposed health center service areas by nursing visits

Areas	Visited by public health nurse before child was born									
	Wards	Questionnaires mailed	Yes	No	Disposition not stated	Undelivered	Minimum visits ¹	Maximum visits ²	Sample level	Standard error
Northeast	23, 35, and 41	816	39	698	3	76	4.8	14.5	0.05	<i>Percent</i> 0.06
Kensington	43, 33, 45, 25, 37, 19, 31, 18, 17, 20, and 16	1,126	56	871	5	194	5.0	22.6	.06	.09
North Philadelphia, west	38, 28, 32, 29, and 47	894	88	618	4	184	9.8	30.9	.12	.6
Germantown	21, 22, 42, 49, and 50	902	51	767	3	81	5.7	15.0	.06	.06
Central City Philadelphia	15, 14, 13, 12, 11, 10, 9, 6, 8, 7, 5, 30, 2, 3, and 4	533	67	325	4	137	12.6	39.0	.17	1.0
West Philadelphia, north	24, 34, 44, and 52	601	53	416	4	128	8.8	30.8	.11	.7
West Philadelphia, south	27, 40, 46, and 51	615	39	472	4	100	6.3	23.3	.08	.5
South Philadelphia	1, 26, 36, 39, and 48	761	117	546	10	88	15.4	28.3	.18	.5
Total .....	.....	6,248	510	4,713	37	988	8.2	24.6	.10	.04

Areas	Visited by public health nurse after child was born								
	Yes	No	Disposition not stated	Undelivered	Minimum visits ¹	Maximum visits ²	Sample level	Standard error	
Northeast	345	389	6	76	42.3	52.3	0.47	<i>Percent</i> 0.6	
Kensington	800	126	6	194	71.0	88.8	.86	.5	
North Philadelphia, west	597	110	3	184	66.8	87.7	.84	.6	
Germantown	651	166	4	81	72.2	81.6	.80	.4	
Central City Philadelphia	353	39	4	137	66.2	92.7	.90	.8	
West Philadelphia, north	329	138	6	128	54.7	77.0	.70	1.0	
West Philadelphia, south	323	188	4	100	52.5	69.4	.63	.9	
South Philadelphia	580	86	7	88	76.2	88.7	.87	.5	
Total	3,978	1,242	40	988	63.7	80.1	.76	.2	

¹ Assuming "not stated" and "undelivered" were "no."

² Assuming "not stated" and "undelivered" were "yes."

One of the unexpected contributions to the study which was not anticipated was the large number of unsolicited comments received. A number of answers indicated that persons could not afford the services of a private physician and had to rely on health centers and hospital clinics for maternal and child hygiene care. Where health centers were available and were used, general satisfaction with their services was expressed. A number of answers indicated concern that health centers were not available. There was some evidence of a need for community education regarding clinic locations and services in areas where well-baby clinics are in operation. Generally, the comments indicated an interest in the health facilities provided and a readiness to use them.

Discussion

The method reported in this paper seemed particularly useful in overcoming a major handicap in the evaluation of public health services by securing reasonably accurate data concerning the services of private physicians. It should be emphasized that data regarding services provided by private physicians were obtained in the following details: (a) percentage of prenatal services provided; (b) month prenatal services were begun; (c) percentage of regular check-ups of infants; (d) frequency of regular check-ups of infants; (e) percentage of immunizations; (f) details of all of these services by color and ward.

Such questions have been the concern of health officers for years. They have been important items in the Evaluation Schedule,² but they have also been among the most difficult to answer and have commonly been reported as "data lacking." One of the methods attempted has been to ask private physicians to report immunizations, visits of well babies, etc. This has rarely produced reliable data and has proved to be a burden. The periodic application of the method of this study would seem to make any such permanent reporting system unnecessary.

The method also appears to be of use in obtaining more accurate data regarding the percentages of expectant mothers and infants served by the public health facilities, since it investigates a specifically identified group. Comparison of vital statistics and activity reports permits an approximation of the percentage such as the number of infants served related to the number of births of the period involved. It has rarely been possible, however, to relate the service data precisely to any one group of infants, since some served were born in the year previous and some of the current group will be served in the year following. The method of this study overcomes this difficulty.

There would seem to be real values in the periodic application of

² Committee on Administrative Practice: Evaluation Schedule, American Public Health Association, 1790 Broadway, New York 19, N. Y., 1947.

this method. Experience with the Evaluation Schedule has indicated that about every 3 years is a practical frequency to explore the basic indices. However, special indices such as changes by ward, color, or among special groups may be more sensitive to changes of practice and it may thus be indicated to all or part of such a study oftener than every 3 years.

Summary

1. A sampling method is presented of obtaining essential data regarding such critical indices of public health as level of immunization and medical and public health nursing services to antepartum mothers and to infants.

2. The method appears to have reasonable and useful reliability, particularly with regard to patterns of practice.

3. In the city studied by the method, white mothers and their infants received extensive preventive medical services, primarily from their own doctors, while Negro mothers and their infants received much less both in quality and quantity, and the services were provided mostly by health centers and hospitals.

4. About 10 percent of all mothers received antepartum public health nursing services—22 percent of Negro mothers and 7 percent of white mothers. Seventy-six percent of all mothers and infants received public health nursing services after the baby was born (90 percent of Negroes and 72 percent of whites) with nearly half the service in the first month. More than three nursing visits were uncommon and in one-half the families there was a single visit. Preliminary study showed some selection of cases on the basis of need. No correlation was found between public health nursing visits and level of immunization.

APPENDIX A

Sample of Questionnaire

Dear Mrs. :

Since is now about one year of age we wish to offer our congratulations, and we hope that this first year has been a healthful one for both of you.

We are making a study to learn how well health services are being provided in Philadelphia and how mothers and children can best be served. You can be of assistance as the mother of a one-year-old by supplying us with some information. The Department of Public Health wishes to continue to play its part in improving health services for children. Would you please fill in the questions listed below and return this letter to us in the enclosed envelope?

1. Has this child received *vaccination* against: (Check correct answer)

Diphtheria If yes, by whom? Own Doctor --- Hospital ---
Yes No

Health Center ---- How many doses?

