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## PUBLIC HEALTH STATISTICS SECTION

### ARE INTERNATIONAL TRAVELERS OVER IMMUNIZED?

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Are international travelers over immunized? This question is frequently discussed in our office as many times we hear about people being misinformed about international travel regulations and being over immunized. Recently we have circulated up-to-date information about international travel health requirements to all parish health units and in conjunction with this effort we offer a brief discussion of the current status of the epidemiology, of the vaccines, and of the risk to Americans for the three major quarantinable diseases; smallpox, cholera, and yellow fever.

#### Smallpox

Having recognized that smallpox is uniquely susceptible to global eradication, the World Health Organization has and is continuing with much vigor to eliminate smallpox. The WHO efforts have been remarkably efficacious because (a) there is no host or reservoir other than man, (b) there are no subclinical carriers, (c) only close generally identifiable contacts acquire the disease, and (d) vaccination is very effective. Smallpox is rapidly disappearing; a global smallpox-free state is being projected well before 1980.

The last reported case in the United States occurred in 1949. In 1966 forty-three countries reported smallpox and by 1971 only 16 countries reported cases. Currently only 4 countries in the world are considered endemic, and in these countries the disease seems limited to well defined areas. The countries are Ethiopia, Pakistan, Bangladesh, and India.<sup>1</sup> "Imported" cases have occurred this year in a few countries geographically proximal to the endemic areas (for example, over 1,000 cases of "imported" smallpox have been reported from Nepal), but no new endemic foci have been established.

In Ethiopia the average number of weekly cases detected was the lowest ever by mid-July. Nearly all cases are in comparatively isolated rural highland areas. Planning is now in progress for "Operation Crocodile," a helicopter assault to interrupt smallpox transmission in Ethiopia.

by December, 1974. In Bangladesh, an average of less than 250 cases are being detected weekly, and most are coming from subdivisions of three districts in the northern part of the country. In Pakistan, smallpox incidence is declining, with less than 10 villages in the entire country reporting cases monthly. The epicenter of the smallpox problem is now the Indian states of Bihar and Uttar Pradesh, recording 75 percent of all of the world's cases.

In all of these countries eradication programs consist of "active surveillance and ring containment"; i.e., any reported cases are identified and those at risk in the nearby vicinity vaccinated. The reporting is done not only by local people but by teams of health officials consisting of two to four people who travel constantly. They feed the reporting system, search for cases, investigate, and take measures to contain all cases by vaccinating primary and secondary contacts.

#### *Smallpox Vaccination*

It will be necessary to continue to vaccinate persons who may have a high risk of exposure: travelers to the few areas of the world reporting smallpox and medical personnel (physicians, nurses and other health workers have comprised more than half of the secondary cases of smallpox in recent epidemics in Europe). Also vaccinations should be given to those whose travel itineraries require smallpox vaccination certification. The vaccine should not be administered to travelers visiting noninfected countries not requiring vaccination certification for admission (i.e. vaccination is not required for entrance into any country in Western Europe).

Currently in non-endemic areas, the risk of complication from the vaccination outweighs whatever threat the disease itself may pose. Vaccination complications fall into four categories: post-vaccinial encephalitis, vaccinia necrosum, eczema vaccinatum, and miscellaneous (generalized vaccinia, accidental eye infections, erythema multiforme, etc.). In the United States during 1968 from more than 5.6 million primary vaccinees and nearly 8.6 million revaccinees and their contacts, 16 cases of encephalitis, 11 cases of vaccinia necrosum, 126 cases of eczema vaccinatum, and 419 other complications, most being generalized vaccinia and accidental eye infection, are known to have occurred. Nine persons died. Moreover, the survey showed that more than half of the complications might have been avoided if known contraindications were heeded. The study revealed complication rates at least twice as high and a higher case fatality rate for children under 1 year of age.<sup>2</sup>

Post-vaccinial encephalitis is similar to many other types of post viral CNS sequelae (e.g. post measles encephalitis) and has a mortality rate of 25 percent. It appears most commonly in primary vaccinees under 10 years of age.<sup>3</sup>

Vaccinia necrosum will occur in patients with defects in their cellular immunity system. The complication is characterized by progression and necrosis of the vaccination site with or without metastases, with eventual massive destruction of tissue, sepsis, and generalized debilitation.<sup>3</sup>

Eczema vaccinatum is a generalized superinfection of the skin with vaccinia virus in eczematous individuals. It is usually worse in eczematous patients who acquire vaccinia by contact than in those who acquire it by vaccination (possibly more inoculum). The illness is more likely to be fatal when it occurs in children less than 2 years old.

