Texas Preventable Disease

NEWS

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contents:

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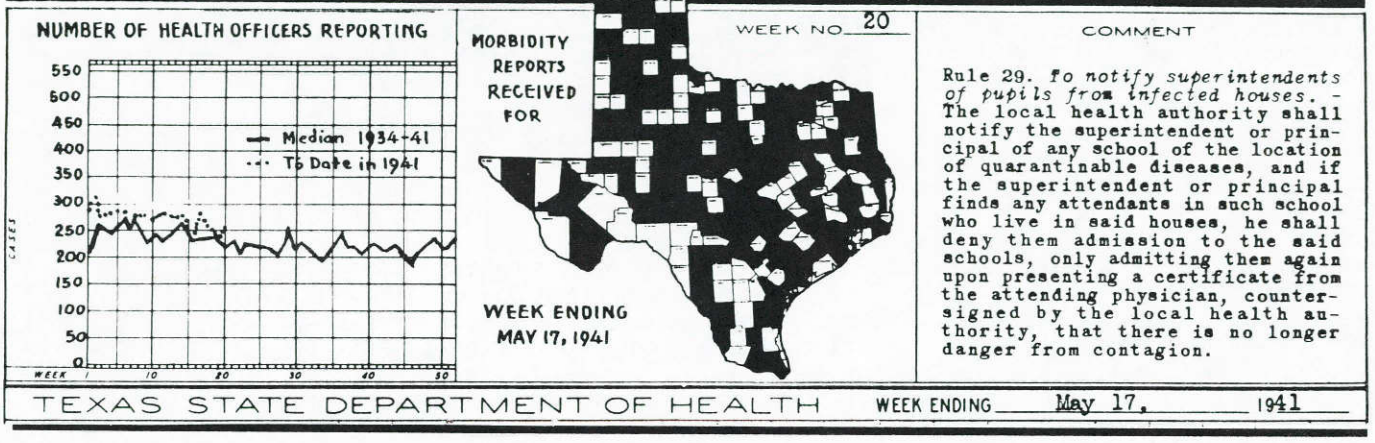
Texas MORBIDITY this WEEK



RECOMMENDATIONS FOR THE PREVENTION OF MALARIA AMONG TRAVELERS*

INTRODUCTION

These recommendations replace the guidelines for malaria prevention published in *Health Information for International Travel 1989*.[1] The new recommendations were developed by CDC in consultation with representatives from the Offices of Medical Services of the Department of State and the Peace Corps; the Division of Experimental Therapeutics of the Walter Reed Army Institute of Research; the Office of the Surgeon General, US Army; the Office of the Surgeon General, US Air Force; and the Bureau of Medicine and Surgery, US Navy.

Malaria in humans is caused by one of four protozoan species of the genus *Plasmodium: P. falciparum, P. vivax, P. ovale,* and *P. malariae*. All are transmitted by the bite of an infected female *Anopheles* mosquito. Occasionally, transmission occurs by blood transfusion or congenitally from mother to fetus. The disease is characterized by fever and "flu-like" symptoms including chills, headache, myalgia, and malaise, which may occur at intervals. Malaria may be associated with anemia and jaundice, and *P. falciparum* infections may cause kidney failure, coma, and death.

Resistance of *P. falciparum* to chloroquine has spread to most areas with malaria. Alternative drugs to chloroquine are either associated with adverse reactions, are of limited efficacy, or require complex and detailed instructions for use that reduce compliance. As a result, increasing numbers of US travelers to malarious areas are being infected with *P. falciparum*.

A new drug, mefloquine (Lariam), is highly effective against both chloroquine-resistant and Fansidar-resistant *P. falciparum* infections. Mefloquine has been approved by the Food and Drug Administration for use as an antimalarial agent. These revised recommendations incorporate mefloquine in the armamentarium for prophylaxis of malaria.

RISK OF ACQUIRING MALARIA

Malaria transmission occurs in large areas of Central and South America, Hispaniola, sub-Saharan Africa, the Indian Subcontinent, Southeast Asia, the Middle East, and Oceania. The estimated risk of acquiring malaria varies markedly from area to area. This variability is a function of the intensity of transmission in both urban and rural areas within the various regions, and it also depends on itinerary and time and type of travel. During 1980-1988, 1,534 cases of *P. falciparum* among US civilians were reported to CDC. Of these, 1,222 (80%) were acquired in sub-Saharan Africa; 112 (7%), in Asia; 100 (7%), in the Caribbean and in South America; and 100 (7%), in other parts of the world. Of the 37 fatal infections, 27 were acquired in sub-Saharan Africa.

*Adapted from: CDC. MMWR 1990;39(RR-3):1-10.

