



MONTHLY MORBIDITY REPORT

Provisional Statistics

Reported Morbidity
November/December, 1978

from
EPIDEMIOLOGY UNIT AND PUBLIC HEALTH STATISTICS

RED MEASLES - THE CONTINUING SAGA

Measles Outbreak - Lake Charles - November, 1978:

A few cases of rash illness were reported in early and mid-October in the Lake Charles area. Two of the first three cases had rashes on trunk and legs, with no rash on the face. However, in late October, several cases with symptoms compatible with measles were reported. In mid-November, a cluster of similar cases were reported. On November 16th, 3 of the cases were confirmed serologically and the next day a team of investigators from State, regional and local health departments intensified investigative efforts. Over the next few days many more cases were uncovered by an extensive media publicity campaign and personal contact with the pediatricians in the Lake Charles area.

Epidemiology:

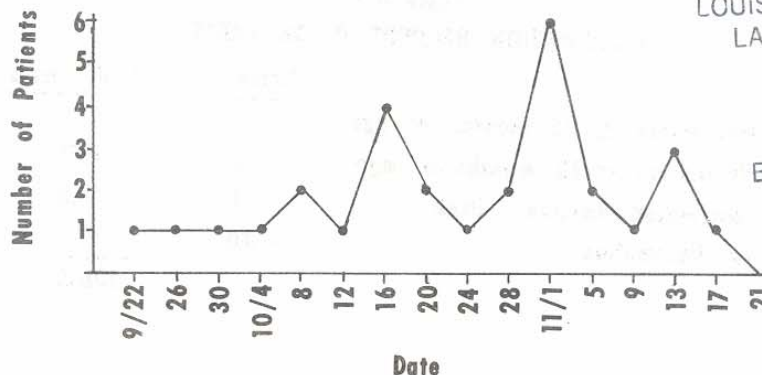
A case was defined by 3 major criteria: presence of fever ≥ 101 ; prodromal cold symptoms including cough, coryza, or conjunctivitis; and maculopapular rash lasting 3 or more days. A total of 38 cases were reported to the Health Department and 29 were finally accepted as confirmed cases. Onset

dates were between September 22nd and November 19th. All of the reported cases, except two were interviewed by Health Department investigators, and the 2 who could not be contacted and interviewed were not listed as cases in the final tabulation. Seven other cases were not accepted as measles: four did not fit the case definition; physicians who saw the other patients diagnosed one "case" as dermatitis, another as roseola, and a third as chickenpox. Twenty-seven of the 29 patients (93%) were seen by physicians during their acute illness. The most frequent symptoms and signs among the cases were: fever and rash (100%), conjunctivitis (88%), cough (81%), coryza (50%), and photophobia (27%). Pruritis, headache, earache, and sore throat were other symptoms reported in low frequency. Rash lasted a mean of 4 days, and the mean temperature reached was 103.4°F . There were no deaths but a teenage patient was hospitalized for one week with high fever and meningeal signs.

As can be seen from the epidemic curve in Table I, there was no sharp peak to the outbreak. Instead, cases were spread relatively evenly over a 2 month time interval with a small grouping of cases in early November. There were no confirmed secondary cases among household contacts, and there

Table I

MEASLES CASES BY DATE OF ONSET IN CALCASIEU PARISH SEPTEMBER - NOVEMBER 1978



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BATON ROUGE, LA

Table II
MEASLES CASES BY AGE
CALCASIEU PARISH
(SEPTEMBER - NOVEMBER 1978)

<1=0	
1-4=0	
5-9=9	31%
10-14=9	31%
15-19=9	31%
20-24=2	6.9%

were no cases under 5 years of age. The ages of the cases ranged from 6 to 21 and the median age was 14 (Table II). A high percentage of cases (62%) occurred in the 10 - 19 age group. Seventeen of the cases attended elementary school, 10 high school, and 2 were out of school. Six elementary schools were involved and 2 high schools. The male - female ratio was approximately 1:1 (14 males:15 females).

