Louisiana

DEPARTMENT OF HEALTH
AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES
AND ENVIRONMENTAL QUALITY

MONTHLY MORBIDITY REPORT

Provisional Statistics

REPORTED MORBIDITY
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OFFICE OF PUBLIC HEALTH STATISTICS

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CHEMOPROPHYLAXIS OF MALARIA

Each year a large number of Americans travel to malarious areas of the world. In recent years there has been a resurgence of malaria in many countries where control had been temporarily achieved. Consequently, there has been a significant increase in the incidence of imported malaria in the United States. From 1970 through 1975, the number of cases of malaria in civilians reported to the Center for Disease Control (CDC) rose from 151 to 430 per year. Information submitted to CDC by health departments and private physicians indicates that many travelers to malarious areas and their physicians are unaware of the risk of acquiring this disease or of the need for malaria chemoprophylaxis. Even when travelers are properly informed and do receive prophylactic medication, they often stop taking their drugs as soon as they return home. The financial cost of such inadequate malaria chemoprophylaxis was well illustrated in a recent study of patients with malaria at a New York hospital; it showed that an illness which cost approximately $1,700 to treat in the hospital could have been prevented by taking just 5 cents' worth of prophylactic medication a week (*1*). The potential risk of inadequate antimalarial prophylaxis can be even better appreciated when it is realized that from 1970 through 1975, 12 American travelers died of malaria after returning to this country.

To understand malaria chemoprophylaxis, a basic knowledge of the life cycle of the malaria parasite is needed. Malaria is transmitted by the bite of an infected *Anopheles* mosquito. As the mosquito feeds, sporozoites are released into the blood stream of the host and enter liver cells (exoerythrocytic stage). After the parasite divides and matures, the liver cell ruptures, and the merozoites invade red blood cells (erythrocytic stage). The intraerythrocytic parasites divide again, and when the infected cell ruptures, they repeat the cycle by reinvading other red blood cells. The release of merozoites from infected erythrocytes usually coincides with the onset of chills and fever characteristic of a clinical attack of malaria. Relapses occur when those parasites which have persisted in the liver mature and are released into the blood stream initiating another series of erythrocytic cycles. Infections caused by *Plasmodium falciparum* and *P. malariae* do not relapse because, unlike other species of *Plasmodium* which infect man, their exoerythrocytic stage terminates when the erythrocytes are invaded. Thus, *P. falciparum* and *P. malariae* infections can be cured by drugs which are active against the erythrocytic forms alone. In *P. vivax* and *P. ovale*, on the other hand, therapy directed at the erythrocytic stages will cure the clinical attack but may not prevent relapses because of a persistence of the exoerythrocytic parasites.

When discussing malaria chemoprophylaxis the following terms are frequently used:

Suppression—prevention of the clinical symptoms of a malaria infection by eliminating parasites from the blood without eliminating the exoerythrocytic stages

Suppressive cure—elimination of all parasites from the body by suppressive treatment which is continued longer than the natural duration of the exoerythrocytic stages

These terms dealing with the **prevention** or **suppression** of symptomatic malaria attacks must be distinguished from terms such as "clinical cure" and "radical cure," which refer to the results of **treatment** of acute or chronic illnesses rather than prophylaxis.

Although malaria is worldwide in distribution, the risk of acquiring the disease is not uniform from country to country, or even within countries. The risk depends on local conditions such as mosquito control efforts, prevalence of disease, weather, and altitude. Areas where malaria is known to exist include parts of Mexico, Haiti, Central America, South America, Africa, the Middle East, the Indian subcontinent, Southeast Asia, Korea, Indonesia, and Oceania. The specific areas of countries in which malaria transmission occurs are listed in Table 1 (*2*) *

(continued on page 2)

FOOD BORN HEPATITIS A OUTBREAK, ST. TAMMANY PARISH

Investigated by the Epidemiology Unit and
Eltimae McLain, R.N., Bobby Falcon, R.N., and Betty Burritt, R.N., St. Tammany Parish Health Unit

As of June 9, 1978 the Epidemiology Unit has learned of 32 cases of hepatitis A occurring between May 19 and June 1, 1978 among people associated with a country club in St. Tammany Parish. Of the 32, 24 (75.0%) had eaten a lunch prepared for participants in a tennis tournament held April 26, 1978. Approximately 61 people ate food prepared for the tournament, giving an attack rate among them of 39.3% (24/61). Three of the 24 were not exposed at the country club, but ate food taken home by participants. Of the 8 people affected who did not eat the tennis tournament lunch, 6 ate food at the country club that day, one ate there the next day, and one could not remember that day, but ate at the club on a regular basis. Approximately 68 people not associated with the tennis tournament ate at the country club on April 26,

(continued on page 5)

* This table could not be reproduced because of space limitations.