Thus, most imported malaria among US travelers was acquired in sub-Saharan Africa, even though only an estimated 90,000 Americans travel to sub-Saharan Africa each year. In contrast, an estimated 900,000 Americans travel to malarious areas of Asia and South America each year. This disparity in the risk of acquiring malaria reflects the fact that travelers to Africa are at risk in most rural and many urban areas and, moreover, tend to spend considerable time, including evening and nighttime hours, in rural areas where malaria risk is highest. Most travelers to Asia and South America, however, spend most of their time in urban or resort areas where there is limited, if any, risk of exposure, and they travel to rural areas mainly during daytime hours when there is limited risk of infection.

Estimating the risk of infection for different categories of travelers is difficult, even if persons travel or temporarily reside in the same general areas within a country. For example, tourists staying in air-conditioned hotels may be at lower risk than backpackers or adventure travelers. Similarly, longer-term residents living in screened and air-conditioned housing are less likely to be exposed than are missionaries or Peace Corps Volunteers.

DRUG RESISTANCE

Resistance of *P. falciparum* to choloroquine has been confirmed or is probable in all countries with *P. falciparum* malaria except the Dominican Republic, Haiti, Central America west of the Panama Canal, the Middle East, and Egypt (Figure 1). In addition, resistance to both chloroquine and Fansidar is widespread in Thailand, Burma, Cambodia, and the Amazon basin area of South America, and resistance has also been reported in sub-Saharan Africa.

GENERAL ADVICE FOR TRAVELERS TO MALARIA-ENDEMIC AREAS

All travelers to malarious areas of the world are advised to use an appropriate drug regimen and personal protection measures to prevent malaria; however, travelers should be informed that regardless of methods employed, malaria still may be contracted. Malaria symptoms can develop as early as 8 days after initial exposure in a malaria-endemic area and as late as several months after departure from a malarious area, after chemoprophylaxis has been terminated. Travelers should understand that malaria can be treated effectively early in the course of the disease, but delay of appropriate therapy can have serious or even fatal consequences. Individuals who have symptoms of malaria should seek prompt medical evaluation, including thick and thin malaria smears, as soon as possible.

PERSONAL PROTECTION MEASURES

Because of the nocturnal feeding habits of *Anopheles* mosquitoes, malaria transmission occurs primarily between dusk and dawn. Travelers should take protective measures to reduce contact with mosquitoes especially during these hours. Such measures include remaining in well-screened areas, using mosquito nets when sleeping, and wearing clothes that cover most of the body. Additionally, travelers should purchase insect repellent before travel for use on exposed skin. The most effective repellents contain N,N diethylmetatoluamide (DEET), an ingredient in many commercially available insect repellents. The actual concentration of DEET varies among repellents, ranging up to 95%. Some persons exposed to DEET have had potentially serious toxic encephalopathy. The possibility of adverse reactions to DEET will be minimized if the following precautions are taken: apply repellent sparingly only to exposed skin or clothing; avoid applying high-concentration products to the skin, particularly of children; do not inhale or ingest repellents or get them into the eyes; avoid applying repellents to portions of children's hands that are likely to have contact with eyes or mouth; never use repellents on wounds or irritated skin; wash repellent-treated skin after coming indoors; and if a suspected reaction to insect repellent occurs, wash treated skin and seek medical attention.[2]

Travelers also should purchase a pyrethrum-containing flying-insect spray to use in living and sleeping areas during evening and nighttime hours.

Permethrin (Permanone) may be sprayed on clothing for protection against mosquitoes.

CHEMOPROPHYLAXIS

Several factors should be considered in the selection of an appropriate chemoprophylactic regimen before travel. The travel itinerary should be reviewed in detail and compared with the information on areas of risk within a given country (1, pp. 15-61) to determine whether the traveler will actually be at risk of acquiring malaria. Additional factors should be considered, including 1) whether the traveler will be at risk of acquiring chloroquine-resistant *P. falciparum* malaria, 2) whether the traveler has previously experienced an allergic or other reaction to the antimalarial drug of choice, and 3) whether medical care will be readily accessible during travel.

Malaria chemoprophylaxis should preferably begin 1-2 weeks before travel to malarious areas (except for doxycycline, which can begin 1-2 days before). In addition to assuring adequate blood levels of the drug, this regimen allows any potential side effects to be evaluated and treated by the traveler's physician. Chemoprophylaxis should continue during travel in the malarious areas and for 4 weeks after a person leaves the malarious areas (except for mefloquine, for which two tablets after the end of exposure are adequate; see below).