2. Has this child received *vaccination* against: (Check correct answer)
 Smallpox ----- If yes, by whom? Own Doctor ---- Hospital ----
 Yes No
 Health Center -----
3. Who took care of you during this pregnancy? (Check one).
 Your Own Doctor ---- Hospital ---- No One -----
 How many months were you pregnant before you saw your doctor? 2 3 4
 5 6 7 8 9 10 (Circle one).
 About how many times did you see the doctor? -----
4. Were you visited by a public health nurse (in a blue or gray uniform) *before* this
 child was born? ----- If yes, how many times did the nurse visit
 Yes No
 you? -----
5. Did a public health nurse visit you in your home *after* this child was born?
 ----- If yes, how old was this child at the first visit? -----
 Yes No
 How many visits were there? -----
6. About how many times has this child received regular medical check-ups? -----
 By Whom? Own Doctor ---- Hospital ---- Health Center -----

This information will be used to improve health services for the children in Philadelphia. It will be appreciated if you return the filled-in questionnaire to us promptly.

Very sincerely yours,

P. S. If you have any suggestions for the improvement of child-care services, will you please write them on the other side of this page.

Activities of a Mental Health Nurse

By ADELE L. HENDERSON, R. N.*

A mental health nurse has been included as a member of the staff of the Prince Georges County Mental Health Clinic, augmenting the traditional team of psychiatrist, psychologist, and psychiatric social worker. It was considered important that the nurse have education and experience in both public health and psychiatric nursing, especially since each staff member had the responsibility of exploring his own profession to see how he might best cooperate with the other members in planning community mental health activities.

The nurse chiefly has served in a liaison capacity for the clinic in its relationship with the existing community nursing groups in health activities. Conferring with the public health nurses regarding patients referred to the mental health clinic was one of her preliminary steps in this role. She discovered that nurses wanted to discuss how they might help the patient and the patient's family during and after the clinic contact. One conference with a nurse disclosed a mother's inability to accept emotionally her child's mental retardation. As the nurse talked about this family, she began to see that seeking consultation from several psychological clinics (subsequent to the mother's contact with the mental health clinic) was a necessary process rather than the mother's intent to be "uncooperative". By realizing what this experience meant to the mother, the nurse was able to understand why this mother needed more time to accept her child's limitations.

The mental health nurse took part in the in-service educational program of the county health department which was planned around nursing relationships. Here the more formalized method of lecture or report, often the procedure in such staff meetings, was modified. A brief report on reading material was used as an approach to stimulate informal discussion by the group. Discussions centered around health problems which the nurses considered important and the community resources they used to meet these problems. Out of discussions, group and individual, grew mutual recognition of areas where mental health activities might be effective.

Prenatal and child health conferences have long been identified with preventive public health measures. Accordingly, thought was given to tools that might be used as preventive mental health services

*Prince Georges County Mental Health Clinic. This is the third in a series of articles about the Prince Georges County Mental Health Clinic, a demonstration sponsored jointly by the Public Health Service and the Maryland State Department of Health.

in these clinic settings. It was believed that informal discussion groups for mothers attending clinics would give them an opportunity to share ideas and experiences. Mothers have something to offer each other, and group discussion of mutual interests is more helpful than being talked at or lectured to by someone labeled as an authority on health matters.

The possibilities of this method were discussed with the county health officer and the public health supervisory staff. Small discussion groups for mothers were initiated in two of the county clinics, one a weekly prenatal and child hygiene clinic in an urban area and the other a monthly child hygiene clinic in the southern and rural part of the county. Since the mothers usually waited for a varying period of time to see the physician, a group of seven or eight of the interested mothers together with the nurse used this period to discuss informally common problems. The make-up of the groups in both clinics varied according to the frequency of appointments which, in turn, were dependent upon the age of the child.

When the groups were formed, the nurse, after informal introductions, began by talking for a few minutes about some aspect of child care or by relating a family experience that might stimulate discussion. Usually a member in the group commented and elaborated upon a point. Gradually, the scope of discussion enlarged. After several months the groups were a new experience to only a few of the mothers, and discussion grew more spontaneously out of their own interests, sometimes beginning with a comment made or a question asked by one of the members. Discussion moved with varying degrees of vigor, dependent upon the experiences and attitudes of those in the group.

Recently in the weekly clinic, the county health department set aside two clinic days during the month for prenatal patients exclusively. It therefore became possible to have groups of prenatal patients alone, and the focus of discussion changed from matters centering around infant and child care to pregnancy and the meaning of the pregnancy to the mother and her family.

Mrs. C. had participated in several group discussions and, not knowing in advance of the change in clinic schedule, had arrived for the 3-month examination of her 1-year-old child. Finding herself in a group with seven prenatal patients, she remarked that she seemed to be the only one who was not there "for herself". Turning to her neighbor, she asked if the expected baby would be the first child in the family. The affirmative answer provoked response from several others in the group about their past and present pregnancies.

One mother mentioned her 4-year-old child's observation of her apparent gain in weight. Several others had had similar experiences, and they exchanged remarks made by children in the family about

the expected baby. One mother said her 5-year-old asked her if she was going to have a new baby, after he had overheard a conversation. She felt that sharing this knowledge would help him later to accept the new baby and show less jealousy toward it. Few believed their children related the expected baby to the change in the size and shape of the mother, and Mrs. X was firm in her belief that there was a "proper time" for a child to be given information regarding reproduction.

Mrs. C said that her boy, who was 6 when the baby was born, had asked several questions that were embarrassing to her. She had put him off by saying they would discuss the question at some future time. He had known they were going to have a baby because "he had asked for one," but when he wondered regarding the origin of the baby she had not known what to tell him. At several points the group responded with embarrassed smiles and short laughs, and it was felt that some of the mothers were hesitant to talk freely at this point.

When Mrs. X said that she had told her two daughters ages 8 and 9 she would be going to New York in a few months to bring a baby back with her, Mrs. C. wondered if it were right to be purposefully untruthful. A member, who had thus far remained out of the discussion, said this was her first pregnancy, and because she lacked information she had read some books. She said if mothers drew away from an honest discussion about pregnancy, a child might feel there was something wrong in having a baby—almost as if it were "dirty". "It is dirty," said Mrs. X, and another mother commented in a casual manner, "It's being done and it has been done for a long time." The tension was broken with laughter, and the mothers seemed more at ease, which resulted in several others expressing a feeling of inadequacy in their ability to answer questions about reproduction. Mrs. C. went a step further by saying she supposed her lack of knowledge had been the reason for her embarrassment when her child had asked questions. A simple diagram of the female organs of reproduction was drawn by the nurse. Group interest was intense. When asked if it might be helpful to see a motion picture presenting more complete information, the group assented in chorus.