Although there was no clearcut index case, the first reported case occurred in an 18 year old who did not attend school and subsequent early cases occurred in one of the high schools where the first patient had close friends. No definite link was found between the Lake Charles outbreak and a major measles outbreak occurring simultaneously in Houston, Texas.

Documentation of vaccination records were obtained on 28 of the 29 cases (See Table III). 39.3% of cases were vaccinated with live attenuated vaccine after 12 months of age and 35.7% had no history of vaccination. The other 25% were immunized prior to 12 months of age or received inactivated vaccine.

Outbreak Control:

After the initial case finding indicated that a significant red measles outbreak was occurring in the Lake Charles area, an attempt was made to define the limits of the outbreak. At the same time that Lake Charles was reporting its cases, Cameron Parish reported approximately 7 cases in 2 locations (1 in Grand Chenier and 6 in Cameron). Increased surveillance for measles was set up in all contiguous parishes. Over the

ensuing two weeks an additional 9 cases were reported from Jefferson Davis Parish (1 in a rural area near Allen Parish, 1 in Lake Arthur, and 7 in Jennings).

An intensive publicity campaign was conducted through TV, radio stations, and newspapers between Beaumont, Texas and Lafayette, Louisiana. Parents in Calcasieu Parish were asked to check their children's immunization records and all children and young adults between 12 months and 21 years of age who had not been vaccinated against measles were urged to see their private physicians or attend special immunization clinics at the Calcasieu Parish Health Unit and a few of its local satellite clinics. The response to this call for voluntary immunization was poor despite the massive publicity campaign. The following week with schools back in session, all of the high schools in the Greater Lake Charles area and all of the elementary schools with measles cases were visited and immunization records were reviewed. Letters were sent home to parents of all those who either had not been immunized with measles vaccine or had no school records of any vaccinations. The parents were asked to supply records of measles vaccination or to sign a consent form for their children to be vaccinated. Teams of health department personnel went into the schools and vaccinated the children who had signed consent forms. The vaccination effort is continuing in the schools. To date, 497 children have been vaccinated in the school program. An additional 500 were vaccinated in the regularly scheduled immunization clinics at the health unit. This is 283 over the total number of measles vaccinations given the month prior to the outbreak. Several pediatricians in the area have cooperated with this effort by reviewing their own records and vaccinating many of their patients who needed vaccination. An estimated 100 to 300 additional susceptibles have been reached in this way. Therefore, we estimate that a total of 1100 - 1300 children have been vaccinated.

This total is significant because 1) those immunized were identified as susceptible by record reviews, and 2) immunization levels in the Lake Charles area are excellent, in excess of 90% according to survey data.

Interpretation of Data:

This measles outbreak illustrates several points about measles activity in the post-vaccination years:

1. Calcasieu Parish had only had 3 cases of measles reported since a 1971 outbreak when 101 cases occurred. Measles outbreaks before a good vaccine was

Table III
VACCINATION RECORDS OF 28 CASES

	<u>Cases</u>	<u>% of Cases</u>
(1) Vaccinated \geq 12 months of age	- 11	39.3
(2) Vaccinated $<$ 12 months of age	- 3	10.7
(3) Inactivated Vaccine Used	- 4	14.3
(4) No Vaccination	- 10	35.7
		<u>100.0</u>

available occurred in cycles of 3 - 5 years. The cycle time for outbreaks nationwide now appears to be longer, perhaps explaining the 7 year time interval between outbreaks in Calcasieu Parish. This time interval may have been necessary to accumulate enough susceptibles for measles virus to take hold in a community.

Measles tends to be grossly underreported. Before vaccine was available, about 400,000 cases were reported in the United States each year, which was one-tenth the number that should have been occurring according to serologic and historic studies. Measles is probably the most highly contagious disease known to man and one or two confirmed cases usually means that there are many more cases in the community.