Chemoprophylactic Regimens

For travel to areas of risk where chloroquine-resistant *P. falciparum* has not been reported, once-weekly use of chloroquine *alone* is recommended. Chloroquine is usually well tolerated. The few people who experience uncomfortable side effects may tolerate the drug better by taking it with meals or in divided, twice-weekly doses. As an alternative, the related compound hydroxychloroquine may be better tolerated. Chloroquine prophylaxis [should] begin 1-2 weeks before travel to malarious areas. It should be continued weekly during travel in malarious areas and for 4 weeks after a person leaves such areas. (See Table 1 for recommended dosages.)

For travel to areas of risk where chloroquine-resistant *P. falciparum* exists, use of mefloquine *alone* is recommended. The dose (250 mg for an adult) should be taken once each week for 4 weeks, followed by one dose every other week, as indicated in Figure 2. (See Table 1 for recommended dosages.) NOTE: In some foreign countries a fixed combination of mefloquine and Fansidar is marketed under the name Fansimef. Fansimef should not be confused with mefloquine, and it is not recommended for prophylaxis of malaria.

Alternatives to mefloquine

Travelers to areas of risk where drug-resistant *P. falciparum* is endemic and for whom mefloquine is contraindicated may elect to use an alternative regimen, as follows:

Doxycycline *alone* taken daily is an alternative regimen for short-term travelers who are intolerant of mefloquine or for whom the drug is contraindicated. Travelers who use doxycycline should be cautioned about the possible side effects as described in the section on adverse reactions. Doxycycline prophylaxis [should] begin 1-2 days before travel to malarious areas. It should be continued daily during travel in the malarious areas and for 4 weeks after the traveler leaves the malarious area. (See Table 1 for recommended dosages.)

Chloroquine *alone* taken weekly is recommended for travelers who cannot use mefloquine or doxycycline, especially pregnant women and children under 15 kg. Travelers who elect to use chloroquine (except those with histories of sulfonamide intolerance) should be given a treatment dose of Fansidar to be carried during travel. These travelers should take the Fansidar promptly if they have a febrile illness during their travel *and professional medical care is not readily available.* They should be aware that this self-treatment of a possible malarial infection is *only a temporary measure and that prompt medical evaluation is imperative.* They should continue their weekly chloroquine prophylaxis after presumptive treatment with Fansidar. (See Table 1 for recommended dosages for prophylaxis and Table 2 for presumptive treatment with Fansidar.)

Mefloquine should not be used for self-treatment because of the frequency of side effects, especially dizziness, which have been associated with therapeutic dosages of mefloquine.

Proquanil is a dihydrofolate reductase (DHFR) inhibitor. Resistance of *P. falciparum* to DHFR inhibitors is present in many endemic regions, but its distribution is not well delineated. Proguanil (Paludrine) is not available commercially in the US. Limited data suggest that it may be effective in East Africa but not in Thailand, Papua New Guinea, and West Africa. This lack of effectiveness may be due to drug resistance or to lack of compliance. If travelers use proguanil, it should be taken as a *daily* 200-mg dose (adult) in combination with *weekly* chloroquine.

Primaquine: prevention of relapses of *P. vivax* and *P. ovale*.

P. vivax and *P. ovale* have forms that can persist in the liver and cause relapses for as long as 4 years after routine chemoprophylaxis is discontinued. Travelers to malarious areas should be alerted to this risk; if they develop malaria symptoms after they leave the malarious area, they should report their travel history and the possibility of malaria to a physician as soon as possible. Primaquine decreases the risk of relapses by acting against the liver stages of *P. vivax* and *P. ovale*; however, it is not indicated for all travelers. Primaquine is administered after the traveler has left an endemic area, usually during the last 2 weeks of the 4-week period of prophylaxis after exposure in an endemic area has ended.

Since most malarious areas of the world (except Haiti) have at least one species of relapsing malaria, travelers to these areas have some risk of acquiring either *P. vivax* or *P. ovale*. This risk, however, is extremely difficult to quantify. Prophylaxis with primaquine is generally indicated for persons who have had prolonged exposure in malaria-endemic areas, eg, missionaries and Peace Corps volunteers. Although the actual risk to the traveler with less intense exposure is difficult to define, with the exception of individuals deficient in glucose-6-phosphate dehydrogenase (G6PD) (see discussion of adverse reactions), most people can tolerate the standard regimen of primaquine. (See Table 1 for recommended dosages).

Adverse Reactions and Contraindications to Antimalarials

The frequent or serious side effects of recommended antimalarials are discussed below. In addition, physicians should review the prescribing information in standard pharmaceutical reference texts and in the manufacturers' package inserts.

