



# Morbidity and Mortality

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EPIDEMIOLOGIC NOTES AND REPORTS

SALMONELLOSIS ASSOCIATED WITH NONFAT DRY MILK

In January 1966, the Division of Epidemiology of the Michigan State Department of Public Health investigated two cases of gastroenteritis due to *Salmonella newbrunswick*. The cases occurred in infant males less than 6 months of age residing in different areas of the state, and each had been fed a formula made from instant nonfat dry milk. A review of surveillance data regarding *S. newbrunswick* showed that before 1965 this serotype had been reported only rarely in the United States. Of the 50,782 isolations of salmonellae from human sources reported between 1947 and 1964, only 13, or 0.02 percent, were *S. newbrunswick*. In contrast, between April 1965 and January 1966

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there were 29 reported isolations of this serotype from humans, a distinct increase suggesting the possibility of a common source of infection.

Accordingly, State Health Departments reporting isolations of this organism were asked to submit epidemiologic information about the cases to the Communicable Disease (Continued on page 386)

CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
 (Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	45th WEEK ENDED		MEDIAN 1961 - 1965	CUMULATIVE, FIRST 45 WEEKS		
	NOVEMBER 12, 1966	NOVEMBER 13, 1965		1966	1965	MEDIAN 1961 - 1965
Aseptic meningitis . . . . .	39	39	41	2,605	1,860	1,862
Brucellosis . . . . .	3	8	3	208	213	350
Diphtheria . . . . .	2	5	7	169	140	236
Encephalitis, primary:						
Arthropod-borne & unspecified . . . . .	24	48	---	1,879	1,689	---
Encephalitis, post-infectious . . . . .	4	6	---	650	593	---
Hepatitis, serum . . . . .	37	527	805	1,239	29,184	37,499
Hepatitis, infectious . . . . .	584	1,235	1,903	27,660	247,629	397,137
Measles (rubeola) . . . . .	716	---	6	194,274	54	378
Poliomyelitis, Total (including unspecified)	4	---	6	86	42	322
Paralytic . . . . .	4	---	6	79	9	---
Nonparalytic . . . . .	---	---	---	---	---	---
Meningococcal infections, Total . . . . .	43	45	38	3,021	2,632	2,067
Civilian . . . . .	37	45	---	2,734	2,442	---
Military . . . . .	6	---	---	287	190	---
Rubella (German measles) . . . . .	239	---	---	43,564	---	---
Streptococcal sore throat & Scarlet fever . . . . .	6,159	6,742	6,090	360,014	336,215	291,140
Tetanus . . . . .	2	6	---	168	234	---
Tularemia . . . . .	2	2	---	153	224	---
Typhoid fever . . . . .	5	6	10	340	383	473
Typhus, tick-borne (Rky. Mt. Spotted fever)	5	3	---	235	252	---
Rabies in Animals . . . . .	43	87	58	3,521	3,772	3,300

NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax: . . . . .	6	Botulism: . . . . .	8
Leptospirosis: Ark.-1, Tex.-1 . . . . .	60	Trichinosis: Cal.-1 . . . . .	87
Malaria: Cal.-3, Fla.-2, Ill.-1, Ky.-1, Md.-1, NC.-1, Pa.-2 . . . . .	410	Rabies in Man: . . . . .	2
Psittacosis: . . . . .	40	Rubella, Congenital Syndrome: Ore.-1 . . . . .	21
Typhus, murine: . . . . .	25	Plague: . . . . .	5

No Report From State of Washington - Health Department Moving To New Quarters.

## SALMONELLOSIS ASSOCIATED WITH NONFAT DRY MILK

(Continued from front page)

Center. Of the 29 persons from whom *S. new-brunswick* was isolated, 2 were lost to follow-up and 2 were clearly secondary cases following documented *S. new-brunswick* infections in other household members. Twenty-five primary cases thus were available for detailed epidemiologic study of a possible common source of infection.

All persons had symptoms characteristic of salmonellosis, including fever, diarrhea, and vomiting. Eleven patients required hospitalization ranging from 3 to 21 days, and an additional 13 patients required the care of a physician. The cases were geographically scattered throughout the United States. Though illness occurred in all age groups, there was a striking predilection for very young children.

Itemized dietary histories were impossible to obtain because of the long interval between illness and investigation of some of the cases. Instead it was determined whether any of a long list of food items "never," "occasionally," or "frequently" were consumed by the patient.