Several weeks later a film was shown to a prenatal group of 22. While it was felt the film available for such a purpose was rather technical for this group, the response following the showing indicated that an expressed need and interest had been met. As one mother remarked, "It all seems so much more natural, and it makes talking much easier."

Through the discussion and the film these mothers probably will find it easier to answer their children's questions about reproduction, thus lessening one of the frequent causes of friction in family relationships. Group discussions have brought out the ideas and feelings of

the mothers participating, and they have learned from each other. In talking about infant feeding on one occasion, a mother said she thought that even a small baby knew if he were wanted and loved, for he could sense his mother's feelings even though he could not understand her words. In a discussion of the father's role in the family, one mother told the others that she felt it was important for a father to feel useful to his baby from the beginning. Others agreed. The mother of four children said an inexperienced father could be helped to feel more at ease by performing some of the daily care for his baby, thus helping him to feel closer to the baby and leading to better family feeling. There is general agreement today that the mental health of an individual is rooted in his early family relationships and, therefore, any lessening of the fears and tensions of parents has an effect upon the mental health of the whole family.

The seminar method is neither new nor unusual. Various States have conducted institutes for groups of professional health workers and have found small discussion groups effective in the process of developing human relations. It is equally applicable to other settings—to venereal disease, tuberculosis, and sight-saving clinics. In Prince Georges County the discussion groups have grown out of an apparent need. Our experience indicates that parents are interested in their children and will cooperate in any program designed to help them in everyday situations. Recently, the county health officer, in planning for new maternal and child health conferences in the county, included discussion groups as part of his total plan.

The nurse has specific responsibility in relation to individual patients being treated in the mental health clinic. Patients are assigned to the nurse when a need is felt for nursing skills in carrying out the psychiatric treatment plan.

A fastidious mother, with feelings about cleanliness that involved frequent use of disinfectants, soap, and water, visited the clinic regularly for psychiatric interviews. Although meticulous housekeeping had been necessary to her for years, her pattern of living had become more involved because of the arrival and care of her first baby. She became aware that her feeling about germs was restricting the activity of her year-old baby. It was decided that along with psychiatric treatment, the nurse could give this mother help with everyday situations in the home, for the needs of the growing child must be considered in the treatment plan.

The first visit to the home revealed a healthy, active child who was kept within the limited boundaries of crib and play pen. She was fed each spoonful of food to prevent soiling her clothes, and she could not throw a toy to the floor and use it again until it had been disinfected. This mother had a deep and real love for her baby and

feared these restrictions might handicap the baby by preventing her from playing like other children.

Acceptance by both the mother and the nurse of the reality of the mother's fastidiousness enabled the mother gradually to allow the baby more freedom.

The baby had never been on the floor and had learned to walk on the bed. The first apparent gain was made when the mother was able to allow her the freedom of walking on the floor of the long, narrow hallway after the floor had been thoroughly cleaned. The hall was walled off from the other rooms in the apartment by doorway gates, but the way the baby ran the length of the hard floor surface indicated a lively appreciation of added space.

The next gain was made when the mother could allow her to walk outdoors, although the outdoor apparel was removed immediately upon reentering the apartment and was kept on a newspaper in a special niche in the coat closet. With each step the mother was given the praise and approval due her, and an understanding of her difficulty in doing these things was expressed. In discussing each new step the nurse asked "Do you think you could?" rather than urging that a thing be done.

The mother is still a very thorough housekeeper but is able to push aside many of her household duties to spend time outdoors with her child. At the age of 2 the child is walking and active, and her mother is able to allow barefoot and exploratory play comparable to that of other children her age. There are still certain restrictions, but as the mother talks over everyday events with the nurse she shows increased evidence of weighing things in terms of precautionary measures that are for her child's welfare against those which are the result of her own feelings regarding cleanliness.

Slow and difficult as the process has been, a real sense of accomplishment was felt when the patient told the psychiatrist, "I feel easier for several days after the nurse's visit." It is apparent that as a result of clinic treatment both parent and child show less tension than when first seen.

Since the mental health of the small child is dependent upon the relationship to the mother and the environment, any help given to the mother which will decrease her tension in handling the child or will improve the opportunity for the child to experience spontaneous relationships with other children is beneficial.

The mental health nurse uses her nursing skills and her knowledge of mental hygiene in a community mental health clinic both in her activities in the community and in giving nursing care to patients referred to the clinic. Her case load is more specialized than that of a nurse in a generalized family health service, but like nurses in all health programs her work is essentially with the daily lives of people.

A few of the activities of the mental health nurse have been pointed out. There have been many other activities—participation in mental health institutes for public health nurses and in nursing conferences, meeting with community groups and organizations interested in health, and collaborating in the community activities carried on by the entire staff of the mental health clinic. From these experiences has come an increased realization that knowledge of mental health and an understanding of the basic needs of people are essential to a public health nurse. She needs more than a modernized outline of things-to-say and things-to-do that are aimed toward the promotion of mental health. Her everyday work carries her into the lives of people in a natural way, and her services are given to individuals and their families. The nurse's interest is in the person rather than the procedure. Mental health knowledge enriches her nursing skill by increasing her awareness of the patient as a person, and she gains more satisfaction from the service she gives.

OTHER ARTICLES IN SERIES

- (1) Davens, Edward and Lemkau, Paul: Birth of a community mental health clinic. *Pub. Health Rep.* **64**: 657 (1949).
- (2) Ross, Mabel: Pilot mental health clinic. First annual report of Prince Georges County clinic. *Pub. Health Rep.* **64**: 797 (1949).

Seasonal Changes in Abundance of Fleas on Rats at Baltimore, Md.

By JAMES YEH and DAVID E. DAVIS*

The collection of a series of rats from poultry warehouses in Baltimore provided an opportunity to compare the number of fleas on rats during different times of the year. This report describes the changes and comments on the relation to climate.

Trapping in poultry warehouses began January 7, 1946, and continued until March 3, 1947. Steel traps were placed along runways and at holes late in the afternoon. The captured rats, dead or alive, were picked up early each morning and brought into the laboratory, each in a separate bag with a tag indicating location and date. While in the bags, the live rats were chloroformed. Each rat was combed into a white basin, and the bags were turned inside out to collect all ectoparasites. Rats found dead in the traps were not combed.