Chloroquine and **hydroxychloroquine** rarely cause serious adverse reactions when taken at prophylactic doses for malaria. Minor side effects may occur, such as gastrointestinal disturbance,

headache, dizziness, blurred vision, and pruritus, but generally these effects do not require discontinuance of the drug. High dosages of chloroquine , such as those used to treat rheumatoid arthritis, have been associated with retinopathy, but this serious side effect has not been associated with routine weekly malaria prophylaxis. Nevertheless, periodic ophthalmologic examinations for persons using chloroquine for extended periods (more than 6 years of cumulative weekly prophylaxis) are recommended. Chloroquine and related compounds may exacerbate psoriasis. Chloroquine may interfere with the antibody response to human diploid cell rabies vaccine when it is administered intradermally.

Mefloquine has rarely been associated with serious adverse reactions (eg, hallucinations, convulsions) at prophylactic dosage, but these reactions are more frequent with the higher dosages used in treatment. Minor side effects observed with prophylactic doses, such as gastrointestinal disturbance and dizziness, tend to be transient and self-limited.

Mefloquine is *not* recommended for use by travelers with a known hypersensitivity to mefloquine; children < 15 kg (30 lbs); pregnant women; travelers using beta blockers or other drugs that may prolong or alter cardiac conduction; travelers involved in tasks requiring fine coordination and spatial discrimination, such as airline pilots; and travelers with a history of epilepsy or psychiatric disorder.

Extreme caution and close clinical monitoring is required when quinine is used to treat persons with malaria who have been taking mefloquine prophylaxis, because quinine and mefloquine are similar regarding their pharmacology and cardiovascular and neurological toxicity.

Mefloquine is a recently licensed drug in the US, and experience with this drug--when used for prophylaxis--is limited. Some adverse reactions may not yet have been identified. Users of mefloquine who experience serious adverse reactions should consult their physician, and the reactions should be reported to the Malaria Branch, CDC, telephone (404) 488-4046.

Doxycycline may cause photosensitivity, usually manifested as an exaggerated sunburn reaction. The risk of such a reaction can be minimized by avoiding prolonged, direct exposure to the sun; using sunscreens that absorb long-wave ultraviolet (UVA) radiation; and taking the drug in the evening. In addition, doxycycline use may be associated with an increased frequency of monilial vaginitis. Gastrointestinal side effects (nausea or vomiting) may be minimized by taking the drug with a meal. Tetracyclines are contraindicated for pregnant women and for children <8 years of age.

Proguanil rarely causes adverse reactions at prophylactic dosage. Reported side effects include nausea, vomiting, and mouth ulcers.

Primaquine may cause severe hemolysis in G6PD-deficient individuals. Before primaquine is used, G6PD deficiency should be ruled out by appropriate laboratory testing.

Chemoprophylaxis for Children

Children of any age can contract malaria. Consequently, the indications for prophylaxis are identical to those described for adults. Mefloquine is not indicated for children <15 kg (30 lbs). Doxycycline is contraindicated in children <8 years of age. (See recommended dosages in Tables 1 and 2.)

Chloroquine phosphate is manufactured in the US in tablet form only, and it tastes quite bitter. Pediatric doses should be calculated carefully according to body weight. Pharmacists can pulverize tablets and prepare gelatin capsules with calculated pediatric doses. Mixing the powder in food or drink may facilitate the weekly administration of chloroquine to children. Alternatively, chloroquine in suspension is widely available overseas. Parents should calculate the volume to be administered, because the concentration of chloroquine base varies in different suspensions.

OVERDOSE OF ANTIMALARIAL DRUGS CAN BE FATAL. THE MEDICATION SHOULD BE STORED IN CHILD-PROOF CONTAINERS OUT OF THE REACH OF CHILDREN.

Prophylaxis During Pregnancy

Malaria infection in pregnant women may be more severe than in nonpregnant women. In addition, there may be increased risk of adverse pregnancy outcomes including prematurity, abortion, and stillbirth. For these reasons, and because chloroquine has not been found to have any harmful effects on the fetus when used in the recommended doses for malaria prophylaxis, pregnancy is not a contraindication to malaria prophylaxis with chloroquine or hydroxychloroquine.

Women who are pregnant or likely to become so should avoid travel to areas with chloroquine-resistant *P. falciparum* because mefloquine and doxycyline should not be used during pregnancy. No alternative prophylactic regimen is completely effective in such areas.

Mefloquine should not be used during pregnancy. Women of childbearing potential who are taking mefloquine for malaria prophylaxis should take reliable contraceptive precautions for the duration of prophylaxis and for 2 months after the last dose of mefloquine.

Doxycycline is contraindicated for malaria prophylaxis during pregnancy. Adverse effects of tetracyclines on the fetus include discoloration and dysplasia of the teeth and inhibition of bone growth. In pregnancy, therefore, tetracyclines would be indicated only if required to treat life-threatening infections due to multidrug-resistant *P. falciparum.*

Proguanil has been widely used for several decades, and no adverse effects on pregnancy or fetus have been established.