Powdered milk was the only item to have been consumed with a greater frequency than could be expected. Twenty of the 25 patients had ingested this product within 30 days of their illness. Many foods such as powdered eggs, pork, shellfish, and chicken, often associated with salmonella infections in the past, could be excluded by the low frequency of exposure in this group. No exact figures of consumption of powdered milk by American families were available, but a survey of households with young children in the Atlanta metropolitan area indicated that only 44 percent of the families used nonfat dry milk during the entire year of 1962. Thus, the fact that 80 percent of the *S. new-brunswick* cases had consumed this product within 30 days of illness seemed quite noteworthy. In addition, the hypothesis that powdered milk was the vehicle of infection was

supported by the fact that several of the infected infants had feeding problems and had a diet consisting almost exclusively of nonfat dry milk.

As this product had not previously been implicated as a source of salmonella infection, bacteriologic examinations were performed on hundreds of shelf samples of many brands of nonfat dry milk by a number of laboratories. The same rare serotype, *S. new-brunswick*, was subsequently isolated from many samples of instant nonfat dry milk produced by a single plant in the midwestern United States. The organism was also isolated within the plant from the equipment and from milk products. The product was recalled from the market in April 1966, and a careful supervised cleanup and remodeling of the plant was instituted.

Inspection of powdered milk plants and bacteriologic examination of their products for salmonellae have been carried out extensively since that time by State Departments of Health and Agriculture, the U.S. Department of Agriculture, and the U.S. Food and Drug Administration. On November 2, 1966, the Borden Company instituted a recall of Starlac Instant Nonfat Dry Milk from the market because of salmonella contamination found by the Food and Drug Administration. On November 9, 1966, the Kroger Company similarly recalled Kroger Instant Nonfat Dry Milk from the market because of contamination with *Salmonella cubana*.

Investigation of illnesses with these serotypes for possible association with powdered milk is being conducted along with careful inspection of milk-drying plants by the dry milk producers and regulatory agencies.

(Compiled by the Salmonella Unit, Bacteriology Section, Epidemiology Branch, CDC.)

## BOTULISM - Indiana

Two cases of botulism have been reported in patients who were hospitalized in Mishawaka, Indiana, on October 21, 1966. A mother and her 5-year-old daughter had presented with symptoms of double and blurred vision, weak neck muscles, and difficulty in swallowing and in walking. These symptoms had begun on October 20, 3 days after a meal which included steak, potatoes, gravy, home-canned beets, and home-canned beans. The mother was treated with 50,000 units of polyvalent (A and B) botulinus antitoxin, and the daughter, with 60,000 units over the first 24 hours. The mother promptly recovered and was discharged October 26. The daughter has been slow in recovering and was discharged November 1 although she still has generalized weakness.

Samples of all leftover foods were obtained from the home. Extracts made from the beets killed white mice when injected intraperitoneally, but had no effect when the mice were simultaneously injected with polyvalent antitoxin. Cultures of the beets yielded *Clostridium botulinum*, type A. Extracts made from the beans did not kill mice and cultures were negative.

(Reported by Dr. A.L. Marshall, Jr., Director, Division of Communicable Disease Control, Bureau of Preventive Medicine, Indiana State Board of Health; Dr. Louis How, St. Joseph County Health Officer; and Dr. Rafael Rabassa, Attending Physician, Mishawaka, Indiana.)

CURRENT TRENDS  
MEASLES - 1966

For the 45th week (ending November 12, 1966), 716 measles cases were reported from 39 States.\* This represents an increase of 12 cases over the preceding week and a decrease of 519 cases from the total of 1,235 for the 45th week in 1965. Michigan notified 96 cases, the highest number for the 45th week, while Oregon and Texas both reported more than 80 cases.

The 10 counties reporting 10 or more cases for the 44th week are listed in Table 1; the geographic distribution of counties and health districts reporting measles for that week is shown in Figure 1.

Of the 2, 870 counties and health districts under surveillance in the United States, 430 reported one or more cases of measles during the first 4-week period (weeks 41 through 44, October 9 - November 5, 1966) of the 1966-67 epidemiological year. Thirty counties from 15 different states reported 10 or more cases during at least one week of the 4-week period; 10 of these counties notified 10 or more measles cases at least twice during this period. Snohomish and Spokane Counties in Washington and Wayne County in Michigan reported 10 or more cases each of the 4 weeks. Snohomish County recorded 95 cases for the 43rd

Table 1  
Counties Reporting Highest Number of  
Measles Cases for Week Ending  
November 5, 1966