Measles is no longer a disease confined to the under ten population. In recent years, the highest incidence has been in the 10 - 14 age group with a steady increase in the 15 - 19 age group. The median age of the Calcasieu outbreak was 14, with a considerable number of cases in the 15 - 22 age range. Adolescents born after 1960 have had less experience with natural measles infection than previous generations of teenagers. Since many of them have not been vaccinated, they are prime targets for measles outbreaks.

This outbreak illustrates that voluntary vaccination in mass campaigns conducted outside of schools during epidemics is doomed to failure. Although our initial campaign during Thanksgiving week may have been hurt by holiday preparations, it has been shown over and over again in epidemics nationwide that the only truly effective way to mass immunize and prevent spread of measles is to temporarily exclude from school all those who have not or will not be vaccinated.

"Why were there as many cases in vaccinated as in unvaccinated individuals? Was there something wrong with our vaccine?" This is the question public health officials are most frequently asked in measles outbreaks. Actually, in 14 outbreaks investigated in 1974 - 1976, 40.9% of all cases were found in previously vaccinated individuals.¹ This compares to 64.3 % in our outbreak. However, 38.9% of those with documented prior vaccinations were immunized prior to 12 months of age or given inactivated vaccine, both circumstances now known to be associated with lower vaccine efficacy. This may explain some of the vaccine failures. Looked at another way, only 39.3% of cases received an effective vaccine after 12 months of age. There are three possibilities why vaccination with the live virus vaccine does not prevent measles: (1) vaccine is not stored or inoculated properly, (2) initial vaccination "did not take," (3) vaccine initially induced antibody response which fell to unprotective levels with time. Although the third theory sounds reasonable, it has never been proven that a child who seroconverted with vaccination ever developed measles later on in life. Although serum antibody titers do fall with time, a recent study by Krugman showed that fourteen years after vaccination with live attenuated measles-vaccine, 98 of 99 children had detectable HI antibody at a 1:4

or greater dilution.² Improper storage and vaccine administration failing to induce an antibody response probably occurs in about 5% of those vaccinated. Although only a 5% failure rate for a vaccine indicates very good efficacy, when the immunization status of the population approaches 90 - 95% (as it is in the Lake Charles area), the 5% failure rate becomes very significant. Take, for example, a sample of 10,000 children, 95% of whom have been vaccinated with live measles vaccine. This means that 9,500 out of 10,000 are vaccinated leaving 500 unvaccinated susceptibles. If there is a 5% failure rate of the vaccine, 475 vaccinated individuals ($9500 \times 5\%$) will also be susceptible. The 475 vaccine failures closely approximates the 500 non-vaccinees and therefore, in an epidemic situation in this population a more or less equal number of cases would be expected in vaccinated as compared with unvaccinated children. Although the cases will be relatively equal in both groups, the attack rate in the unvaccinated will be much higher than in the vaccinated group.

6. Serologic confirmation is often of primary importance to local school and government officials in proving the existence of measles in their community. However, as reflected in the Lake Charles outbreak, waiting for serologic confirmation could cause a great deal of unnecessary delay in implementing outbreak control measures. It was almost 2 months after the onset of the first case before serologic confirmation was obtained. Obtaining paired blood samples 2 - 4 weeks apart and allowing for shipment and processing in the State Lab can take an inordinate amount of time. If measles is strongly suspected, health officials should be contacted and control measures implemented immediately.

NB: HI (hemagglutination inhibition) screening for measles is not done in the State Lab. Only CF (complement-fixation) testing is done. The CF test can only be used to test for suspect measles cases. It is not an effective screening test. To avoid confusion, please mark all specimens properly. If you suspect a red measles case write on specimen: "Suspect red measles: acute serum or convalescent serum." Acute and convalescent bloods should be obtained 2 - 3 weeks apart. If whole blood can be spun down and serum separated, refrigerate and hold the serum until a second specimen is obtained and submit both specimens to the lab properly labelled at the same time. If blood cannot be spun down locally, send the individual whole blood specimens to the lab as soon as they are obtained.