Most complications can be treated; and markedly less case fatality ratios have been reported with the use of VIG (vaccinia immune globulin, available from the Center for Disease Control, Atlanta, Georgia), thiosemicarbazone, idoxuridine, and immunotherapy via whole blood or white blood cell transfusions from recently vaccinated donors.<sup>4</sup>

Those who receive the vaccination will display immunity for at least 3 years. Those who qualify to receive the vaccine should be carefully screened for any of the relative contraindications: eczema (by history or examination), eczema in a household member, severe chronic skin disease, cancer, less than one year of age, pregnancy, known immune deficiency syndromes, radiation therapy, and immunotherapy or steroid usage. Subsequent to vaccination, recent vaccinees should be instructed to avoid contact with people having any of the above conditions.

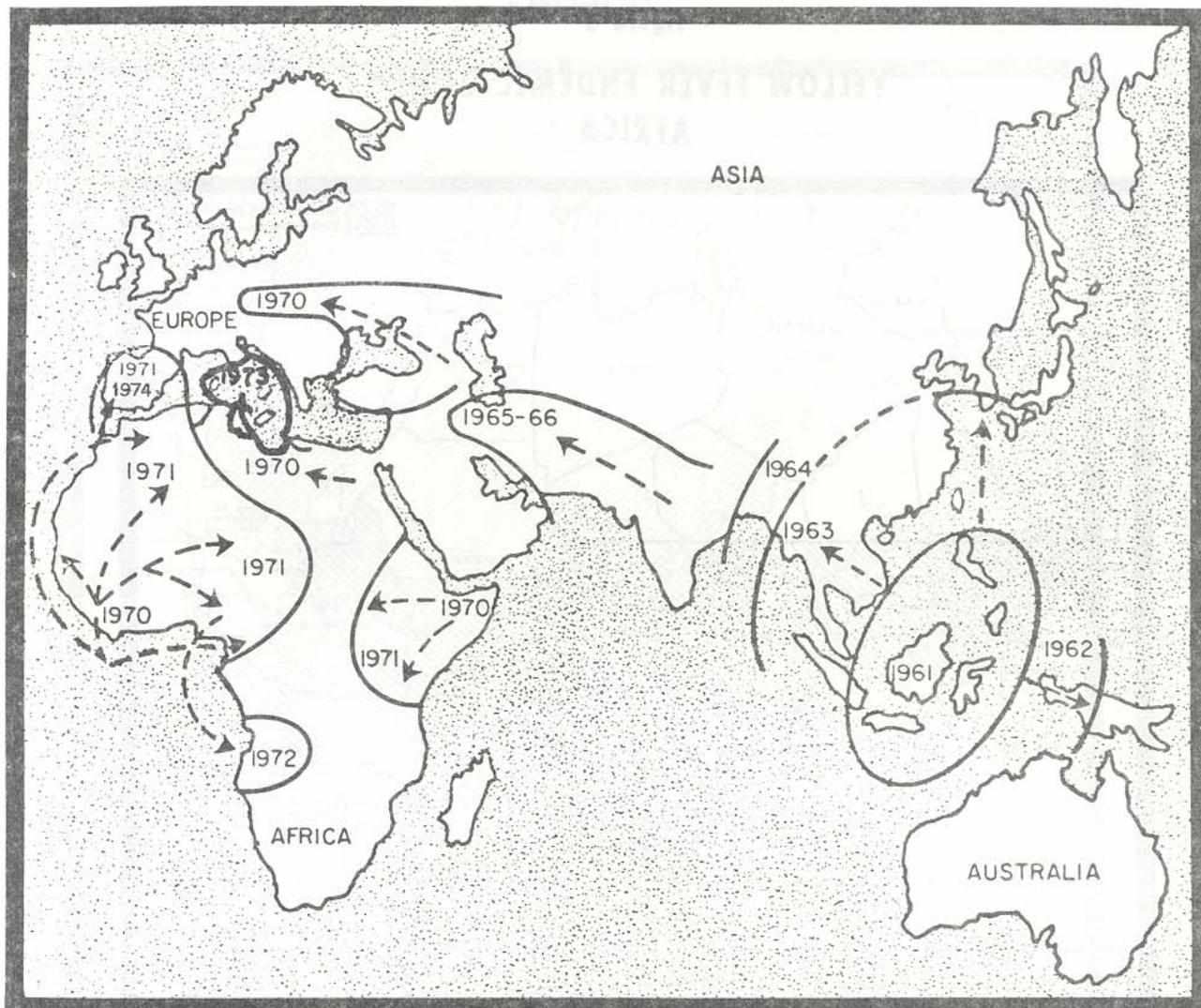
#### *Cholera*

Cholera has a frightening historical reputation and at its worse can lead to death in less than a day. Nevertheless, cholera no longer is the dread it used to be. More than half of the world's inhabitants now live in endemic areas and millions of people have traveled through these areas; however, only 4 cases of cholera are known to have occurred in American travelers in the past decade. The risk is therefore obviously small, and it should not be necessary for anyone to cancel travel plans anywhere in the world because of this risk.<sup>5</sup>