(continued from page 1)

All persons traveling to one or more of these areas are at risk of acquiring malaria. The traveler's itinerary should be reviewed to determine if he or she will be visiting a malarious area. If so, the traveler should be informed of the general protective measures which will help reduce exposure to mosquitoes and should receive a specific recommendation for malaria chemoprophylaxis. The choice of a drug or drugs will depend on several factors which are discussed in detail in the following sections. These include: the intensity of the traveler's exposure to malaria, whether or not the traveler is visiting an area with chloroquine-resistant malaria, whether or not the traveler has a history of drug allergy or intolerance, and whether or not she is pregnant.

Questions about malaria chemoprophylaxis may be directed to State Health Departments or to CDC: day 404-633-3311, night and weekend 404-633-2176.

GENERAL PROTECTIVE MEASURES

Because of the feeding habits of *Anopheles* mosquitos, malaria transmission takes place primarily between dusk and dawn. Therefore, travelers can reduce their risk of acquiring malaria by remaining in well-screened areas during these hours and by sleeping under mosquito netting (16 x 18 mesh). Outdoors, exposure to mosquitos can be reduced by wearing clothing that adequately covers the arms and legs and by applying mosquito repellent to exposed areas of the skin.

MALARIA CHEMOPROPHYLAXIS IN AREAS WHERE STRAINS OF *P. FALCIPARUM* ARE SENSITIVE TO CHLOROQUINE

Chloroquine phosphate is the drug of choice for the suppression of infections caused by *P. vivax, P. malariae, P. ovale,* and strains of *P. falciparum* that are sensitive to chloroquine (Table 2). The recommended adult dose is 500 mg (300 mg base) orally once a week beginning 1-2 weeks before entering a malarious area and continuing for 6 weeks after the last exposure (Table 3). Chloroquine is a safe and effective suppressive agent when taken on a regular basis. Serious adverse reactions to suppressive doses are rare, but minor side effects such as gastrointestinal disturbances, headache, dizziness, and blurred vision are occasionally seen. It may be possible to reduce the frequency and magnitude of these minor adverse reactions by taking the drug after meals. When chloroquine is used in high doses for prolonged periods of time, such as in the treatment of rheumatoid arthritis, it may cause a severe retinopathy characterized by a loss of central visual acuity, pigmentation of the macula, and retinal artery constriction. Retinopathy has never been reported with suppressive antimalarial doses of chloroquine (500 mg weekly) even when administered for as long as 26 years. Malaria chemoprophylaxis for pregnant women and for children is discussed in later sections.

Although chloroquine is well absorbed and suppressive blood levels are rapidly achieved after a single oral dose, travelers should nevertheless start this drug 1-2 weeks before entering a malarious area in order to establish a regular pattern of drug administration. This practice also allows any early adverse reactions to chloroquine that might occur to take place in this country, where they can be managed by the traveler's personal physician.

Chloroquine is active only against the erythrocytic stages of *Plasmodium* spp. Therefore, it **suppresses** the clinical symptoms of a malaria infection without **preventing** the infection. In the cases of *P. falciparum* and *P. malariae,* which have no persistent exoerythrocytic phase, chloroquine usually produces a suppressive cure when continued for 6 weeks after leaving the malarious area. Occasionally, however, delayed primary attacks caused by these 2 species can occur after 6 weeks. Travelers should be alerted to this risk, and if a fever develops after they return home, they should report their possible malaria exposure to their physician as soon as possible.