County	State	Number of Cases
Snohomish	Washington	60
Park	Wyoming	44
Spokane	Washington	42
King	Washington	41
Golden Valley	North Dakota	20
Parker	Texas	18
Milwaukee	Wisconsin	14
Washington	Oregon	12
Cameron	Texas	11
Wayne	Michigan	10

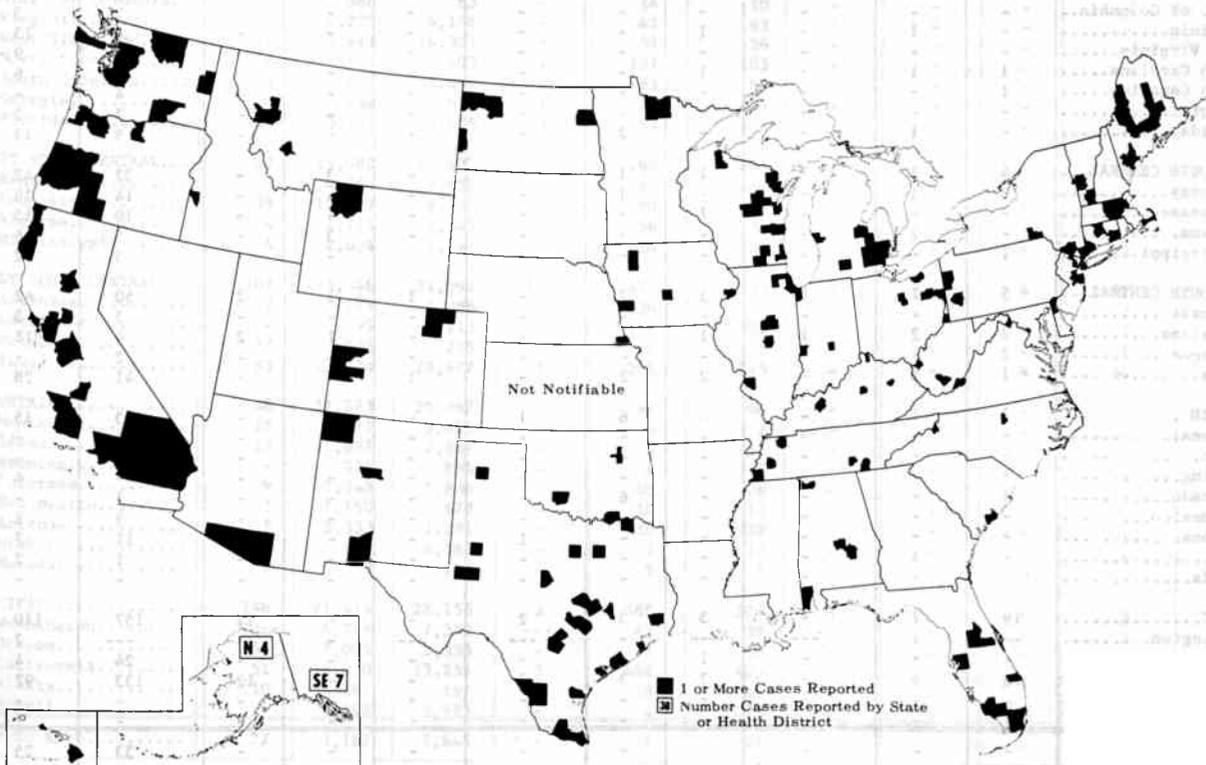
week, the highest number reported for any week from a single county during the 4-week period.

(Reported by the Childhood Viral Diseases Unit, Epidemiology Branch, CDC.)

(Continued on page 392)

\*The State of Washington did not report by the time of publication.

Figure 1  
COUNTIES OR HEALTH DISTRICTS REPORTING MEASLES  
WEEK ENDING NOVEMBER 5, 1966





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## CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDED NOVEMBER 12, 1966 AND NOVEMBER 13, 1965 (45th WEEK) - CONTINUED