Influencing the low incidence is a multitude

Figure 1

## EXTENSION OF EL TOR CHOLERA, 1961-1974

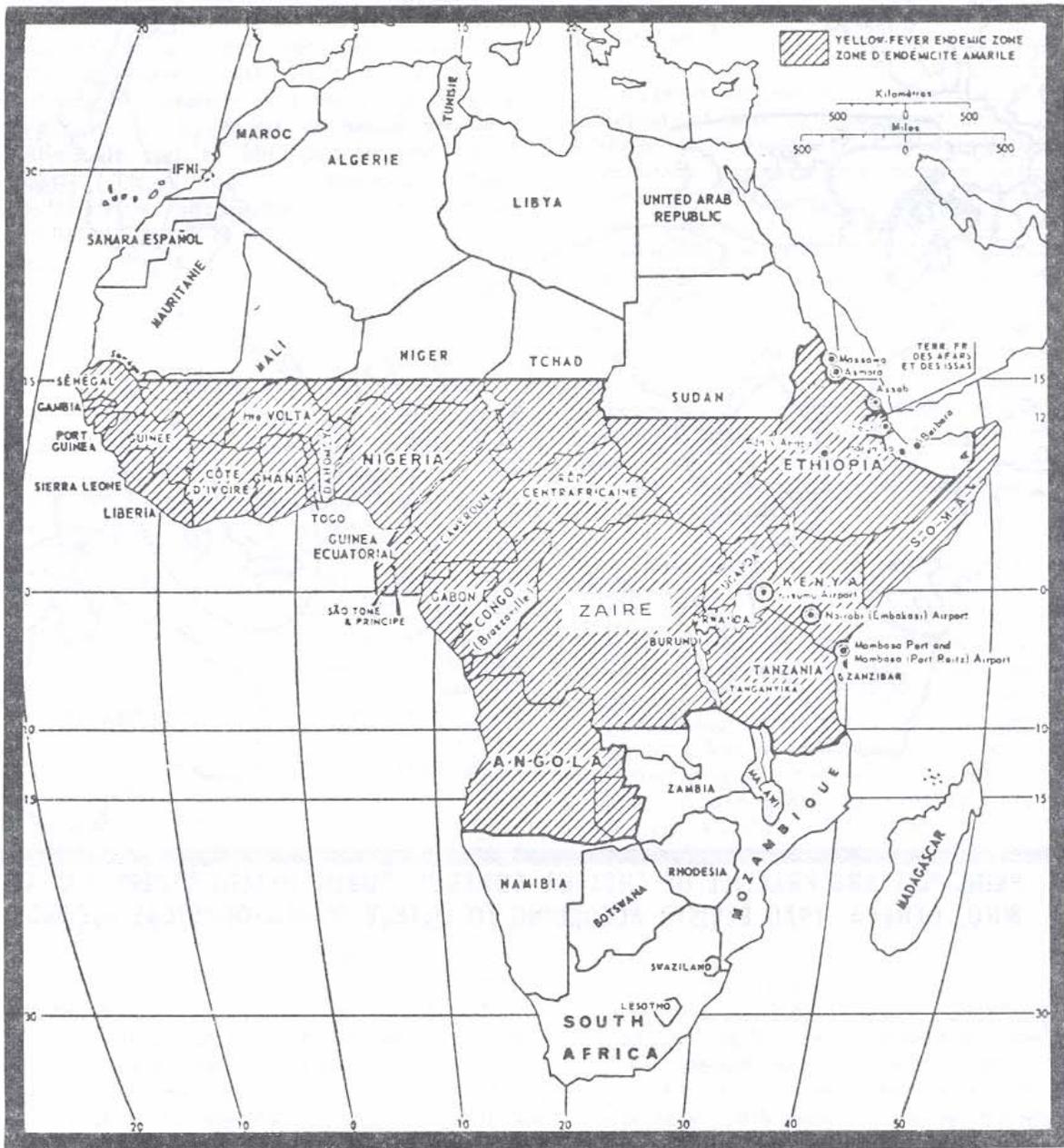


**SOURCE: PRINCIPLES AND PRACTICE OF CHOLERA CONTROL, PUBLIC HEALTH PAPERS, NO. 40, WHO, GENEVA, 1970 REVISED ACCORDING TO WEEKLY EPIDEMIOLOGICAL RECORD**

of factors, most important of which is our desire to frequent accommodations that maintain adequate sanitary standards and thereby avoid exposure. Moreover, cholera is not a highly communicable disease, and spread by person-to-person contact rarely, if ever, occurs. Proper sanitary habits such as hand washing, careful handling of excreta, avoiding uncooked foods, and avoiding swimming in areas contaminated with human waste will prevent spread dramatically.<sup>6</sup> Probably of least significance is cholera vaccination.

There are two recognized biotypes, the classical and the El Tor variants. Both are pathogenic; however, the El Tor biotype infections result in many more asymptomatic cases than the classical does. The organism is fragile and easily killed by chlorination, heat, sunlight, or drying. Its only natural reservoir is man. Water seems to play a major role in transmission; cholera vibrios can survive for weeks in salt water (i.e. sea waters along beaches contaminated with human waste) but will disappear spontaneously in a few days from fresh water when

**Figure 2**  
**YELLOW FEVER ENDEMIC ZONE \***  
**AFRICA**



\* See footnote below Figure 3.

Figure 3