These poultry warehouses are located in old, dilapidated buildings near the markets. The poultry are kept in cages for several days before slaughtering. There is an abundant supply of chicken mash and water, as well as an occasional dead chicken. Each warehouse was trapped for 10 to 14 days each month. Care was taken not to overtrap and reduce the population. An analysis of the data for rats per trap night indicates that no great change in population occurred. Hence these rats were derived from a homogeneous habitat and a relatively constant population.

A total of 3,520 fleas was recovered from 526 infested rats, out of the 966 live rats captured. The fleas were either mounted on permanent slides or cleared with 10 percent KOH, and then were identified.¹

Seasons of the Year

Weather records from the Monthly Meteorological Summary, issued by the Weather Bureau of the United States Department of Commerce, at Baltimore, Md., were used to determine the weekly mean temperatures and total weekly precipitation from January 1, 1946 to March 3, 1947. When plotted (fig. 1) it is possible to divide the year into seven seasons, each having relatively homogeneous temperature and rainfall conditions. The characteristics of these

*Rodent Ecology Project, Department of Parasitology, School of Hygiene and Public Health, The Johns Hopkins University. This work was conducted under a grant from the International Health Division of the Rockefeller Foundation.

¹ Identification of fleas was done under the guidance of Dr. L. E. Rozeboom, School of Hygiene.

seven seasons may be summarized as follows: The hibernal season (1946) was cold and had considerable precipitation; the prevernal season was warmer and had about the same precipitation; the vernal season was still warmer and had heavy rainfall in several weeks; the estival season was hot, with considerable rain; the postestival season was slightly cooler, with several very dry weeks; the serotinal season was cooler and moderately wet; the autumnal season was short, cool, and dry; the hibernal season (1946-47) was cold and wet. The rats for this study were collected inside and, since the doors of these poultry houses were usually open and there was no central heating system, the weather within the poultry warehouses changed from season to season.

A total of 966 live rats of the species, *Rattus norvegicus*, was captured during the whole year survey. A total of 526 (54.5 percent) of the captured rats was found infested with fleas. Of the 966 rats trapped, 458 (47.3 percent) weighed between 0-199 gm., 414 (42.8 percent) weighed between 200-399 gm., and 94 (9.7 percent) weighed more than 400 gm. The sex ratio was 54.5 percent male. Of the 3,520 fleas identified in the present study, 1,603 (45.4 percent) were *Xenopsylla cheopis*; 1,557 (44.1 percent) *Nosopsyllus fasciatus*; and 360 (10.5 percent) *Leptosylla segnis*. In addition, 1 individual of *Pulex irritans* and 15 specimens of *Ctenocephalus felis* were collected.

Table 1. Seasonal prevalence of *X. cheopis*

Sex and weight		Hibernal	Prevernal	Vernal	Estival	Postestival	Serotinal	Autumnal	Hibernal (46-47)	Total
<i>Males</i>										
0-199 gm	Number examined	24	46	24	31	35	55	11	6	232
	Fleas per rat	0.3	(*)	0.1	3.3	1.3	1.3	1.6	1.6	1.1
	Percent with fleas	20.8	2.2	4.1	51.6	25.6	23.6	54.6	16.6	22.4
200-399 gm	Number examined	30	47	20	49	21	29	13	21	230
	Fleas per rat	.9	(*)	.6	4.2	2.7	4.7	3.4	.4	2.0
	Percent with fleas	23.3	2.1	15.0	57.1	33.3	58.6	69.2	19.0	33.5
400 gm	Number examined	8	18	3	7	16	3	3	7	65
	Fleas per rat	0	.1	-----	7.3	1.3	-----	-----	.3	1.7
	Percent with fleas	0	5.5	-----	57.1	25.0	-----	-----	28.6	26.1
<i>Females</i>										
0-199	Number examined	31	43	16	34	38	49	12	4	227
	Fleas per rat	.5	0	.2	3.6	.6	2.2	2.5	-----	1.3
	Percent with fleas	16.1	0	12.5	67.6	5.2	28.6	66.6	-----	24.6
200-399 gm	Number examined	29	26	23	51	20	20	10	4	183
	Fleas per rat	.2	.1	.3	4.0	2.0	3.1	4.2	-----	2.1
	Percent with fleas	13.8	3.8	17.4	53.0	50.0	45.0	70.0	-----	34.9
400 gm	Number examined	2	5	0	11	3	4	2	2	29
	Fleas per rat	-----	-----	-----	1.4	-----	-----	-----	-----	1.7
	Percent with fleas	-----	-----	-----	36.3	-----	-----	-----	-----	44.8
Total male and female	Number examined	124	185	86	183	133	160	51	44	966
	Fleas per rat	.5	(*)	.3	3.9	1.4	2.7	2.9	1.0	1.6
	Percent with fleas	17.7	2.1	12.7	55.7	25.6	36.8	64.7	29.5	54.4

*Means less than 0.05.

Seasonal Changes in Flea Indices

Although the two indices for indicating the number of fleas on rats are unsatisfactory (2) the mean number of fleas per rat (flea index) and the proportion of rats having fleas (infestation rate) will both be used until better methods are devised. The mean number of female fleas per rat, recommended by Cole (1) was not used because the small number of infested rats (54.4 percent) did not permit adequate evaluation of this new index. Furthermore, one object of this study was to compare the seasonal changes in abundance with those in nearby cities. Persons interested in the Cole index may calculate it from the tables.

The data for the three species of fleas are given in tables 1, 2, and 3 according to seasons and to weight and sex of rat. The infestation rate or flea index was not calculated when less than six live rats were examined, although such records are used in the totals.

Xenopsylla cheopis. The data in table 1 show the minimum numbers in the prevernal season, a maximum in the estival season, a decline in the postestival and then another maximum in the autumnal season. No difference in the flea index or the infestation rates between the male and female rats is apparent. There is some increase of fleas correlated with the increase in size of rat.