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			POLIOMYELITIS				RUBELLA
	1966	Cumulative		1966	Cumulative		Total		Paralytic		
		1966	1965		1966	1965	1966	1965	1966	Cumulative 1966	
UNITED STATES...	716	194,274	247,629	43	3,021	2,632	4	-	4	79	239
NEW ENGLAND.....	24	2,434	37,066	4	139	133	-	-	-	-	38
Maine.....	15	260	2,873	1	12	17	-	-	-	-	7
New Hampshire.....	-	80	382	-	9	7	-	-	-	-	-
Vermont.....	4	302	1,344	-	4	8	-	-	-	-	1
Massachusetts.....	2	810	19,346	2	57	49	-	-	-	-	5
Rhode Island.....	-	72	3,950	1	17	14	-	-	-	-	2
Connecticut.....	3	910	9,171	-	40	38	-	-	-	-	23
MIDDLE ATLANTIC.....	14	18,238	15,669	10	382	344	-	-	-	-	10
New York City.....	2	8,340	2,647	5	61	58	-	-	-	-	4
New York, Up-State.	1	2,585	4,252	1	105	98	-	-	-	-	6
New Jersey.....	4	1,899	2,916	-	107	88	-	-	-	-	-
Pennsylvania.....	7	5,414	5,854	4	109	100	-	-	-	-	-
EAST NORTH CENTRAL...	160	69,510	57,680	7	482	398	-	-	-	4	93
Ohio.....	4	6,383	8,958	3	138	107	-	-	-	1	2
Indiana.....	2	5,759	2,073	3	85	47	-	-	-	1	30
Illinois.....	18	11,447	3,037	1	86	105	-	-	-	2	14
Michigan.....	96	14,808	26,962	-	126	92	-	-	-	-	14
Wisconsin.....	40	31,108	16,650	-	47	47	-	-	-	-	33
WEST NORTH CENTRAL...	131	8,986	16,942	2	157	132	-	-	-	1	11
Minnesota.....	4	1,660	723	-	35	32	-	-	-	1	2
Iowa.....	4	5,358	9,145	-	22	12	-	-	-	-	4
Missouri.....	30	566	2,622	1	61	53	-	-	-	-	3
North Dakota.....	52	1,233	3,881	-	11	11	-	-	-	-	2
South Dakota.....	-	40	115	-	5	3	-	-	-	-	-
Nebraska.....	41	129	456	1	9	10	-	-	-	-	-
Kansas.....	NN	NN	NN	-	14	11	-	-	-	-	-
SOUTH ATLANTIC.....	39	15,593	25,879	6	512	494	-	-	-	1	12
Delaware.....	-	262	508	-	4	10	-	-	-	-	-
Maryland.....	1	2,121	1,188	-	49	47	-	-	-	-	-
Dist. of Columbia..	-	388	83	-	14	10	-	-	-	-	-
Virginia.....	5	2,205	4,146	-	62	63	-	-	-	-	-
West Virginia.....	10	5,411	14,301	-	39	26	-	-	-	-	1
North Carolina.....	6	519	403	1	131	103	-	-	-	-	-
South Carolina.....	1	660	1,099	1	53	62	-	-	-	-	3
Georgia.....	-	236	623	1	66	59	-	-	-	1	-
Florida.....	16	3,791	3,528	3	94	114	-	-	-	-	8
EAST SOUTH CENTRAL...	47	19,980	14,577	1	260	201	-	-	-	3	14
Kentucky.....	-	4,754	2,859	-	90	79	-	-	-	-	11
Tennessee.....	39	12,467	8,232	1	90	64	-	-	-	-	3
Alabama.....	4	1,725	2,345	-	56	33	-	-	-	1	-
Mississippi.....	4	1,034	1,141	-	24	25	-	-	-	2	-
WEST SOUTH CENTRAL...	107	25,346	31,393	10	410	333	4	-	4	67	2
Arkansas.....	7	979	1,088	-	36	17	-	-	-	1	-
Louisiana.....	-	99	113	3	152	182	-	-	-	1	-
Oklahoma.....	15	534	215	-	21	21	-	-	-	1	-
Texas.....	85	23,734	29,977	7	201	113	4	-	4	64	2
MOUNTAIN.....	48	12,273	20,267	-	91	94	-	-	-	-	30
Montana.....	15	1,871	3,825	-	5	2	-	-	-	-	-
Idaho.....	12	1,657	2,887	-	5	11	-	-	-	-	-
Wyoming.....	-	214	856	-	6	5	-	-	-	-	-
Colorado.....	9	1,348	5,836	-	49	26	-	-	-	-	4
New Mexico.....	2	1,150	679	-	10	11	-	-	-	-	-
Arizona.....	5	5,333	1,381	-	10	19	-	-	-	-	26
Utah.....	3	648	4,589	-	1	17	-	-	-	-	-
Nevada.....	2	52	214	-	5	3	-	-	-	-	-
PACIFIC.....	146	21,914	28,156	3	588	503	-	-	-	3	29
Washington.....	---	4,249	7,352	---	43	39	---	---	---	2	---
Oregon.....	85	2,005	3,356	-	37	35	-	-	-	-	17
California.....	51	14,930	13,256	3	486	403	-	-	-	1	7
Alaska.....	10	581	197	-	18	18	-	-	-	-	2
Hawaii.....	-	149	3,995	-	4	8	-	-	-	-	3
Puerto Rico.....	77	3,167	2,645	-	16	11	-	-	-	1	3