## YELLOW FEVER ENDEMIC ZONE \* AMERICAS



\* NOTE: Although the "yellow fever endemic zones" are no longer included in the Regulations, a number of countries (most of them being not bound by the Regulations or bound with reservations) consider these zones as infected areas and require an International Certificate of Vaccination against Yellow Fever from travelers arriving from those areas. The above map has therefore been included in this publication for practical reasons.

there are no more carriers in the area. Studies have shown that an extraordinarily large inoculum is required to cause illness in the healthy individual. One exception to this last statement occurs in those individuals who have lost the natural barrier of gastric acidity (as occurs with pernicious anemia, antacid therapy, gastric surgery); they are susceptible to infection with small inoculum.

The classical biotype was thought to be responsible for the worldwide pandemic in the late 19th century and early 20th century. More recently it has only been found in a few endemic foci on the Asian subcontinent. The El Tor biotype has been responsible for the current pandemic spread of cholera that began in Indonesia in 1961 (see Figure 1), and has spread to Asia, the Middle East, Africa, Spain, Italy, and Portugal by 1974. In countries newly infected with cholera, there has been a tendency for physicians and government officials unfamiliar with the disease to overreact, spreading "cholera hysteria."<sup>6</sup> It is important for the physician to recognize and to impart to others that cholera need no longer be considered a lethal disease; moreover, when treated its mortality is less than one percent.<sup>6</sup>