Because the exoerythrocytic stages of *P. vivax* and *P. ovale* persist in the liver, delayed initial attacks or relapses caused by these 2 species can occur as long as 4 years after chloroquine suppression is discontinued. These relapses can be prevented by the use of primaquine which is active against the exoerythrocytic stages of malaria parasites. However, in contrast to the use of primaquine to eradicate malaria parasites after a **clinical attack** (radical cure), the

TABLE 2. Indications for malaria chemoprophylaxis

Purpose	Drugs of Choice	Alternative Drugs
To prevent acquisition of malaria in areas **without** known chloroquine-resistant malaria	Chloroquine phosphate Amodiaquine Hydroxychloroquine Chloroquine sulfate	Pyrimethamine Chlorguanide[1]
To prevent acquisition of malaria in areas **with** known chloroquine-resistant strains of *P. falciparum*	Pyrimethamine-sulfadoxine[1]	Since pyrimethamine-sulfadoxine is not available in the United States and must be obtained overseas (see table 3), travelers should take weekly chloroquine or a comparable drug until pyrimethamine-sulfadoxine can be obtained (see page 4)
To prevent relapses of *P. vivax* and *P. ovale*	Primaquine[2]	

[1] Not available in the United States
[2] Not recommended for all travelers to malarious areas (see text this page)

TABLE 3. Drugs and doses for malaria chemoprophylaxis

Generic Name	Brand Names[1]	Manufacturer	Adult Dose	Pediatric Dose
Amodiaquine	Camoquin Flavoquine Basoquin	Parke-Davis	520 mg (400 mg base) once weekly and continued for 6 weeks after last exposure in a malarious area	<1 year : 65 mg (50 mg base) 1- 3 years:130 mg (100 mg base) 4- 6 years:195 mg (150 mg base) 7-10 years:260 mg (200 mg base) 11-16 years:390 mg (300 mg base)
Chlorguanide (Proguanil)	Paludrine	Ayerst, ICI Chemicals	100-200 mg daily and continued for 6 weeks after last exposure in a malarious area	2 years & under: 25-50 mg 3- 6 years: 50-75 mg 7-10 years: 100 mg
Chloroquine phosphate	Aralen Avlocloı Resochin	Winthrop ICI Chemicals FBA Pharmaceuticals	500 mg (300 mg base) weekly and continued for 6 weeks after last exposure in a malarious area	<1 year : 62 mg (37.5 mg base) 1- 3 years:125 mg (75 mg base) 4- 6 years:165 mg (100 mg base) 7-10 years:250 mg (150 mg base) 11-16 years:375 mg (225 mg base) or 5 mg/kg base
Chloroquine sulfate	Nivaquine	May & Baker	500 mg (300 mg base) weekly and continued for 6 weeks after last exposure in a malarious area	<1 year : 62 mg (37.5 mg base) 1- 3 years:125 mg (75 mg base) 4- 6 years:165 mg (100 mg base) 7-10 years:250 mg (150 mg base) 11-16 years:375 mg (225 mg base) or 5 mg/kg base
Hydroxychloro-quine	Plaquenil	Winthrop	400 mg (310 mg base) weekly and continued for 6 weeks after last exposure in a malarious area	<1 year : 50 mg (37.5 mg base) 1- 3 years:100 mg (75 mg base) 4- 6 years:130 mg (100 mg base) 7-10 years:200 mg (150 mg base) 11-16 years:290 mg (225 mg base) or 5 mg/kg base
Primaquine	None	Winthrop	26.3 mg (15 mg base) daily for 14 days or 79 mg (45 mg base) once weekly for 8 weeks; start during the last 2 weeks of, or following a course of suppression with chloroquine or a comparable drug	0.3 mg/kg base/day for 14 days or 0.9 mg/kg base/day weekly for 8 weeks
Pyrimethamine	Daraprim	Burroughs-Wellcome	25 mg weekly and continued for 6 weeks after last exposure in a malarious area	2 years & under: 6.25 mg 3-10 years: 12.5 mg Over 10 years: Adult dosage
Pyrimethamine-sulfadoxine[2]	Fansidar Falcidar Antemal Methipox	Hoffmann-La Roche Hoffmann-La Roche	50 mg pyrimethamine and 1,000 mg sulfadoxine every other week and continued for 6 weeks after last exposure in a malarious area[3]	In terms of sulfadoxine: 6 to 11 months: 125 mg 1 - 3 years : 250 mg 4 - 8 years : 500 mg 9 - 14 years : 750 mg

[1] Use of trade names is for identification only and does not constitute endorsement by the Public Health Service, United States Department of Health, Education, and Welfare.

[2] Countries where pyrimethamine-sulfadoxine can be obtained: Belgium, Brazil, Burma, Cambodia, Germany, Hong Kong, Indonesia, Laos, Malaysia, Philippines, Singapore, Switzerland, Thailand, Venezuela, Viet Nam.