Table 2. *Seasonal prevalence of N. fasciatus*

Sex and weight		Hibernal	Prevernal	Vernal	Estival	Postestival	Scroftinal	Autumnal	Hibernal (46-47)	Total
<i>Males</i>										
0-199 gm. -----	Rats examined.	24	46	24	31	35	55	11	6	232
	Fleas per rat.	1.1	3.6	2.0	.9	.1	.1	(*)	.2	1.2
	Percent with fleas.	45.8	67.4	52.2	32.2	8.5	9.1	(*)	16.6	31.8
200-399 gm. -----	Rats examined.	30	47	20	49	21	29	13	21	230
	Fleas per rat.	2.5	6.3	6.3	1.1	.1	.1	1.5	1.2	2.6
	Percent with fleas.	60.0	61.7	80.0	42.8	9.5	6.6	46.1	47.6	45.2
400 gm. -----	Rats examined.	8	18	3	7	16	3	3	7	65
	Fleas per rat. ....	.3	4.0	-----	1.8	.1	-----	-----	(*)	1.7
	Percent with fleas.	25.0	66.6	-----	71.4	6.2	-----	-----	14.2	38.4
<i>Females</i>										
0-199 gm. -----	Rats examined.	31	43	16	34	33	49	12	4	227
	Fleas per rat.	1.0	1.9	2.2	.8	(*)	.3	1.8	-----	.9
	Percent with fleas.	51.6	48.8	43.7	29.4	2.6	12.2	41.6	-----	30.8
200-399 gm. -----	Rats examined.	29	26	23	51	20	20	10	4	183
	Fleas per rat.	2.1	3.2	3.0	1.5	0	.2	.4	-----	1.6
	Percent with fleas.	51.7	42.3	65.2	37.2	0	10.0	30.0	75.0	37.1
400 gm. -----	Rats examined.	2	5	0	11	3	4	2	2	29
	Fleas per rat.	-----	-----	-----	3.7	-----	-----	-----	-----	1.1
	Percent with fleas.	-----	-----	-----	36.3	-----	-----	-----	-----	27.6
Total, male and female	Rats examined.	124	185	86	183	133	160	51	41	966
	Fleas per rat.	1.6	3.8	3.3	1.2	(*)	.2	.1	.9	1.6
	Percent with fleas.	50.8	57.2	59.3	27.7	5.2	11.2	31.3	43.1	36.1

*Means less than 0.05.

Table 3. Seasonal prevalence of *L. segnis*

Sex and weight		Hibernal	Prevernal	Verinal	Estival	Postestival	Serotinal	Autumnal	Hibernal (40-47)	Total
<i>Males</i>										
0-199 gm	Number examined	24	46	24	31	35	55	11	6	232
	Fleas per rat	(*) 2.0	1.2	1.2	0	0	0	0	0	.5
	Percent with fleas	4.2	15.2	20.8	0	0	0	0	0	5.6
200-399 gm	Number examined	30	47	20	49	21	29	13	21	230
	Fleas per rat	(*) 1.5	2.4	0	0	0	.3	0	0	.7
	Percent with fleas	6.6	17.0	19.0	0	0	3.4	0	0	10.8
400 gm	Number examined	8	18	3	7	16	3	3	7	65
	Fleas per rat	0	.5	0	0	0	0	0	0	(*)
	Percent with fleas	0	5.5	0	0	0	0	0	0	.2
<i>Females</i>										
0-199 gm	Number examined	31	43	16	34	28	49	12	4	227
	Fleas per rat	(*) .2	1.0	0	0	0	0	0	0	.1
	Percent with fleas	3.7	7.0	12.5	0	0	0	0	0	4.4
200-399 gm	Number examined	29	26	23	51	20	20	10	4	183
	Fleas per rat	(*) .5	.6	0	0	1.7	0	0	0	.3
	Percent with fleas	3.4	3.8	17.4	0	0	10.0	0	0	6.0
400 gm	Number examined	2	5	0	11	3	4	2	2	29
	Fleas per rat	0	0	0	0	0	0	0	0	0
	Percent with fleas	0	0	0	0	0	0	0	0	0
Total male and female	Number examined	124	185	86	183	133	160	51	44	966
	Fleas per rat	(*)	1.0	1.3	0	0	.2	0	0	.3
	Percent with fleas	4.0	10.8	17.4	0	0	1.8	0	0	4.5

*Means less than 0.05.

Nosopsyllus fasciatus. The data in table 2 show the maximum in winter and spring and the minimum in late summer. Males and medium sized rats had higher values, but the differences are not statistically significant.

Leptosylla segnis. The data in table 3 indicate that this species is always uncommon, but reaches its maximum in spring.

A comparison of figures 1 and 2 shows that *N. fasciatus* and *L. segnis* reach maximum abundance in the cool, wet seasons. The bimodal curve for *X. cheopis* is surprising and may reflect a relatively dry (except for 2 weeks) postestival season.

Comparison With Other Cities

Although it is not the object of this report to present an exhaustive comparison with other cities, it is pertinent to compare the flea counts in Baltimore with those in nearby cities. In Norfolk, about 100 miles to the south, Hasseltine (3) found *X. cheopis* abundant with a maximum in August and minimum in March, *N. fasciatus* common with a maximum about March, and *L. segnis* very uncommon.

In Philadelphia, 100 miles to the north, Vogel and Cadwallader (4) found *X. cheopis* abundant with a maximum prevalence from Septem-

ber to November, *N. fasciatus* common with maxima in May and October, and *L. segnis* very rare. Comparisons must be made with

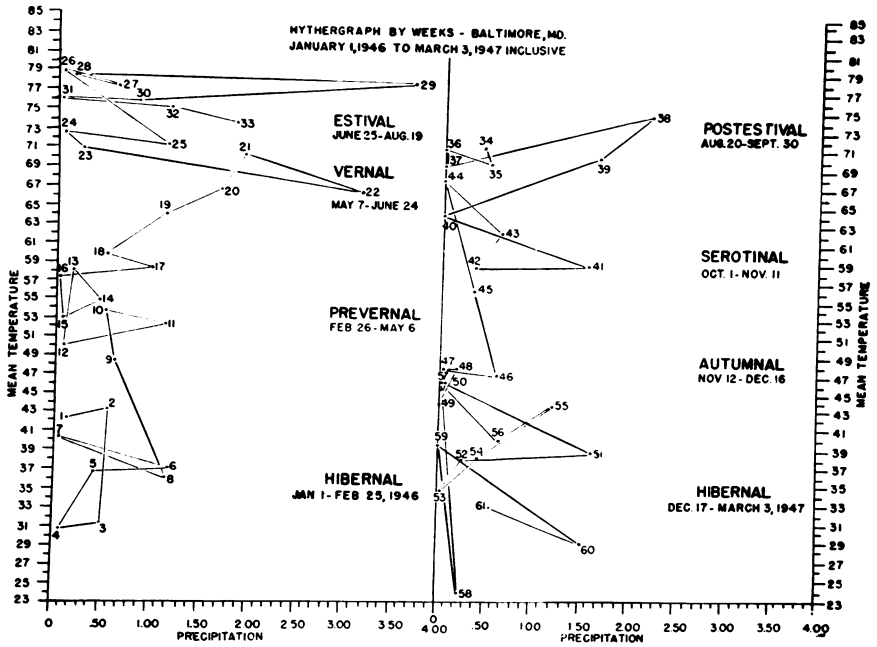


Figure 1. Hythergraph showing precipitation and temperature by weeks, 1946-47.