Primaquine should not be used during pregnancy because the drug may be passed transplacentally to a G6PD-deficient fetus and cause hemolytic anemia in utero. Whenever radical cure or terminal prophylaxis with primaquine is indicated during pregnancy, chloroquine should be given once a week until delivery, at which time the decision to give primaquine may be made.

Prophylaxis While Breast-Feeding

Very small amounts of antimalarial drugs are secreted in the breast milk of lactating women. The amount of drug transferred is not thought to be harmful to the nursing infant; however, more information is needed. Because the quantity of antimalarials transferred in breast milk is insufficient to provide adequate protection against malaria, infants who require chemoprophylaxis should receive the recommended dosages of antimalarials. (Table 1).

MALARIA HOTLINE: Detailed recommendations for the prevention of malaria may be obtained 24 hours a day by calling the CDC Malaria Hotline at (404) 332-4555.

References:

1. Centers for Disease Control. Health information for international travel 1989. Atlanta: CDC, 1989; HHS publication no. (CDC) 89-8280.

2. Centers for Disease Control. Seizures temporally associated with use of DEET insect repellent - New York and Connecticut. MMWR 1989:38:678-80.

Figure 1.
Malarious areas with *Plasmodium falciparum* resistant and sensitive to chloroquine, 1990

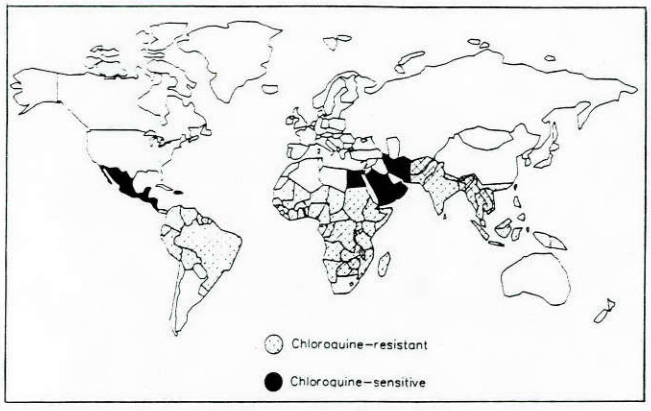


Figure 2.
Recommended doses of mefloquine for various lengths of stay in malarious areas

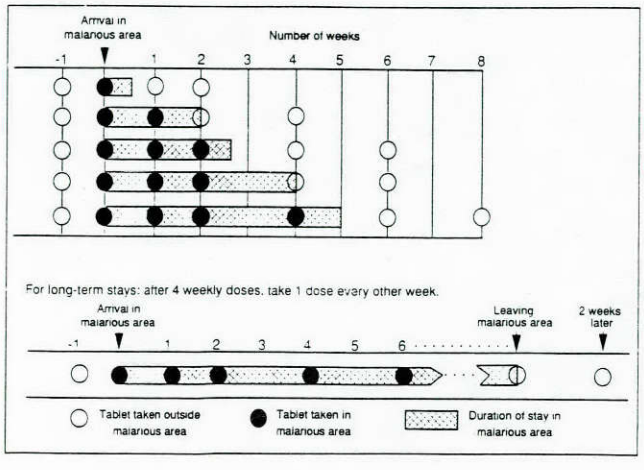


Table 1.
Drugs used in the prophylaxis of malaria

Drug	Adult dose	Pediatric dose
Chloroquine phosphate (Aralen®)	300 mg base (500 mg salt) orally, once/week	5 mg/kg base (8.3 mg/kg salt) orally once/week, up to maximum adult dose of 300 mg base
Hydroxychloroquine sulfate (Plaquenil®)	310 mg base (400 mg salt) orally, once/week	5 mg/kg base (6.5 mg/kg salt) orally, once/week, up to maximum adult dose
Mefloquine (Lariam®)	228 mg base (250 mg salt) orally, once/week*	15-19 kg:1/4 tab/wk* 20-30 kg: 1/2 tab/wk* 31-45 kg: 3/4 tab/wk* >45 kg: 1 tab/wk*
Doxycycline	100 mg orally, once/day	>8 years of age: 2 mg/kg of body weight orally/day up to adult dose of 100 mg/day
Proguanil	200 mg orally, once/day in combination with weekly chloroquine	<2 years: 50 mg/day 2-6 years: 100 mg/day 7-10 years: 150 mg/day >10 years: 200 mg/day
Primaquine	15 mg base (26.3 mg salt) orally, once/day for 14 days	0.3 mg/kg base (0.5 mg/kg salt) orally once/day for 14 days

*The dose (250 mg for an adult) should be taken once each week for 4 weeks, followed by one dose every other week, as indicated in Figure 2.