[3] Use of this drug for more than 6 months is discouraged until more information becomes available on its chronic toxicity.

use of primaquine for **prophylaxis** is controversial, and it is not possible to make a recommendation which will be applicable to all travelers. The decision to administer primaquine should take into account both the intensity of the traveler's exposure to *P. vivax* and *P. ovale* and the potential risk of primaquine toxicity. For American travelers, most of whom remain in urban areas and stay on the usual tourist routes, the intensity of malaria exposure is usually low. Furthermore, adverse reactions to primaquine, such as hemolytic anemia and methemoglobinemia in glucose-6-phosphate dehydrogenase (G6PD)-deficient individuals may pose problems in some ethnic groups. G6PD deficiency occurs most commonly in blacks and persons of Mediterranean extraction. For these reasons, most authorities recommend that prophylaxis with primaquine be used **only** in travelers who are heavily exposed to mosquitoes and in those individuals in whom G6PD deficiency has been excluded by appropriate laboratory tests. When primaquine prophylaxis is used, it may be started during the last 2 weeks of, or following a course of chloroquine suppression.

Because the decision to administer primaquine should be made on an individual basis, the use of fixed combination chloroquine-primaquine tablets cannot be recommended routinely.

The most suitable alternatives to chloroquine are amodiaquine and hydroxychloroquine; both are 4-aminoquinolines whose activities and toxicities are similar to chloroquine. Prophylactic pyrimethamine can be used in patients who are unable to tolerate one of the 4-aminoquinolines. Chlorguanide can also be used for this indication, but it is not available in the United States. Like chloroquine, pyrimethamine and chlorguanide are active against the erythrocytic stages of malaria parasites and thus suppress the clinical symptoms of these infections. They have no significant toxicity in prophylactic doses. The major drawback to the use of pyrimethamine and chlorguanide in malaria chemoprophylaxis is the presence of drug-resistant strains of *P. vivax* and *P. falciparum.* Such resistant strains have been reported from all areas where there has been extensive use of pyrimethamine and/or chlorguanide.

MALARIA CHEMOPROPHYLAXIS IN AREAS WHERE CHLOROQUINE-RESISTANT STRAINS OF *P. FALCIPARUM* HAVE BEEN CONFIRMED

Although strains of both *P. vivax* and *P. falciparum* resistant to several antimalarial drugs have been identified, the most important from a prophylactic and therapeutic standpoint are those strains of *P. falciparum* which are resistant to the 4-aminoquinolines (for example, chloroquine, amodiaquine).

Areas in which chloroquine-resistant strains of *P. falciparum* have been documented include parts of the following: Panama, South America, the Indian subcontinent, Southeast Asia, and New Guinea, but **not** Africa or the Middle East. Countries with chloroquine-resistant *P. falciparum* malaria are listed in Table 1. Although this table provides the most up-to-date information available from the World Health Organization (*3,4*), it has several limitations. First, only those areas in which testing for chloroquine resistance has been performed are listed, and in many cases studies have been limited to 2 or 3 locales within a country. Thus, the status of *P. falciparum* sensitivity to chloroquine in neighboring areas may be unknown. Second, many of the studies on which Table 1 is based were performed between 5 and 10 years ago. Since then, changes in the distribution and degree of chloroquine resistance may have taken place. Finally, sensitive and resistant strains of *P. falciparum* can coexist in the same or neighboring areas. For these reasons recommendations for malaria chemoprophylaxis in countries with chloroquine-resistant strains of *P. falciparum* must be individualized. Moreover, these recommendations may change from year to year as areas with chloroquine resistance change and new drugs become available. Individualized recommendations are also important because, at present, there are no drugs available in the United States which are universally acceptable for the suppression of chloroquine-resistant strains of *P. falciparum*.

The descriptions and recommendations made here are general ones. For specific recommendations about chemoprophylaxis in areas with chloroquine-resistant malaria, physicians and public health officials are urged to consult CDC.

Chloroquine alone will provide some protection against malaria in areas with chloroquine-resistant malaria, since it suppresses the clinical symptoms of *P. vivax, P. malariae,* and *P. ovale* infections and is also active against chloroquine-sensitive strains of *P. falciparum*. Other drugs, such as amodiaquine which appears to be more effective than chloroquine against resistant strains, may offer additional but not absolute protection. Probably the most effective drug for the suppression of chloroquine-resistant *P. falciparum* malaria is a fixed combination of pyrimethamine and sulfadoxine—a long-acting sulfonamide—called Fansidar.* Because the manufacturer of this drug combination has not yet sought Food and Drug Administration approval, it is not licensed and cannot be obtained in this country (*5-7*). It is available, however, in most countries with known chloroquine-resistant malaria (Table 3). If the decision is made to use pyrimethamine-sulfadoxine, travelers should start taking chloroquine 1 to 2 weeks before entering the malarious area and continue it until they obtain pyrimethamine-sulfadoxine.