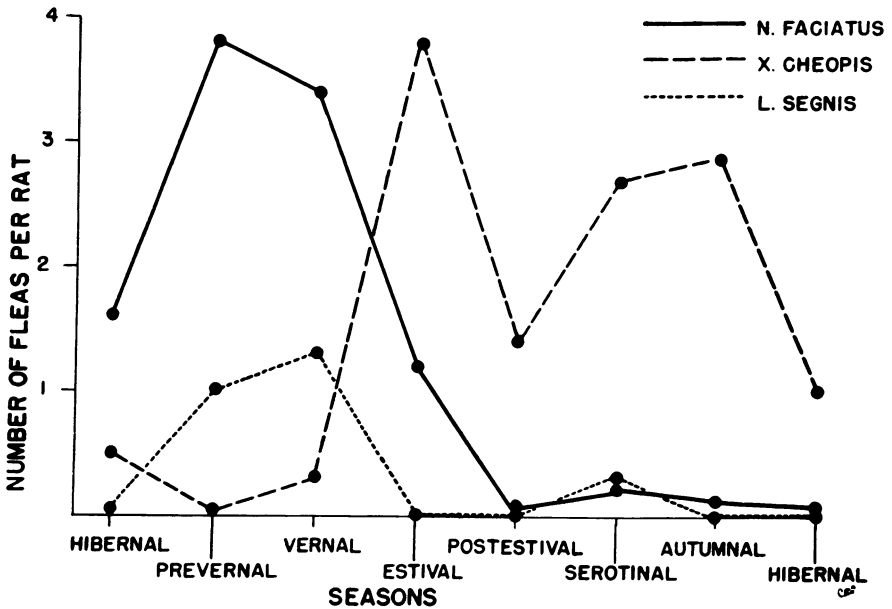


Figure 2. Seasonal changes in number of fleas per rat, Baltimore, Md.

caution because of differences in years and habitat of the rats, but it is clear that in this region *X. cheopis* is most common in summer and fall and that *N. fasciatus* is most common in spring. The greater number of *L. segnis* collected in 1946 in Baltimore in comparison with the very small number in nearby cities 10 to 20 years ago raises the question of a possible increase in *L. segnis* in recent years.

Summary

To determine the seasonal changes in numbers of fleas on rats, 966 Norway rats (*Rattus norvegicus*) were captured in poultry warehouses in Baltimore from January 7, 1946 to March 3, 1947. For analysis the data were divided into seven seasons according to temperature and precipitation.

The infestation by *Xenopsylla cheopis* was minimum in the prevernal season (2.1 percent of the rats infested), maximum in the estival (55.7 percent), declined in the postestival (25.6 percent), and again maximum in the autumnal (64.7 percent). The infestation by *Nosopsyllus fasciatus* was maximum in the hibernal (50.8 percent), prevernal (57.2 percent), and vernal seasons (59.3 percent), and minimum in the postestival season (5.2 percent). The infestation of *Leptopsylla segnis* was always small but was maximum in the vernal season (17.4 percent).

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- (3) Hasseltine, H. H.: Rat-flea survey of the port of Norfolk, Virginia. Pub. Health Rep. **44**:579-589 (1929).
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INCIDENCE 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 FEBRUARY 18, 1950

In the United States, reported incidence of influenza for the current week is more than twice the number of cases reported for the previous week and more than three times the number reported for the corresponding week last year. The total for the current week is 16,223 reported cases of influenza, for the previous week 7,967, and for the corresponding week last year, 4,792. The 5-year (1945-49) median for the week is 4,792 cases. The high corresponding week during the past 5 years was in 1948 when 11,234 cases were reported.

The cumulative total for the calendar year is 49,640 cases of influenza as compared with 32,208 for the same period last year, and 37,425 for the corresponding median. The high year during the past 5 years was 1946 when 147,779 cases were reported during the first 7 weeks of the year.

The increase over the previous week in reported cases of influenza was not nation-wide, but was confined to West North Central (from 32 to 227), South Atlantic (from 1,731 to 3,005), West South Central (from 5,238 to 11,703), and Mountain Divisions (from 312 to 813).

In the West North Central Division, the increase was confined to North Dakota and Nebraska; in the South Atlantic, to Virginia and West Virginia; in the West South Central, to Arkansas, Oklahoma and Texas. The Mountain Division showed increases in Colorado, Idaho, Montana and Wyoming.

Other notifiable diseases in which increases were reported for the current week over the previous week were measles (6,564 to 7,136), pneumonia (2,335 to 2,524), and scarlet fever (1,871 to 2,005). The largest increase in reported cases of measles occurred in Indiana (47 to 306), Kansas (5 to 79), Nebraska (137 to 243), New Jersey (371 to 702), Pennsylvania (186 to 266), and Wisconsin (190 to 275).

Reported incidence of whooping cough with 2,701 cases for the current week decreased from last week, but remained above the corresponding week last year (976). The 5-year (1945-49) median for whooping cough is 2,095.

No smallpox was reported in the United States. Poliomyelitis decreased from 120 cases last week to 97 currently. For the corresponding week last year, 67 cases of poliomyelitis were reported.