## Morbidity and Mortality Weekly Report

CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

NOVEMBER 12, 1966 AND NOVEMBER 13, 1965 (45th WEEK) - CONTINUED

AREA	STREPTOCOCCAL SORE THROAT & SCARLET FEVER	TETANUS		TULAREMIA		TYPHOID		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
		1966	1966	Cum. 1966	1966	Cum. 1966	1966	Cum. 1966	1966	Cum. 1966	1966
UNITED STATES...	6,159	2	168	2	153	5	340	5	235	43	3,521
NEW ENGLAND.....	999	-	4	-	1	-	11	-	3	2	83
Maine.....	32	-	-	-	-	-	-	-	-	-	25
New Hampshire.....	13	-	-	-	-	-	-	-	-	-	28
Vermont.....	5	-	-	-	-	-	-	-	-	2	25
Massachusetts.....	121	-	2	-	1	-	7	-	1	-	4
Rhode Island.....	50	-	-	-	-	-	-	-	-	-	-
Connecticut.....	778	-	2	-	-	-	4	-	2	-	1
MIDDLE ATLANTIC.....	129	-	14	-	-	1	56	2	44	-	205
New York City.....	13	-	5	-	-	1	25	-	-	-	1
New York, Up-State.....	81	-	2	-	-	-	12	-	13	-	192
New Jersey.....	NN	-	2	-	-	-	7	-	13	-	-
Pennsylvania.....	35	-	5	-	-	-	12	2	18	-	12
EAST NORTH CENTRAL...	694	-	20	-	19	2	41	-	19	6	462
Ohio.....	65	-	4	-	3	1	20	-	9	-	194
Indiana.....	66	-	4	-	9	-	4	-	-	3	106
Illinois.....	124	-	4	-	6	1	5	-	10	2	68
Michigan.....	346	-	6	-	-	-	6	-	-	1	41
Wisconsin.....	93	-	2	-	1	-	6	-	-	-	53
WEST NORTH CENTRAL...	432	1	14	1	19	-	31	-	4	16	806
Minnesota.....	10	-	3	-	1	-	1	-	-	5	191
Iowa.....	165	-	2	-	-	-	5	-	-	3	154
Missouri.....	6	1	8	-	10	-	15	-	3	2	238
North Dakota.....	157	-	-	-	-	-	1	-	-	2	46
South Dakota.....	13	-	-	1	4	-	-	-	-	4	93
Nebraska.....	-	-	-	-	2	-	2	-	-	-	23
Kansas.....	81	-	1	-	2	-	7	-	1	-	61
SOUTH ATLANTIC.....	747	-	32	-	12	-	65	-	109	4	451
Delaware.....	12	-	-	-	-	-	1	-	2	-	-
Maryland.....	90	-	3	-	2	-	11	-	26	-	3
Dist. of Columbia..	16	-	-	-	-	-	2	-	-	-	-
Virginia.....	131	-	6	-	2	-	15	-	31	-	232
West Virginia.....	223	-	-	-	1	-	1	-	-	-	53
North Carolina.....	15	-	4	-	3	-	6	-	27	-	4
South Carolina.....	71	-	2	-	1	-	13	-	5	-	-
Georgia.....	7	-	7	-	3	-	4	-	18	-	96
Florida.....	182	-	10	-	-	-	12	-	-	4	63
EAST SOUTH CENTRAL...	941	-	22	-	23	-	43	3	42	5	445
Kentucky.....	96	-	2	-	2	-	10	-	9	3	100
Tennessee.....	666	-	5	-	13	-	22	-	24	2	304
Alabama.....	120	-	8	-	4	-	6	1	7	-	20
Mississippi.....	59	-	7	-	4	-	5	2	2	-	21
WEST SOUTH CENTRAL...	601	1	42	1	67	2	36	-	9	7	710
Arkansas.....	11	-	4	-	50	-	4	-	2	1	79
Louisiana.....	-	-	10	-	4	-	10	-	-	1	48
Oklahoma.....	91	-	3	-	7	-	9	-	6	3	174
Texas.....	499	1	25	1	6	2	13	-	1	2	409
MOUNTAIN.....	837	-	2	-	9	-	17	-	4	1	94
Montana.....	34	-	-	-	2	-	-	-	-	-	7
Idaho.....	85	-	-	-	-	-	-	-	-	-	-
Wyoming.....	49	-	-	-	3	-	-	-	1	-	-
Colorado.....	306	-	2	-	-	-	4	-	2	-	18
New Mexico.....	98	-	-	-	1	-	2	-	1	1	16
Arizona.....	151	-	-	-	1	-	5	-	-	-	41
Utah.....	111	-	-	-	2	-	5	-	-	-	3
Nevada.....	3	-	-	-	-	-	1	-	-	-	9
PACIFIC.....	779	-	18	-	3	-	40	-	1	2	265
Washington.....	---	---	---	---	---	---	11	---	---	---	15
Oregon.....	30	-	1	-	-	-	1	-	-	-	4
California.....	721	-	17	-	3	-	26	-	1	2	246
Alaska.....	20	-	-	-	-	-	-	-	-	-	-
Hawaii.....	8	-	-	-	-	-	2	-	-	-	-
Puerto Rico.....	1	2	53	-	-	-	16	-	-	1	18