Table 2.
Drug used in the presumptive treatment of malaria

Drug	Adult dose	Pediatric dose weight (kg):tablet(s)
Pyrimethamine-sulfadoxine (Fansidar®)	3 tablets (75 mg pyrimethamine and 1,500 mg sulfadoxine), orally as a single dose	5-10:1/2 11-20:1 21-30:1 1/2 31-45:2 >45:3

POSSIBLE INTERFERENCE OF ANTIBODY RESPONSE TO HDCV (RABIES) BY THE USE OF CHLOROQUINE

Chloroquine phosphate (administered for malaria chemoprophylaxis) and other unknown factors encountered by persons traveling to developing countries may interfere with the antibody response to human diploid cell vaccine (HDCV; rabies vaccine). HDCV should not be administered by the intradermal (ID) dose/route when chloroquine or other drugs which may interfere with the immune response are being used. The intramuscular (IM) dose/route of preexposure rabies prophylaxis, however, provides a sufficient margin of safety in this setting.

If sufficient time is available prior to departure, it is recommended that the traveler receive the rabies vaccine series (HDCV) before the initiation of chloroquine prophylaxis. This should be an infrequent problem of international travelers.

PDN Editorial Note: For additional information on the prevention of rabies, please refer to TDH pamphlet #6-108, "Rabies Prevention -- 1989." The interference of chloroquine phosphate with the antibody response to HDCV is discussed on page 10.

For additional information on malaria prevention, see: CDC. Recommendations for the prevention of malaria among travelers. MMWR 1990;39(No. RR-3):1-10, reprinted in this issue of PDN.

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EPI NOTES

Rocky Mountain Spotted Fever: The first case of Rocky Mountain spotted fever in 1990 has been reported. The patient, a 55-year-old, white, male, had onset of illness on April 11 and died on April 20. The patient was exposed to ticks at a nephew's home in the Hill Country. The nephew and the nephew's daughter were confirmed spotted fever cases in 1989.

Vibrio-Associated Death: A death caused by *Vibrio parahemolyticus* has been reported from Calhoun County. The patient, a 77-year-old male, had a history of recent consumption of raw oysters.

TMP-SMX-Resistant *Shigella sonnei*: In the US, the resistance rate of *Shigella sonnei* to trimethoprim-sulfamethoxazole (TMP-SMX) has been low. Since 1987, the TDH Bureau of Laboratories has tested over 990 *S. sonnei* isolates for antibiotic sensitivity to TMP-SMX. Overall 11% of the isolates are resistant.

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VACCINE-PREVENTABLE DISEASE UPDATE
PROVISIONAL DATA
Weeks 16-19*

CONFIRMED AND SUSPECTED MEASLES

County	Latest Rash Onset	# Cases	Affected Population
Anderson	05/07/90	1	School-age
Bastrop	04/27/90	13	All age groups
Bell	05/01/90	34	All age groups
Bosque	05/06/90	7	Pre-school, School-age
Burleson	04/26/90	3	School-age, Adult
Burnet	05/01/90	4	Pre-school, School-age
Cameron	04/25/90	66	All age groups
Childress	04/23/90	1	Adult
Collin	05/10/90	60	All age groups
Cooke	05/11/90	15	All age groups
Coryell	04/30/90	22	All age groups
Dallas	05/14/90	2,166	All age groups
Denton	05/14/90	188	All age groups
Dimmitt	05/05/90	1	School-age
El Paso	05/07/90	230	All age groups
Ellis	04/28/90	68	All age groups
Fannin	04/23/90	3	All age groups
Foard	05/11/90	1	Pre-school
Gaines	04/23/90	25	All age groups
Gillespie	05/03/90	2	Adult
Grayson	04/23/90	80	College
Grimes	04/16/90	12	Pre-school, School-age
Harrison	05/05/90	9	Pre-school, School-age
Hays	04/28/90	7	All age groups
Hidalgo	04/28/90	46	All age groups
Hill	05/01/90	14	All age groups
Jack	04/23/90	3	Pre-school, Adult