Measles - General Concepts:

Measles is an RNA virus of the paramyxovirus group. It is very effectively spread by aerosol inoculation. It occurs worldwide and is especially prevalent in late winter and early spring. The incubation period is usually 10 - 12 days but in adults may last as long as 3 weeks. The period of communicability is from the beginning of the prodromal period to about 4 days after appearance of the rash. The characteristic dusky-red blotchy rash appears on the 3rd to 7th day after the prodromal fever and cold symptoms begin. The rash

usually begins on the face, becomes generalized, and lasts 4 to 6 days. Atypical cases can occasionally occur especially among those previously immunized with inactivated vaccine. In these cases the rash often begins on the extremities. Although Koplik spots are often not seen in measles, they are thought to be pathognomonic if present. They are tiny white spots found opposite the first molar teeth and have been described as grains of salt on a wet background.

Although rare, there are significant complications of measles infections. These include encephalitis, SSPE, pneumonia, and otitis media. Encephalitis occurs in one out of every 1,000 cases. SSPE (subacute sclerosing panencephalitis) has been definitely linked to measles. It is characterized by the insidious onset of mental deterioration and myoclonic seizures with eventual progression to generalized convulsions, coma and death. The mean age of onset is about 10 years of age with a history of measles illness occurring on the average 7 years before onset of SSPE. The incidence of SSPE is 5 - 10 per 1 million cases of measles.

One in 1,000 measles cases dies primarily of pneumonia or neurologic complications caused by encephalitis. Measles illness during pregnancy increases fetal risk. Most commonly, this involves premature labor and increased rates of spontaneous abortion and low birth weight.

Measles - The Future:

With the advent of effective vaccines in 1963, the number of measles cases has plummeted from about 400 - 500,000 reported cases per year to an all time low of 22,000 in 1974. CDC has estimated that since its inception, vaccination has prevented 24 million cases of measles, 2,400 measles - related deaths, and 8,000 cases of mental retardation that would have resulted from measles encephalitis. Despite this encouraging news, since 1974 the number of cases of measles has increased

nationwide from 22,000 in 1974 to 57,000 in 1977. The year nationwide, cases are down to about 25,000 for the first 11 months of the year. In Louisiana, we have gone from a low of 13 in 1974 to about 420 so far this year:

TABLE IV

	U.S.	Louisiana
1973	26,690	9
1974	22,094	13
1975	24,374	31
1976	39,585	311
1977	57,345	125
1978 (To Date)	About 25,350	About 420

The natural cycles of peak measles years is probably one explanation for the rise in the number of cases. However, there is no doubt that a small but significant number of children still are not properly immunized against measles. HEW Secretary Califano has launched a national initiative to eradicate measles from the United States by 1982. Although this goal may appear out of reach at the present time, it is clear that by approaching 100% measles immunization in our school age children, we can greatly reduce the number of measles cases.

Below are excerpts from official recommendations of the Public Health Service Advisory Committee for Measles Virus Vaccine:³

MEASLES VIRUS VACCINE

Live measles virus vaccine* available in the United States is prepared in chick embryo cell culture. The vaccine virus strain primarily used at present has been attenuated beyond the level of the original Edmonston B strain and is therefore known as a further attenuated strain. Vaccine prepared with the further attenuated measles virus is generally preferred, in part because it causes fewer reactions than its predecessor. It is available in monovalent (measles only) form and in combinations: measles-rubella (MR) and measles-mumps-rubella (MMR) vaccines. All vaccines containing measles antigen are recommended for use at about 15 months of age. MMR is encouraged for use in routine infant vaccination programs. In all situations where measles vaccine is to be used, consideration should be given to using a combination vaccine when recipients are likely to be susceptible to rubella and/or mumps as well as to measles. Edmonston B measles vaccine is not available in combined form and is now rarely used.

Measles vaccine produces a mild or inapparent, non-communicable infection. Measles antibodies develop in at least 95% of susceptible children vaccinated at about 15 months of age or older with the current further attenuated vaccine. Evidence now extending to 15-year follow-up indicates that, although titers of vaccine-induced antibodies are lower than those following natural disease, the protection conferred appears to be durable.