Telegraphic case reports from State health officers for the week ended February 18, 1950

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Polio-myelitis	Rocky Mt. spotted fever	Scarlet fever	Small-pox	Tularemia	Typhoid and paratyphoid fever ¹	Whooping cough	Rabies in animals	
NEW ENGLAND															
Maine.....				19		13			12				33		
New Hampshire.....				1		1			2				2		
Vermont.....				13					1				12		
Massachusetts.....				180	3				141			1	138		
Rhode Island.....	2	1				4			20				13		
Connecticut.....				47	3	45			28				74		
MIDDLE ATLANTIC															
New York.....	8	1	23	604	5	246	8		187			3	204	12	
New Jersey.....	4		2	702	2	113			47			8	199		
Pennsylvania.....	1			266	6	69			117			1	186	6	
EAST NORTH CENTRAL															
Ohio.....	6		4	199	4	87	2		311			3	237	6	
Indiana.....	4			306	1	3	2		43		1	1	49	12	
Illinois.....	1	1	1	119	3	89	2		60		2	3	74	1	
Michigan.....	3			1,240	5	56	2		147		1		245	2	
Wisconsin.....			31	275		21			102			1	187		
WEST NORTH CENTRAL															
Minnesota.....	2			42	2	3			23			1	13		
Iowa.....				795	2	2	2		15				23	4	
Missouri.....	3		6	6	3	39	1		31				27		
North Dakota.....		1	156	33	1	25			5		8		5		
South Dakota.....	1						1		6				1		
Nebraska.....	1		48	243		15	3		56				5		
Kansas.....	1		17	79		15	2		42				5		
SOUTH ATLANTIC															
Delaware.....				36	1				4					2	
Maryland.....	3		5	35	1	41	4		33			2	89		
District of Columbia.....			5	96		11	1		6				6		
Virginia.....	6		2,259	40	2	148			27		2	3	37	1	
West Virginia.....	9		363	123	2	23	1		31			1	68	6	
North Carolina.....	5			183	3		2		39			1	52		
South Carolina.....	10		34	79	2	11			4			1	3	5	
Georgia.....	6		319	44	4	18	2		8			2	7	10	
Florida.....	2		16	44	4	10	6		9				3	3	

March 10, 1950

EAST SOUTH CENTRAL										
Kentucky.....	3	6	86	3	60			44	1	23
Tennessee.....	9	139	93	5		2		51	1	34
Alabama.....	4	256	22	3	39	1		18		18
Mississippi.....	3	15	68	1	25	2		5		5
WEST SOUTH CENTRAL										
Arkansas.....	1	361	5		53			6	4	49
Louisiana.....	2	6	26		22	3		3	3	3
Oklahoma.....	8	356	13	1	100	2		27	3	96
Texas.....	25	10,980	213	5	912	14		33	3	168
MOUNTAIN										
Montana.....		335	34					29		3
Idaho.....	1	102	9		13	5		12		2
Wyoming.....		20	18	1				2	2	15
Colorado.....		179	142		35	3		12		10
New Mexico.....	1	23	20		20			8	1	16
Arizona.....	2	177	122		20			7		17
Utah.....		142	142		5	1		8	1	24
Nevada.....										
PACIFIC										
Washington.....		8	85		4	4		64		82
Oregon.....		5	20	1	27	4		26		42
California.....	9	5	224	6	78	14		101	2	185
Total.....	146	16,223	7,136	82	2,524	97		2,005	50	2,701
Median, 1945-49.....	288	4,792	13,932	98		42	1	3,001	42	2,995
Year to date, 7 weeks.....	1,199	49,640	36,829	611	16,202	801	6	11,976	168	17,051
Median, 1945-49.....	2,166	37,425	53,474	608		313	3	18,893	27	15,743
Seasonal low week ends.....	{ (27th) } { July 9 }	{ (30th) } { July 30 }	{ (35th) } Sept. 3	{ (37th) } Sept. 17		{ (11th) } Mar. 19		{ (32d) } { Aug. 13 }	{ (35th) } Sept. 3	{ (11th) } Mar. 19
Since seasonal low week.....	5,470	80,170	55,959	1,524		42,283		28,415	17	3,691
Median, 1944-45 to 1948-49.....	9,732	68,478	79,598	1,560		19,297		44,823	81	3,820

¹ Including cases reported as salmonella.

² New York City only.

³ Including cases reported as streptococcal sore throat.

⁴ Deduction: Missouri, week ended Feb. 4, 1 case.

Alaska: Pneumonia, 1 case.

Hawaii: Encephalitis 1, influenza 9, measles 1, whooping cough 1.

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—December 1949.—During the month of December 1949, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama City		Colon		Canal Zone		Outside the zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox.....	4		2		6		1		13	
Diphtheria.....	5						3		8	
Dysentery:										
Amebic.....	3						5		8	
Bacillary.....	1				1		2		4	
Hepatitis, infectious	2						2		4	
Malaria ¹					3		73	1	76	1
Measles.....	1		30		24				55	
Meningitis, meningococcal.....								1		1
Mumps.....	2		25						27	
Pneumonia.....		5		4	15	2		6	² 15	17
Polio-myelitis.....					1				1	
Tuberculosis.....		12		4	7	2		8	² 7	26
Typhoid fever.....			1				2		3	
Typhus fever (endemic).....			1						1	
Whooping cough.....				1	9				² 9	1
Yaws.....							2		2	

¹ 4 recurrent cases.

² Reported in the Canal Zone only.

NOTE.—Cases are listed by place of residence except when place of infection is known.

DEATHS DURING WEEK ENDED FEBRUARY 18, 1950

	Week ended Feb. 18, 1950	Corresponding week 1949
Data for 94 large cities of the United States:		
Total deaths.....	9,346	9,819
Median for 3 prior years.....	9,819	
Total deaths, first 7 weeks of year.....	67,471	69,828
Deaths under 1 year of age.....	623	609
Median for 3 prior years.....	776	
Deaths under 1 year of age, first 7 weeks of year.....	4,408	4,760
Data from industrial insurance companies:		
Policies in force.....	69,864,655	70,616,279
Number of death claims.....	10,759	13,167
Death claims per 1,000 policies in force, annual rate.....	8.0	9.7
Death claims per 1,000 policies, first 7 weeks of year, annual rate.....	9.8	9.8

FOREIGN REPORTS

CANADA

Provinces—Notifiable diseases—Week ended January 28, 1949.—During the week ended January 28, 1949, cases of certain notifiable diseases were reported by the Dominion Bureau of Statistics as follows:

Disease	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox			28	1	326	439	72	65	73	91	1,095
Diphtheria			1		7	1	2				11
Dysentery, bacillary					11	2				1	14
Encephalitis, infectious							1				1
German measles			7		17	94		26	292		436
Influenza			23			18	2				43
Measles			15		325	501	50	44	66	165	1,166
Meningitis, meningococcal							1				2
Mumps			92			659	7	29	81	157	1,025
Poliomyelitis					1						1
Scarlet fever	3			9	78	46	9	1	79	4	229
Tuberculosis (all forms)	11		5	5	76	36	16	4	83	46	282
Typhoid and paratyphoid fever					7	1			1	1	10
Undulant fever					1	1					2
Veneral diseases:											
Gonorrhoea	11		11	8	68	73	21	14	33	(¹)	1,239
Syphilis	3		2	10	38	24	10	6	2	(¹)	1,95
Whooping cough	5		89		162	35	7	4	5	27	334

¹ Report not received for the Province of British Columbia.