#### Cholera Vaccine

The currently available vaccine (killed *V. cholera*) is very limited in its usefulness. It provides protection for only about 50 percent of vaccinees and then only for a few months and does not prevent the carrier state. In 1970 the Surgeon General lifted the requirement for vaccination for persons entering the United States from endemic areas, stating: "There is clear evidence that cholera vaccine is of little use in preventing the spread of the cholera across borders. We have, today, excellent treatment for cholera. The only effective method of preventing the spread of the disease is improvement of environmental sanitation . . ." Moreover, rapid transportation makes it virtually impossible to prevent the introduction of cholera in any part of the world. In the last year there has been one case in the mainland United States (source unknown) and some reported cases in Guam, Europe, and Canada, demonstrating that cholera can be introduced anywhere. Nevertheless, secondary cases will appear only in areas that are "cholera receptive" in terms of poor sanitation and personal or food hygiene.<sup>5</sup>

Cholera immunization is not routinely recommended for travelers to countries not requiring vaccination as a condition for entry. It need only be given to those travelers who (1) require vaccination for entrance into a country

on their itinerary, or (2) those who have compromised gastric acidity and are going to cholera endemic areas. Currently only 20 countries in the world have cholera vaccination entry requirements, and of these only one (Thailand) is reporting cholera cases. Twenty-seven other countries are reporting cholera but have no cholera vaccination entry requirements. With but one or two possible exceptions, all of those countries with cholera vaccination requirement require the vaccination only of individuals arriving from infected areas.<sup>7</sup>

In those people receiving vaccine, two doses spaced one week to one month apart are recommended, as this ensures optimal immunity and freedom from most travel restrictions imposed by health authorities in some countries.<sup>5</sup> Most individuals will react to the vaccine with local inflammation and a low grade temperature.

Meanwhile, such measures as cholera vaccination, mass chemoprophylaxis, and quarantine of persons and places, have no scientific role in the treatment of individual cases or outbreaks that may occur in the United States.

#### Yellow Fever

Since the early nineteenth century yellow fever has ceased to be one of the most feared of all epidemic diseases. Development and application of effective vaccines and favorable results in *Aedes* mosquito eradication have produced a feeling of security in many health circles about the control of yellow fever. Nevertheless, events during the past decades still remind us that the disease has a 5 percent to 10 percent case-fatality ratio and a potential to affect many. Epidemics have occurred in Ethiopia (1961), Senegal (1965), Nigeria and Upper Volta (1969), Peru (1970), and Angola (1971).

Currently cases of yellow fever are reported from only the tropical areas of Africa and South America. Early in 1974 the disease was also reported in Panama, the first detected cases there since 1965.<sup>8</sup> Epidemiologically the disease has two forms, urban and jungle (sylvatic), clinically and etiologically they are identical.

Urban yellow fever is an epidemic form transmitted from infected to susceptible man by a mosquito vector, *Aedes aegypti*. With the elimination or suppression of this mosquito from urban areas, urban epidemic yellow fever has disappeared. No large urban epidemics have occurred in the Americas since 1928-1929, when Rio de Janeiro, Brazil reported 738 cases, 436 fatalities.

Jungle yellow fever is an enzootic disease transmitted among non-human hosts, principally monkeys, by a variety of mosquito vectors belonging to either the *Aedes*, *Sabethes*, or *Haemagogus* genus. People are infected more or less accidentally as they work or travel in endemic jungle areas. The endemic areas are shown in Figures 2 and 3.

Urban yellow fever can and has been prevented by eradicating the *Aedes aegypti* population or by suppressing their number. Jungle yellow fever can be prevented in humans only by immunization of susceptible persons, as infection is maintained in non-human reservoirs.

#### Yellow Fever Vaccine

The vaccine is a live attenuated virus prepared from one of two strains: 17D or Dakar (French neurotropic). The Dakar strain has, at times, been associated with severe complications, including meningoencephalitis (0.5 percent incidence), and is neither available in this country nor recommended. The 17D strain has caused no significant complications except for two cases of encephalitis in its initial 34 million doses in this country. It is recommended and available in the United States. Five percent to ten percent of 17D vaccinees have mild headache, myalgia, low grade fever, or other minor symptoms 5-10 days after vaccination.