Vaccine Shipment and Storage

Failure of protection against measles may result from the administration of improperly stored vaccine. During shipment and storage prior to reconstitution, measles vaccine must be kept at a temperature between 2-8 C (35.6-46.4 F). It must also be protected from light, which may inactivate the virus.

*Official name: Measles Virus Vaccine, Live, Attenuated

VACCINE USAGE

General Recommendations

Persons can be considered immune to measles only if they have documentation of:

- (1) Physician-diagnosed measles or laboratory evidence of measles immunity, or
- (2) Adequate immunization with live measles vaccine when 12 or more months of age.

Most persons born before 1957 are likely to have been infected naturally and generally need not be considered susceptible. All other children, adolescents, and adults are considered susceptible and should be vaccinated, if not otherwise contraindicated.

Dosage

A single dose of live measles vaccine (as a monovalent or combination product) should be given subcutaneously in the volume specified by the manufacturer. Immune serum globulin (ISG) should **NOT** be given with further attenuated measles virus vaccine. It is indicated only if Edmonston B vaccine is used.

Age at Vaccination

Measles vaccine is indicated for persons susceptible to measles, regardless of age, unless otherwise contraindicated. Current evidence indicates that for a maximum rate of seroconversion, measles vaccine should preferably be given when children are about 15 months of age. Whenever there is likely exposure to natural measles, infants as young as 6 months should be vaccinated. However, to ensure protection of infants vaccinated before 12 months of age, they should be revaccinated when they are about 15 months old. It is particularly important to vaccinate infants before they might encounter measles in day-care centers or other such environments.

Because of the *upward* shift in age distribution of reported cases, the immune status of all adolescents should be evaluated. Complete measles control will require protection of all susceptibles; therefore, increased emphasis must be placed on vaccinating susceptible adolescents and young adults. Susceptible persons include those who received inactivated vaccine or who were given live measles virus vaccine before they were 12 months of age, as well as those who were never vaccinated or never had measles.

Revaccination of Persons Vaccinated According to Earlier Recommendations

Persons vaccinated with live measles vaccine before 12 months of age and those vaccinated at any age with inactivated vaccine (available from 1963 to 1967) should be identified and revaccinated. Persons who are unaware of their age at vaccination or who were vaccinated prior to 1968 with a vaccine of unknown type should also be revaccinated. In addition, persons who received live measles vaccine in a series within 3 months of inactivated measles vaccine should be revaccinated.

There has been some confusion concerning the immunity of children vaccinated against measles at 12 months of age. This is because some recent data have indicated a slightly lower rate of seroconversion among children vaccinated at 12 months of age than among those vaccinated at 13 months or later. This difference is not sufficient to warrant routinely revaccinating persons in the former group; the vast majority are fully protected. If, however, the parents of a child vaccinated when 12 to 15 months old request revaccination for the child, there is no immunologic or safety reason to deny the request.

Individuals Exposed to Disease

Use of vaccine: Exposure to measles is not a contraindication to vaccination. Available data suggest that live measles vaccine, if given within 72 hours of measles exposure, may provide protection. If the exposure does not result in infection, the vaccine should induce protection against subsequent measles infection.

Use of ISG: To prevent or modify measles in a susceptible person exposed less than 6 days before, ISG, 0.25 ml/kg (0.11 ml/lb) of body weight, should be given (maximum dose—15 ml). ISG may be especially indicated for susceptible household contacts of measles patients, particularly contacts under 1 year of age, for whom the risk of complications is highest. Live measles vaccine should be given about 3 months later, when the passive measles antibodies should have disappeared, if the child is then at least 15 months old. *ISG should not be used in an attempt to control measles outbreaks.*

SIDE EFFECTS AND ADVERSE REACTIONS

Experience with more than 100 million doses of measles vaccine distributed in the United States through early 1978 indicates an excellent record of safety. About 5%-15%

of vaccinees may develop fever ≥ 103 F (≥ 39.4 C) beginning about the sixth day after vaccination and lasting up to 5 days. Most reports indicate that persons with fever are asymptomatic. Transient rashes have been reported rarely. Central nervous system conditions including encephalitis and encephalopathy have been reported approximately once for every million doses administered. Limited data indicate that reactions to vaccine are not age-related.