CONFIRMED AND SUSPECTED MEASLES

County	Latest Rash Onset	# Cases	Affected Population
Johnson	04/20/90	10	All age groups
Jones	04/16/90	1	Pre-school
Karnes	05/07/90	13	All age groups
Kaufman	04/29/90	29	All age groups
Kendall	05/01/90	1	Pre-school
Kerr	05/08/90	1	Adult
LaSalle	04/27/90	2	Pre-school
Maverick	04/23/90	3	Pre-school
McLennan	04/28/90	13	All age groups
Milam	05/08/90	1	Pre-school
Mills	04/20/90	1	Pre-school
Navarro	05/13/90	10	All age groups
Palo Pinto	04/25/90	11	All age groups
Smith	04/28/90	16	All age groups
Somervell	04/28/90	1	Adult
Tarrant	05/13/90	172	All age groups
Tom Green	05/08/90	6	Pre-school, Adult
Travis	04/20/90	239	All age groups
Val Verde	04/23/90	2	Pre-school, School-age
Van Zandt	04/29/90	4	Pre-school, Adult
Webb	04/23/90	175	All age groups
Willacy	04/20/90	5	School-age
Williamson	04/24/90	11	Pre-school
Wise	04/20/90	5	School-age, Adult
Texas	YTD	4,029	

*Cummulative data for counties with ongoing outbreaks (ie, latest rash onset within last 31 days).

MONTHLY SUMMARY OF REPORTABLE DISEASES IN TEXAS

(Counties listed below reflect only those with populations of 190,000 or more, based on 1989 population estimates.)

Cumulative through: APRIL, 1990

County	Amebiasis	Campylobacteriosis	Chickenpox	Encephalitis	H. influenzae Infections	Hepatitis A	Hepatitis B	Hepatitis NA-NB	Influenza	Measles	Meningococcal Infections	Aseptic Meningitis	Mumps	Pertussis	Rubella	Salmonella	Shigella
BEXAR	1	3	9	0	14	21	33	0	0	6	0	7	0	0	0	20	41
BRAZORIA	0	0	18	0	0	2	2	0	3595	0	1	0	0	0	0	2	5
CAMERON	1	4	99	0	6	8	4	0	624	2	1	0	0	0	0	5	8
COLLIN	0	1	391	0	3	2	2	1	5132	38	0	4	3	0	0	0	1
DALLAS	6	9	0	0	17	101	40	0	14	122	8	26	9	0	0	39	23
DENTON	0	1	122	0	2	3	3	0	146	2	3	0	1	0	0	4	1
EL PASO	1	2	756	0	6	70	51	1	40	151	0	2	14	0	0	19	6
FORT BEND	0	4	23	0	2	0	4	0	40	0	0	0	0	0	0	2	7
GALVESTON	0	1	327	0	5	15	16	0	106	0	1	1	1	0	0	0	7
HARRIS	1	7	3149	0	12	25	26	0	160121	13	5	13	26	0	0	39	14
HIDALGO	1	2	120	0	2	0	1	0	36	0	0	2	1	0	0	5	12
JEFFERSON	0	0	654	0	7	6	9	1	3438	4	0	1	1	0	0	0	2
LUBBOCK	0	2	379	0	14	4	13	1	1860	0	4	2	9	0	0	7	93
MCLENNAN	0	0	224	0	3	13	1	0	5627	11	0	1	6	0	0	6	3
MONTGOMERY	0	0	2	0	2	2	2	0	0	1	0	0	4	0	0	3	1
NUECES	0	0	427	0	4	18	11	0	2682	0	0	1	2	0	0	16	10
TARRANT	0	4	1514	1	19	34	16	2	1904	128	2	2	3	0	0	22	13
TRAVIS	3	12	72	0	1	15	10	0	3300	106	0	1	2	0	0	12	8
All Other Counties	29	18	4362	2	119	231	150	37	37830	410	14	23	83	0	0	112	68
Cumulative TX 1990	43	70	12648	3	238	570	394	43	226495	994	39	86	165	0	0	313	323
Cumulative TX 1989	59	185	12539	24	314	1306	645	145	60556	2815	40	145	321	51	31	509	421

1990 CUMULATIVE TOTALS FOR OTHER REPORTABLE DISEASES:

Acute Occ. Pesticide Poisoning	2	Coccidioidomycosis	15	Histoplasmosis	11	Psittacosis	0
Anthrax	0	Dengue	0	Legionellosis	3	Q Fever	0
Asbestosis	9	Diphtheria	0	Leptospirosis	0	Rabies	0
Botulism	2	+ Elevated Blood Lead Levels	340	Listeria Infections	5	Reye Syndrome	0
Brucellosis	0	Gonorrhea	12773	Lyme Disease	2	Rocky Mt Spotted Fever	1
Chlamydia trachomatis	6217	Hansen's Disease	14	Malaria	7	Silicosis	0
Cholera	0	Hepatitis D (Delta Agent)	0	Plague	0	Syphilis (P&S)	1583
		Hepatitis type unspecified	73	Poliomyelitis	0	Tetanus	3
						Toxic Shock Syndrom	0
						Trichinosis	0
						Tuberculosis	548
						Tularemia	0
						Typhoid	2
						Typhus, Murine	2
						Vibrio Infections	0
						Yellow Fever	0

+ Blood lead level >40ug/dl in persons 15 years of age or older: summarized by date of blood lead test.