Recognizing as minimal both the risk of contracting yellow fever to the American traveler visiting cities in an endemic zone and the risk of reintroducing yellow fever into this country's *Aedes* mosquito population, the USPHS announced on 11/9/72 the elimination of yellow fever vaccination requirement for travelers entering the United States from anywhere.<sup>9</sup> Specific recommendations for Americans going abroad are to receive the vaccination if (1) an entrance requirement of a country visited or (2) if their travel plans may expose them to an unusually high risk of contracting the disease (e.g. Peace Corps volunteer working in the jungle in an endemic area).

Specific information about international immunization requirements is obtained from the booklet Health Information for International Travel, published yearly by the Bureau of Epidemiology, Center for Disease Control, as a supplement to the Morbidity and Mortality Weekly Report. Because the situation with regard to quarantinable diseases and vaccinations required by various countries may change frequently, CDC also distributes weekly a sheet entitled "Countries with Areas Infected with

Quarantinable Diseases" which lists countries currently reporting cases of quarantinable diseases. In addition, changes in vaccination requirements reported by WHO are published at the bottom of this sheet. Both publications are needed to properly inform travelers as to vaccination requirements. These materials can be ordered from the Center for Disease Control (no charge); however, every parish health unit has a set of these documents and can answer specific questions about travel requirements. Physicians are invited to utilize this service, which is provided by the State without charge, through the parish health units.

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## STAPHYLOCOCCAL FOOD POISONING ON AN OFFSHORE OIL PLATFORM

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Nine of twenty-seven workers on an offshore oil platform located in Louisiana gulf coastal waters became acutely ill with gastrointestinal symptoms during the afternoon of September 12, 1974. The nine men were flown by helicopter to a New Orleans hospital that evening; two required admission. An investigation utilizing food consumption history, symptoms, and food and patient culturing uncovered evidence to suggest that lunch sandwiches served on the twelfth were responsible for spreading staphylococcal enterotoxin to the workers.

The lunch menu consisted of both a warm meal and cold meal. Eleven of the men did not eat lunch, seven ate the hot meal, and nine ate the cold meal. All nine men who ate the cold food became ill, and no illness was reported from any others. Other meals such as breakfast that day and dinner the night before were examined for any significant attack rates, and none could be found.

The cold meal consisted of seven items: roast beef sandwiches, ham and cheese sandwiches, luncheon meat sandwiches, Kool-aid, mustard, mayonnaise, and catsup. These items were cultured; and staphylococci, coagulase positive, were isolated in numbers greater than  $10^7$  per gram of sandwich from each of the three sandwiches. All nine of ill men reported eating at least two of the three types of sandwiches; moreover, no other pathogenic organisms were cultured from the food.

Symptoms were similar to those reported in previous staphylococcal food-borne outbreaks. They occurred from one to six hours after the meal and lasted for 8 to 24 hours. All had nausea, 55 percent vomiting and abdominal cramps, 33 percent diarrhea, 22 percent weakness, low grade fever, and chills; and 22 percent (2 of 9) were hospitalized. One was hospitalized only overnight for severe weakness secondary to persistent vomiting and diarrhea, while the other remained five days for diagnosis and treatment of upper GI bleeding occurring with the vomiting (a Mallory-Weiss syndrome was suspected but never proven). The vomitus and stool of this severely

ill patient were cultured; the vomitus grew a coagulase positive staphylococcus while the stool culture was negative for pathogens.

Investigation into the food preparation and food handling uncovered the all too common culprit causing this type of outbreak, inadequate refrigeration. Evidently the meat for the luncheon sandwiches was shipped to the platform the night before, refrigerated. The sandwiches were prepared later that night by one handler. He did not return the sandwiches to refrigeration but rather left them exposed to room temperature. They remained without refrigeration for approximately twelve hours (until they were eaten) and were exposed to the hot temperatures (approximately 80°-90°F) of the environment.

Foods are generally contaminated from the hands of workers preparing them. The responsible individual may have an obvious open sore on his hand; however, not uncommonly examination of the handler will not reveal any open cuts or skin lesions. Cultures of the nose, throat, perineum, and skin (especially the dorsum of the hand) may locate a source of a pathogenic strain. Nevertheless, the search for the pathogenic strain on the handler is usually unrewarding. In this case, cultures of the nares and pharynx and examination of the handler conducted one month later were negative for a coagulase producing staphylococcus or any open cuts or skin lesions.