FINLAND

Notifiable diseases—December 1949.—During the month of December 1949, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	16	Poliomyelitis	27
Diphtheria	100	Scarlet fever	652
Gonorrhoea	547	Syphilis	52
Paratyphoid fever	87	Typhoid fever	22

JAPAN

Influenza.—Information dated February 17, 1950, states that there has been widespread incidence of influenza in Japan in recent weeks. A total of 1,032 cases was reported during the week ended January 28, and 2,125 cases during the week ended February 4.

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

Note.—The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India—Calcutta and Masulipatam.—During the week ended February 4, 1950, 187 cases of cholera, with 63 deaths, were reported in Calcutta, and 17 cases (11 deaths) in Masulipatam.

Pakistan—Dacca.—Seven cases of cholera, with 4 deaths, were reported in Dacca, Pakistan, during the week ended January 21, 1950.

Plague

Belgian Congo—Costermansville Province.—On February 9, 1950, 1 case of plague was reported in Kiavirimu, northeast of Lubero, Costermansville Province, Belgian Congo.

Indochina (French)—Annam—Phanthiet.—During the week ended February 11, 1950, 5 cases of plague were reported in Phanthiet, Annam, French Indochina.

Siam (Thailand).—During the week ended January 28, 1950, 6 cases of plague were reported in Thailand.

Union of South Africa—Orange Free State.—During the week ended January 14, 1950, 1 fatal suspected case of plague was reported at Ramdam Farm in Bethulie District, Orange Free State, Union of South Africa.

Smallpox

Arabia—Jedda and Mecca.—Information dated January 28, 1950, states that to that date 370 cases of smallpox, with 130 deaths, had been reported in Jedda during the recent outbreak in that city. For the week ended February 4, a total of 18 cases (6 deaths) was reported in Jedda, and 11 cases (5 deaths) in Mecca; for the week ended February 11, 15 cases (2 deaths) were reported in Jedda, and 12 cases (4 deaths) in Mecca.

Burma.—During the week ended February 4, 1950, 242 cases of smallpox with 78 deaths were reported in Burma, including 143 cases (49 deaths) in Bassein, and 97 cases (29 deaths) in Rangoon.

China.—Smallpox has been reported in China as follows: Sung Shan, December 21–31, 1949, 34 cases; Swatow, week ended January 28, 1950, 39 cases.

India—Calcutta and Madras.—For the week ended February 4, 1950, Calcutta reported 249 cases of smallpox, with 110 deaths. Madras reported 204 cases (26 deaths) during that week, and 161 cases (21 deaths) during the preceding week (week ended January 28).

Indochina (French)—Viet Nam.—During the week ended February 4, 1950, 64 cases of smallpox, with 52 deaths, were reported in Viet Nam, French Indochina.

Israel—Jerusalem.—During the week ended January 7, 1950, 9 cases of smallpox were reported in Jerusalem, Israel, and 6 cases were reported in that city during the week ended January 14.

Korea—Seoul.—For the week ended January 28, 1950, 10 cases of smallpox, with 3 deaths, were reported in Seoul, Korea.

Nigeria.—During the week ended January 14, 1950, 376 cases of smallpox, with 69 deaths, were reported in Nigeria, including 9 cases in Lagos (1 death), 7 cases in Port Harcourt, 3 cases in Calabar, and 2 cases in Warri.

Typhus Fever

France.—During the week ended February 4, 1950, 1 case of typhus fever (murine type) was reported in Seine Department, France.

Gold Coast—Accra.—During the week ended January 7, 1950, 1 case of typhus fever was reported in Accra, Gold Coast.

Japan—Tokyo-Yokohama.—During the week ended January 28, 1950, 32 cases of typhus fever were reported in the Yokohama-Tokyo Port Area, Japan. The following week (February 4) 52 suspected cases were reported in Tokyo; during the week ended February 11, 68 suspected cases were reported in Tokyo, and 26 (suspected) in Yokohama.

Later information, dated February 23, states that an outbreak of endemic typhus fever is occurring among the civilian populations of Tokyo and Yokohama, confined entirely to vagrants. This outbreak is said to have become explosive in Yokohama during the week ended February 18, with 190 cases, 9 deaths. During the same week 48 cases 3 deaths were reported in Tokyo.

Libya—Cyrenaica—Tokra.—During the week ended January 21, 1950, 2 cases of typhus fever were reported in Tokra, Cyrenaica.

Yellow Fever

French Equatorial Africa—Port Gentil.—On February 9, 1950, 1 suspected case of yellow fever was reported in Port Gentil, Gabon, French Equatorial Africa.

Announcement

A meeting on venereal disease research will be held April 27-28, 1950, in Washington, D. C. The meeting is sponsored jointly by the American Venereal Disease Association and the Experimental Therapeutics Study Section, National Institutes of Health, Public Health Service.

The first day, Thursday, April 27, will be devoted to papers on *Treponema pallidum*, experimental syphilis, early syphilis, other venereal diseases, and the newer antibiotics in syphilis.

The second day will feature the business meeting of the American Venereal Disease Association (limited to members), and papers on neurosyphilis, and miscellaneous aspects of syphilis. The afternoon session on Friday, April 28, will feature a panel discussion on the international aspects of venereal disease control and papers on the treponemal immobilization tests, and the epidemiology and serology of syphilis.

The program for each day will be held in the Thomas Jefferson Auditorium, United States Department of Agriculture, Fourteenth and Independence Avenue SW., beginning at 10 a. m.

All persons interested in this phase of medicine are cordially invited to attend the meeting. Copies of the program will be sent at a later date upon request.

All inquiries should be addressed to: Francis L. Schwehl, Executive Secretary, Experimental Therapeutics Study Section, Division of Research Grants and Fellowships, National Institutes of Health, Bethesda 14, Md., or to Dr. William L. Fleming, Secretary, American Venereal Disease Association, 750 Harrison Avenue, Boston, Mass.