MEASLES - 1966 - (Continued from page 387)

Paterson, New Jersey

During October 1966, 47 cases of measles were reported from 8 of New Jersey's 21 counties. The largest number of cases was reported from the city of Paterson (MMWR, Vol. 15, No. 42). By October 20, 37 cases were known to the Paterson Board of Health, 34 of which occurred among students attending eight of the city's public and parochial schools. The majority of the cases were reported from the lower socioeconomic areas of Paterson.

On October 30 an immunization campaign was conducted by the Paterson Board of Health in a circumscribed lower socioeconomic area of the city. Representatives from the State Board of Health and the local Community Action Program participated in an intensive door-to-door campaign to reach families in this area. Radio, newspaper, and sound truck publicity were also utilized. Within the target area of the campaign, 1,200 children were immunized. Eighty percent of the families who came to the immunization clinic indicated that they were motivated to come as a result of direct personal contact with the organized health workers and volunteers.

In addition, the Paterson School system has distributed 3,308 questionnaires on measles susceptibility among kindergarten through third grade students in the schools located within the defined geographic area. Of the 2,382 forms returned, 1,359 were from students with a history of measles or vaccination, while 1,023 or 42.9 percent of the forms were from children considered to be susceptible. A concentrated effort is now being made by 40 health department employees and community volunteers to visit the homes of the 926 children whose families did not respond to the questionnaire. Their function is to gather the necessary information preparatory to a school immunization program and to stimulate participation in the program.

(Reported by Dr. J. Allen Yeager, Director, Paterson Board of Health; Dr. William J. Dougherty, Director of Preventable Disease Control, New Jersey State Department of Health.)

ERRATUM: Vol. 15, No. 44, p. 378

The date in the title of the Measles County Map should be October 29, not November 5.

THE MORBIDITY AND MORTALITY WEEKLY REPORT, WITH A CIRCULATION OF 15,600, IS PUBLISHED AT THE COMMUNICABLE DISEASE CENTER, ATLANTA, GEORGIA

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IN ADDITION TO THE ESTABLISHED PROCEDURES FOR REPORTING MORBIDITY AND MORTALITY, THE COMMUNICABLE DISEASE CENTER WELCOMES ACCOUNTS OF INTERESTING OUTBREAKS OR CASE INVESTIGATIONS WHICH ARE OF CURRENT INTEREST TO HEALTH OFFICIALS AND WHICH ARE DIRECTLY RELATED TO THE CONTROL OF COMMUNICABLE DISEASES. SUCH COMMUNICATIONS SHOULD BE ADDRESSED TO:

THE EDITOR
MORBIDITY AND MORTALITY WEEKLY REPORT
COMMUNICABLE DISEASE CENTER
ATLANTA, GEORGIA 30333

NOTE: THE DATA IN THIS REPORT ARE PROVISIONAL AND ARE BASED ON WEEKLY TELEGRAMS TO THE CDC BY THE INDIVIDUAL STATE HEALTH DEPARTMENTS. THE REPORTING WEEK CONCLUDES ON SATURDAY; COMPILED DATA ON A NATIONAL BASIS ARE RELEASED ON THE SUCCEEDING FRIDAY.

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Table with multiple columns and rows, containing data for various states and a total row. The text is partially obscured and difficult to read.

Table with multiple columns and rows, containing data for various states and a total row. The text is partially obscured and difficult to read.