Subacute sclerosing panencephalitis (SSPE) is a "slow virus" infection of the central nervous system associated with a measles-like virus. Results from a recent study indicate that measles vaccine, by protecting against measles, significantly reduces the chance of developing SSPE (3,4). However, there have been reports of SSPE in children who did not have a history of natural measles but did receive measles vaccine. Some of these cases may have resulted from unrecognized measles illness in the first year of life or possibly from the measles vaccine. The recent decline in numbers of SSPE cases in the presence of careful surveillance is additional strong presumptive evidence of a protective effect of measles vaccination.

Revaccination Risks

There is no evidence of enhanced risk from receiving live measles vaccine for one who has previously received live measles vaccine or had measles. Specifically, there does not appear to be any enhanced risk of SSPE. The previously cited study showed no association between SSPE and either receiving live measles vaccine more than once or receiving it after having had measles.

On exposure to natural measles, some children previously inoculated with inactivated measles virus vaccine have developed atypical measles, sometimes with severe symptoms. Reactions, such as local edema and induration, lymphadenopathy, and fever, have at times been observed when live measles virus vaccine was administered to recipients of inactivated vaccine. However, despite the risk of local reaction, children who have previously been given inactivated vaccine (whether administered alone or followed by a dose of live vaccine within 3 months) should be revaccinated with live vaccine to avoid the severe atypical form of natural measles and to provide full and lasting protection.

PRECAUTIONS AND CONTRAINDICATIONS

Pregnancy: Live measles vaccine should not be given to females known to be pregnant. This precaution is based on the theoretical risk of fetal infection, which applies to administration of any live virus vaccine to females who might be pregnant or who might become pregnant shortly after vaccination. Although no evidence exists to substantiate this theoretical risk from measles vaccine, concern about it has constrained measles vaccination programs for adolescent girls. Considering the importance of protecting adolescents and young adults against measles with its known serious risks, asking females if they are pregnant, excluding those who are, and explaining the theoretical risks to the others are reasonable precautions in a measles immunization program.

Febrile illness: Vaccination of persons with febrile illness should be postponed until recovery. Minor illnesses such as upper respiratory infections, however, do not preclude vaccination.

Allergies: Live measles vaccine is produced in chick embryo cell culture. It has not been reported to be associated with allergic reactions and can be given to all who need it, including persons with allergies to eggs, chickens, and feathers. Some vaccines contain trace amounts of antibiotics to which patients may be allergic. Those administering vaccines should review the label information carefully before deciding whether patients with known allergies to such antibiotics can be vaccinated safely. Live measles virus vaccine does not contain penicillin.

Recent Administration of ISG: Vaccination should be deferred for about 3 months after a person has received ISG because passively-acquired antibodies might interfere with the response to the vaccine.

Tuberculosis: Tuberculosis may be exacerbated by natural measles infection. There is no evidence, however, that the live measles virus vaccine has such an effect. Therefore, tuberculin skin testing need not be a prerequisite for measles vaccination. The value of protection against natural measles far outweighs the theoretical hazard of possibly exacerbating unsuspected tuberculosis. If there is a need for tuberculin skin testing, it can be

done on the day of vaccination and read 48 to 72 hours later. If a recent vaccinee proves to have a positive skin test, appropriate investigations and, if indicated, tuberculosis therapy should be initiated.

Altered immunity: Replication of the measles vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, or generalized malignancy or with therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation. Patients with such conditions should not be given live measles virus vaccine. Their risks of being exposed to measles may be reduced by vaccinating their close susceptible contacts. Management of such persons, should they be exposed to measles, can be facilitated by prior knowledge of their immune status.