TEXAS DEPARTMENT OF HEALTH
TEXAS AIDS CASES: SURVEILLANCE REPORT
Case Count by Residence and Year of Diagnosis
May 11, 1990

	1980-1985		1986		1987		1988		1989		1990		Cumulative	
COUNTY	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Bell	3	3	4	2	4	2	2	2	6	0	3	0	22	9
Bexar	53	50	56	50	115	87	177	89	208	53	40	8	649	337
Bowie	1	1	2	2	6	4	10	9	5	4	0	0	24	20
Brazoria	8	8	10	9	11	5	11	6	13	3	4	1	57	32
Brazos	10	10	5	4	6	6	6	6	6	3	0	0	33	29
Cameron	1	1	5	3	3	3	12	8	14	7	7	2	42	24
Collin	1	1	2	2	5	5	4	3	5	3	0	0	17	14
Dallas	251	240	306	265	502	392	520	297	515	159	74	6	2168	1359
Denton	2	2	6	6	16	14	10	5	12	3	3	1	49	31
Ector	1	1	4	4	4	4	7	2	2	1	2	0	20	12
Ellis	0	0	1	1	7	6	6	4	4	2	0	0	18	13
El Paso	6	6	10	9	19	12	18	9	28	13	4	0	85	49
Fort Bend	10	10	10	9	16	11	6	5	18	4	1	0	61	39
Galveston	11	11	16	15	25	17	24	12	29	11	8	1	113	67
Gregg	2	2	4	3	7	4	2	1	3	0	0	0	18	10
Harris	621	573	638	568	852	661	870	502	768	241	99	8	3848	2553
Hays	3	3	4	4	2	2	2	1	1	1	2	0	14	11
Hidalgo	6	6	0	0	7	4	6	4	14	3	7	2	40	19
Howard	2	2	3	3	1	0	3	3	3	1	0	0	12	9
Hunt	1	1	1	1	4	3	3	0	0	0	1	0	10	5
Jefferson	7	6	8	5	20	14	19	13	10	0	2	0	66	38
Johnson	1	1	1	1	3	1	7	3	2	1	1	0	15	7
Liberty	3	2	3	3	1	0	1	0	3	1	0	0	11	6
Lubbock	4	4	5	4	15	11	7	2	15	2	2	1	48	24
McLennan	2	2	6	5	7	5	3	2	8	3	1	0	27	17
Midland	1	1	0	0	6	4	4	0	2	0	0	0	13	5
Montgomery	5	5	3	2	9	7	13	11	9	6	2	0	41	31
Nueces	6	4	11	9	20	15	14	7	21	12	7	0	79	47
Orange	3	3	4	2	4	4	3	3	3	3	0	0	17	15
Potter	1	0	3	2	5	3	6	4	9	2	1	0	25	11
Smith	3	3	4	1	4	1	4	1	6	4	2	0	23	10
**TDC	8	8	18	10	18	7	24	6	46	6	6	1	120	38
Tarrant	44	37	53	38	131	97	107	51	120	32	33	5	488	260
Taylor	3	3	3	2	2	2	11	6	6	2	0	0	25	15
Tom Green	1	1	2	2	3	3	0	0	4	1	0	0	10	7
Travis	61	51	56	41	108	89	138	74	163	50	30	1	556	306
Victoria	0	0	3	2	3	3	2	2	2	1	1	0	11	8
Walker	3	3	1	1	3	2	2	1	2	0	0	0	11	7
Webb	1	1	4	4	5	2	5	4	4	1	3	2	22	14
Wichita	2	2	2	1	6	6	16	3	10	1	0	0	36	13
Williamson	0	0	3	3	4	3	1	0	7	0	0	0	15	6
All Others	38	33	43	37	94	69	95	49	60	9	17	2	347	199

	1980 - 1985		1986		1987		1988		1989		1990		CUMULATIVE	
STATEWIDE	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Case Fatality Ratio (%)	1190 CFR%	1101 93	1323 CFR %	1135 86	2083 CFR%	1590 76	2181 CFR%	1210 55	2166 CRF%	649 30	363 CFR%	41 12	9306 CFR%	5726 62

* COUNTIES LISTED INDIVIDUALLY ARE THOSE WITH A CUMULATIVE TOTAL OF 10+
** CASES DIAGNOSED WHILE INCARCERATED WITHIN STATEWIDE TEXAS DEPARTMENT OF CORRECTION FACILITIES

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