The recommended regimen for pyrimethamine-sulfadoxine is 50 mg pyrimethamine and 1,000 mg sulfadoxine once every 2 weeks. This drug is active primarily against the erythrocytic stages of malaria parasites. When continued for 6 weeks after returning from a malarious area, it produces suppressive cure in most chloroquine-sensitive and chloroquine-resistant *P. falciparum* infections and is an effective suppressant for *P. malariae, P. ovale,* and strains of *P. vivax* which are sensitive to pyrimethamine. Pyrimethamine-resistant strains of *P. vivax* will not be suppressed. For this reason, some authorities have suggested adding chloroquine to a course of pyrimethamine-sulfadoxine.

As with chloroquine, pyrimethamine-sulfadoxine will not prevent delayed primary attacks or relapses due to persistent exoerythrocytic stages of *P. vivax* and *P. ovale* when suppression is discontinued. Primaquine prophylaxis may be advisable in such cases (see page 2).

Thus far, no serious adverse reactions to pyrimethamine-sulfadoxine have been reported (*5-8*), but because the combination includes a sulfonamide, it should not be given to patients with known allergy to the sulfonamides. Physicians should also be alert to the risk of other potentially serious reactions that have been associated with the use of sulfonamides. Since pyrimethamine-sulfadoxine has only been studied in prophylactic regimens of 4-6 months' duration, the long-term use of this drug is discouraged until more information becomes available on its possible chronic toxicity.

MALARIA CHEMOPROPHYLAXIS IN PREGNANT WOMEN

Pregnancy is not a contraindication for malaria chemoprophylaxis. The most suitable agent for use during pregnancy is chloroquine or 1 of the other 4-aminoquinolines,

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because they have not been associated with teratogenic effects when administered for malaria suppression. Neither pyrimethamine nor pyrimethamine-sulfadoxine should be used in pregnant women because of reports of congenital defects associated with the administration of pyrimethamine to animals. To avoid excessive use of drugs during pregnancy, prophylaxis with primaquine, if indicated (see page 2) should be withheld until after delivery.

MALARIA CHEMOPROPHYLAXIS IN CHILDREN

In children, chloroquine phosphate is the drug of choice for the suppression of infections caused by *P. vivax, P. malariae, P. ovale,* and strains of *P. falciparum* that are sensitive to chloroquine (Table 2). The drug should be taken orally once a week beginning 1-2 weeks before entering a malarious area and continuing for 6 weeks after the last exposure.

Since chloroquine is not available in liquid form in the United States and since it has an extremely bitter taste, the tablets must be crushed or scored and broken and then dissolved, preferably in chocolate syrup, for pediatric administration. Chloroquine syrup or elixir (Nivaquine) or amodiaquine (Basoquin) can be purchased outside this country and should be considered for use in children staying for prolonged periods of time in malarious areas. Since fatalities from accidental poisonings in children have been reported, containers of these drugs should be kept out of the reach of children. One of the other 4-aminoquinolines or pyrimethamine or chlorguanide is a safe and effective alternative in children who cannot tolerate chloroquine.

In malarious areas with known chloroquine-resistant strains of *P. falciparum*, pyrimethamine-sulfadoxine may be used. As in adults, long-term use of this drug is discouraged.

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FOOD BORNE HEPATITIS A OUTBREAK, ST. TAMMANY PARISH

(continued from page 1)

giving an attack rate among them of about 9% (6/68).

The tennis tournament meal consisted of roast beef sandwiches, cole slaw, and brownies, all prepared at the country club. Preliminary analysis of food histories indicates that consumption of roast beef sandwiches was associated with illness. Country club officials have stated neither the sandwiches, the cole slaw, nor their ingredients were served at other country club meals.

The husband of one food handler developed illness on May 19. He and his wife deny that she brought food home from the club, and if that is true, his illness may indicate that she was ill and infectious at about the time that the meal was prepared. She had a gastrointestinal illness at about that time with anorexia, nausea, and malaise, but no jaundice or dark urine. She did not see a physician or miss any work, and did handle both sandwiches and cole slaw for the tennis tournament meal. In addition she usually prepares salad, and all 8 people infected who did not eat the tennis tournament meal did eat salad at the country club. All food handlers who had contact with the food are being tested for IgM anti-hepatitis A virus antibody to see if they have evidence of recent infection. Household contacts of ill persons have been offered gamma globulin injections.