Management of Patients with Contraindications to Measles Vaccine

If immediate protection against measles is required for persons for whom live measles virus vaccine is contraindicated, passive immunization with ISG, 0.25 ml/kg (0.11 ml/lb) of body weight, should be given as soon as possible after known exposure (maximum dose—15 ml). It is important to note, however, that ISG, which will usually prevent measles in normal children, may not be effective in children with acute leukemia or other conditions associated with altered immunity.

Simultaneous Administration of Certain Live Virus Vaccines

See "General Recommendations on Immunization," MMWR 25:349-350, 355. 1976.

References:

- 1 CDC, Measles Surveillance Report No. 10, 1973 - 1976, issued 7/77, p. 22.
- 2 Krugman, S. Present Status of Measles and Rubella Immunization in United States: a medical progress report. J. Pediatr. 90: 1-12, 1977.
- 3 MMWR, Nov. 3, 1978, Vol 27, No. 44.
- 4 Horstmann, D.M., Problems in Measles and Rubella in Disease of the Month, Year Book Medical Publishers, Inc., Mar. 1978 p. 3-27.
- 5 Linnemann, C.C. Jr., "A Seroepidemiologic Study of a Measles Epidemic in a Highly Immunized Population," American Journal of Epidemiology, Vol. 95, No. 3, 1972, p. 238-246.

This public document was published at a cost of \$.27 per copy by the Office of Health Services and Environmental Quality to inform Physicians, Hospitals, and the Public of current Louisiana morbidity status under authority of special exception by Division of Administration. This material was printed in accordance with the standards for printing by state agencies established pursuant to R. S. 43:31.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS Reported Morbidity November, 1978	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTION	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SPERMATOPHYTES
TOTAL TO DATE 1977	23	0	14	0	574	145	499	136	10	22	27	5	143	1	146	3	80	18030	61
TOTAL TO DATE 1978	94	0	15	1	676	197	485	121	4	16	486	9	118	4	172	2	351	20753	68
TOTAL THIS MONTH	12	0	4	0	56	19	45	5	0	2	0	0	23	1	21	1	8	2112	6
ACADIA																		12	
ALLEN																		4	
ASCENSION																		7	
ASSUMPTION						1												4	
AVOYELLES																		2	
BEAUREGARD																		7	
BIENVILLE																		7	
BOSSIER					1		1											24	
CADDO	1				3	2	6	1					5		2			205	
CALCASIEU					1	2							7		4		7	115	
CALDWELL																		6	
CAMERON																	1	1	
CATAHOULA																		1	
CLAIBORNE																		4	
CONCORDIA																		1	
DESOTO																		2	
EAST BATON ROUGE					4		1	1					2		2			157	
EAST CARROLL																		1	
EAST FELICIANA																		7	
EVANGELINE					2	1									2			2	
FRANKLIN																		2	
GRANT					1													3	
IBERIA					1													2	
IBERVILLE							1											13	
JACKSON																		3	
JEFFERSON	1		2		16	2	3	1					1		3			95	
JEFFERSON DAVIS							1											7	
LAFAYETTE	7		1		11	4	7								3	1		34	
LAFOURCHE						1		1										16	
LASALLE																			
LINCOLN					1													27	
LIVINGSTON																		2	
MADISON					2													14	
MOREHOUSE															1			16	
NATCHITOCHES																		29	
ORLEANS					4	3	6						5					841	
OUACHITA					1		4											83	
PLAQUEMINES			1															3	
POINTE COUPEE																			
RAPIDES					1		1			2			2		2			82	
RED RIVER																		3	
RICHLAND																		3	
SABINE																		1	
ST. BERNARD					2		1											4	
ST. CHARLES																		8	
ST. HELENA																			
ST. JAMES	1																	16	
ST. JOHN																		5	
ST. LANDRY							4											10	
ST. MARTIN					1										1			4	
ST. MARY	1				1													6	
ST. TAMMANY																		20	
TANGIPAHOA							3											30	
TENSAS																		1	
TERREBONNE					2	1	3	1										8	
UNION							1								1			12	
VERMILION							1											4	
VERNON																		66	
WASHINGTON														1				30	
WEBSTER	1				1	1	1						1					17	
WEST BATON ROUGE																		19	
WEST CARROLL						1												2	
WEST FELICIANA																			
WINN																		2	
OUT OF STATE																			