In the United States foods most commonly responsible as a vehicle for transmission of the disease are those perishable items usually left at room temperature, especially cream filled bakery products, meat sandwiches, milk, . . . . Not all strains of coagulase positive staphylococci produce the toxin for food poisoning; but the toxin when present is relatively heat-stable and can remain active even after food has been exposed to boiling temperatures. The bacteria can produce enough toxin in only four to five hours incubation at 80°-90°F to cause disease. Refrigeration prevents toxin formation.<sup>1</sup>

Because of its rapid onset, short duration,

absence of high fever, and usual association of similar illness in others who have eaten the same food, diagnosis is not difficult. Nevertheless other rapid onset food-borne illnesses should be considered such as those due to heavy metals. In most cases no treatment is needed; however, a few may require fluid replacement or treatment from complications (as illustrated in this outbreak).

Recommendations to food handlers should include proper cleaning of work areas, hand

washing, and refrigeration of perishable foods, with reheating only immediately before serving. Specifically those food handlers with active staphylococcal hand lesions should be forbidden to work, and all food handlers should be trained to observe strict personal hygiene.

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## SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS Reported Morbidity October, 1974	ASEPTIC MENINGITIS	DIPH THERIA	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	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 19 73	102	0	16	4	610	126	425	42	12	43	100	48	210	6	214	4	87	19630	707
TOTAL TO DATE 19 74	134	0	15	5	513	164	487	48	19	23	93	18	153	9	213	3	12	21081	519
TOTAL THIS MONTH	20	0	0	0	65	24	43	12	2	3	11	0	23	0	36	0	0	2257	43
ACADIA					1			3	1						1			14	
ALLEN																			
ASCENSION															1			1	
ASSUMPTION					1			1										4	1
AVOYELLES																		18	
BEAUREGARD							2											3	
BIENVILLE																		8	
BOSSIER										1								18	4
CADDO					6	3	6			1			3		2			162	2
CALCASIEU							3								3			97	1
CALDWELL																		1	
CAMERON																		1	
CATAHOULA																		6	
CLAIBORNE							1											3	
CONCORDIA					4													11	
DESOTO													1					11	
EAST BATON ROUGE					4		6	1							5			111	2
EAST CARROLL																		11	1
EAST FELICIANA																		7	
EVANGELINE							1											2	
FRANKLIN																		7	1
GRANT																		5	
IBERIA						1												8	
IBERVILLE	2														1			7	
JACKSON																		1	
JEFFERSON	2				6	2	2								3			124	2
JEFFERSON DAVIS					2													17	
LAFAYETTE																		43	
LAFOURCHE					1	1												21	
LASALLE																		4	
LINCOLN					2													49	
LIVINGSTON																		10	
MADISON																		6	1
MOREHOUSE					1													16	
NATCHITOCHE					1	1												59	
ORLEANS					18	16	9	4					18		14			839	23
OUACHITA					1													88	2
PLAQUEMINES					1		2	1										2	
POINTE COUPEE																		7	
RAPIDES							1											132	
RED RIVER																		2	
RICHLAND					1										1			11	
SABINE					1		1											3	1
ST. BERNARD	1				1		2											8	
ST. CHARLES																		7	1
ST. HELENA																		1	
ST. JAMES																		7	
ST. JOHN					1		1											12	
ST. LANDRY							3								1			15	
ST. MARTIN					1			1										19	
ST. MARY																		12	
ST. TAMMANY					6										1			49	
TANGIPAHOA					1													50	
TENSAS																		1	
TERREBONNE	1																	14	
UNION																		5	
VERMILION							2											4	
VERNON	1				2			1	1		11		1		1			16	1
WASHINGTON																		8	
WEBSTER					1					1					1			43	
WEST BATON ROUGE																		4	
WEST CARROLL															1			3	
WEST FELICIANA																		18	
WINN					1													6	
OUT OF STATE																		5	

\* Includes Rubella, Congenital Syndrome

From January 1 through October 31, the following cases were also reported: 3-Brucellosis; 1-Malaria (contracted outside the U.S.A.); 1-Rocky Mountain Spotted Fever