ST. LOUIS ENCEPHALITIS

Once again, the Epidemiology Unit is requesting the assistance of the physicians of Louisiana in reporting cases of suspect or confirmed St. Louis (SLE) or other arbovirus encephalitis. Control of St. Louis encephalitis is based on control of the mosquito vector, primarily the night feeding *Culex* species. We rely on a two-fold system for deciding where to carry out intensive mosquito control activities: (1) reporting of human cases by physicians and (2) systematic serological study of birds trapped at the variety of locations around the state.

The only practical way to make the diagnosis of SLE is by serological testing, since the virus is extremely difficult to isolate. Both acute phase and convalescent phase sera, drawn two to three weeks apart, are required to confirm the diagnosis. (Either a sero-conversion or a 4-fold titer rise is confirmation). The hemagglutination-inhibition test is done at no charge by the Central Laboratory. Serum specimens should be mailed (freezing not necessary) either directly to the Central Lab, 7th Floor, 325 Loyola Ave., New Orleans, La. 70112, or to one of the Regional Labs. The local health unit or the Epidemiology Unit (504-568-5006) should also be notified of all suspect cases. Please do not delay notification until the diagnosis is confirmed because the several week delay may make an important difference in disease control activities.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS Reported Morbidity May, 1978	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIOUS	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
TOTAL TO DATE 19 77	5	0	4	0	251	50	250	57	2	5	23	4	27	0	32	1	71	7486
TOTAL TO DATE 19 78	9	0	1	0	260	78	214	66	1	7	426	3	38	1	31	1	333	8944
TOTAL THIS MONTH	7	0	1	0	55	21	45	23	0	2	115	0	11	1	18	0	21	1884
ACADIA					1	1	1	1			2						3	13
ALLEN																		7
ASCENSION							1											10
ASSUMPTION																		6
AVOYELLES																		2
BEAUREGARD																		8
BIENVILLE																		5
BOSSIER						1											2	22
CADDO					2	3	2			1					1		1	208
CALCASIEU					1	2	1											104
CALDWELL																		2
CAMERON							1							1				2
CATAHOULA																		2
CLAIBORNE							1	1										1
CONCORDIA								1										
DESOTO																		11
EAST BATON ROUGE	1				2	3		1			3				3			142
EAST CARROLL																		1
EAST FELICIANA											1						1	4
EVANGELINE																		1
FRANKLIN							1											2
GRANT																		1
IBERIA					2						2						2	4
IBERVILLE											2							26
JACKSON																		2
JEFFERSON			1		19	1	3	1			33		3		3		2	74
JEFFERSON DAVIS					1	1	1											7
LAFAYETTE					1			1			19							26
LAFOURCHE						2							1					9
LASALLE																		
LINCOLN						1												31
LIVINGSTON											1							2
MADISON					1													9
MOREHOUSE							2	1										23
NATCHITOCHES																		58
ORLEANS	2				13	5	12	4			1		5		2			668
OUACHITA					2		4				34						10	90
PLAQUEMINES							1	1										3
POINTE COUPEE																		1
RAPIDES	2							2		1					2			100
RED RIVER																		4
RICHLAND							1											6
SABINE																		1
ST. BERNARD					2		2				2							9
ST. CHARLES																		5
ST. HELENA							1								1			1
ST. JAMES																		4
ST. JOHN																		1
ST. LANDRY					1		1	1										20
ST. MARTIN																		2
ST. MARY							1											1
ST. TAMMANY					1			1			1		2		1			14
TANGIPAHOA					4						1							16
TENSAS																		1
TERREBONNE					1	1	2	5							5			7
UNION																		9
VERMILION											9							2
VERNON	2							2										38
WASHINGTON							4				4							8
WEBSTER					1		1											24
WEST BATON ROUGE							1											8
WEST CARROLL																		
WEST FELICIANA																		4
WINN																		9
OUT OF STATE																		3

* Includes Rubella, Congenital Syndrome

From January 1 through May 31, 1978, the following cases were also reported: 1-Brucellosis; 3-Malaria (contracted outside the U.S.A.); 1-Psittacosis; 2-Leptospirosis.