* Includes Rubella, Congenital Syndrome

From January 1 through November 30, the following cases were also reported: 1-Brucellosis; 3-Malaria(contractured outside the U.S.A.); 3-Psittacosis; 3-Leptospirosis; 2-Rocky Mountain Spotted Fever; 2-Histoplasmosis; 11-Cholera; 1-Cryptococ

SELECTED REPORTABLE DISEASES (By Place of Residence)

STATE AND PARISH TOTALS Reported Morbidity December, 1978	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTION	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MEHINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 19 77	28	0	21	0	714	186	534	151	13	23	30	5	166	1	171	3	131	19962	674
TOTAL TO DATE 19 78	98	0	15	1	748	218	539	136	4	17	493	9	124	4	181	2	385	22795	733
TOTAL THIS MONTH	4	0	0	0	72	21	54	15	0	1	7	0	6	0	9	0	34	2052	69
ACADIA							2											21	1
ALLEN																		7	
ASCENSION					2													1	
ASSUMPTION																		6	1
BOYELLEES							1												
BEAUREGARD																		4	
BIENVILLE																		3	
BOSSIER							2											22	
CADDO					1	1	4	1										168	1
CALCASIEU							5	1					2		4		23	126	4
CALDWELL																		4	
CAMERON																	5		
CATAHOULA	1				1													2	
CLAIBORNE																		9	
CONCORDIA						3	1	1										3	
DESOTO																		13	
EAST BATON ROUGE					1		2											170	8
EAST CARROLL							1												
EAST FELICIANA																		1	
EANGELINE																		2	
FRANKLIN							2											2	
GRANT																		2	
IBERIA	1						1	2										2	
IBERVILLE																		4	2
IBACKSON																		2	
IBEFFERSON					20	4		1					1		1			85	
IBEFFERSON DAVIS																	6	4	
IBAFAYETTE					2	2		1					1		1			24	
IBAFOURCHE					3	2		2										10	
IBASALLE								1							1				
IBINCOLN						1												11	
IBIVINGSTON							1											1	
IBADISON					1													5	
IBOREHOUSE																		10	2
IBATCHITOCHES					1	2	1				1							6	
IBRELEANS					15	2	16	4			1		2					973	25
IBUACHITA					2		5				5			2				91	9
IBLAQUEMINES					1													7	
IBOINTE COUPEE							1												2
IBAPIDES					1	2				1					1			47	7
IBED RIVER																			
IBICHLAND																		7	
IBABINE																		1	
IBT. BERNARD					7		1											10	
IBT. CHARLES	1																	12	
IBT. HELENA																		9	
IBT. JAMES					1													12	
IBT. JOHN					1													3	
IBT. LANDRY					6	1	3	1										9	1
IBT. MARTIN					2	1												10	1
IBT. MARY																		8	1
IBT. TAMMANY					1													7	
IBANGIPAHOA	1				1		2											27	
IBENSAS																		1	
IBERREBONNE					1		1											4	
IBION																		2	
IBERMILION																		4	
IBERNON																		6	
IBASHINGTON							1											19	3
IBEBSTER					1		1								1			20	
IBEST BATON ROUGE																		10	1
IBEST CARROLL																		1	
IBEST FELICIANA																		5	
IBINN																		13	
IBUT OF STATE																		4	

*Includes Rubella, Congenital Syndrome

January 1 through December 31, the following cases were also reported: 3-Brucellosis; 4-Malaria (contracted outside U.S.A.); 3-Psittacosis; 3-Leptospirosis; 2-Rocky Mountain Spotted Fever; 2-Histoplasmosis; 11-Cholera; 1-Cryptococcus