



Morbidity and Mortality

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE / PUBLIC HEALTH SERVICE HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

DATE OF RELEASE: APRIL 16, 1971 - ATLANTA, GEORGIA 30333

CURRENT TRENDS ROUTINE TESTING IN BLOOD BANKS FOR THE HEPATITIS-ASSOCIATED ANTIGEN

A Statement By

*Ad Hoc Committee** on Hepatitis-Associated Antigen (HAA) Tests
of the

Committee on Plasma and Plasma Substitutes

Division of Medical Sciences

NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL

In its last report (1), the Committee concluded that when the methodologic, supply, and licensure problems are solved, all donor blood should be tested for the presence of the hepatitis-associated antigen (HAA). The report noted that a study on the comparative sensitivity of HAA tests was underway that would be useful in answering some of the methodologic questions. This study has been completed, and the Committee has made an initial analysis of the results; a more deliberate assessment is being made, and a detailed report will be published elsewhere. Recently, two commercial sources of HAA detection kits were licensed by the Division of Biologics Standards, National Institutes of Health. Although commercial supplies of reagents and kits required for over-all national needs are not yet assured, a steady improvement in the supply can be anticipated.

The purpose of this statement is to make available to the general medical community the Committee's conclusions and recommendations based on its assessment of the findings of the comparative sensitivity study.

Each of the 20 laboratories that participated in the study was sent:

1. 120 coded human serum specimens (the "panel specimens"), selected so that about one-sixth were strongly positive (contained high concentrations of HAA), about one-half were weakly positive, and one-third were negative (contained no HAA insofar as could be determined by available methods);
2. an aliquot of human antiserum containing antibody against HAA;
3. an aliquot of a guinea pig hyperimmune serum against HAA; and
4. a positive control serum containing HAA.

Each laboratory was asked to test the 120 panel specimens by the methods of Ouchterlony agar gel diffusion (AGD),

counterelectrophoresis (CEP), and complement fixation (CF). Two laboratories used, in addition, indirect hemagglutination inhibition (HAI) and radioimmunoassay (RIA). Each laboratory was asked to perform the tests with the human and guinea pig antisera supplied and with at least one of its own antiserum reagents.

Initial analysis of the results of the study gives reasonable assurance of its validity despite the limitations and possible biases that were recognized in its design. The data show that the AGD was the least sensitive method and that the four other methods can be ranked in order of increasing sensitivity as: CEP, CF, HAI, and RIA. The data also show that the human antiserum used was more sensitive in the AGD and CEP tests than the guinea pig hyperimmune serum that was supplied; the two antisera were of about equal sensitivity when used in the CF method.

The results obtained by newly trained personnel, using any test, compared unfavorably with the results obtained by experienced technicians. In the hands of the inexperienced technicians, the AGD method gave the largest number of both false-positive and false-negative results. These technicians obtained somewhat more accurate results using the CEP method.

In selecting a test for routine use in blood banks, sensitivity is but one factor. Each of the currently available tests has practical advantages and disadvantages. On a comparative basis, the AGD test is the most readily learned, and it is simple to perform. It demonstrates reactions of identity and is useful in confirming positive findings, especially weak posi-

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*T. C. Chalmers, National Institutes of Health, Bethesda, Maryland, Chairman; E. A. Kabat, Columbia University College of Physicians and Surgeons, New York, New York; J. W. Mosley, John Wesley Hospital, Los Angeles, California; S. Rivers, Emory University, Atlanta, Georgia; J. T. Sgouris, Michigan Department of Public Health, Lansing, Michigan; and R. B. Pennell, Blood Research Institute, Boston, Massachusetts; and R. E. Kissling, Center for Disease Control, Atlanta, Georgia; L. Barker, Division of Biologics Standards, NIH, Bethesda, Maryland; and G. W. Beebe, National Research Council, Washington, D.C., Consultants.

HEPATITIS-ASSOCIATED ANTIGEN – (Continued from front page)

tives, obtained by other tests. However, it takes 24-48 hours to obtain results, and in some AGD techniques the final results are read after 7 days of incubation. Although more difficult to learn, the CEP test, once mastered, is not difficult to perform. It takes 1-3 hours to obtain results. The CF test is still more difficult to learn and to perform; but, it, too, may be run rapidly. Inherent technical factors currently preclude the use of the HAI and RIA tests in any but a few research-oriented blood banks.

Accordingly, the Committee is of the opinion that at this time the choice open to blood banks instituting routine donor-blood HAA testing is limited to the AGD or the CEP test. It is important to recognize that HAA testing has moved from the experimental laboratory to the blood bank with extraordinary rapidity. The tests (2) currently available are adaptations of methods that are in general use in research and clinical laboratories for a variety of purposes. The development of more sensitive, practical, and reproducible tests is under intensive study; within the next few years, other tests, some involving new principles, may be introduced. Information about the nature of HAA is being accumulated, and recent research strongly suggests the existence of subtypes of HAA, which may have to be taken into account in evaluating test results.

The Committee recommends:

1. That, as soon as practicable, all blood banks begin routine HAA testing of blood donors with commercial supplies of antiserum licensed by the Division of Biologics Standards or with locally prepared antisera of equivalent quality, recognizing that rapid and possibly fundamental methodologic changes may occur in the next few years. **A commercial antiserum should be used only with the test methods for which it is recommended.**

2. That, if test results are required rapidly, blood banks introducing routine screening begin with the CEP test. The AGD test is useful if test results are not needed rapidly, and it could be used for confirmatory tests in reference laboratories.

3. That the CF, HAI, and RIA tests not be adopted for general use in blood banks unless procedures are developed that make them practical. (However, laboratories and blood banks that are already using, or have capabilities to begin using, these tests are encouraged to do so.)

In offering the above recommendations, the Committee is impelled to emphasize that in the current state of the art, routine HAA testing of blood donors is not the final and complete solution to the hepatitis problem. Certainly it is good medical practice to identify, by any practical means, prospective donors whose blood may transmit hepatitis to a patient and to disqualify them as donors. Currently, even in the best of hands, the most sensitive test identifies only a portion of such persons.

The Committee also wishes to emphasize that the introduction of routine HAA screening in the nation's more than 5,000 blood banks involves procedural problems that should be dealt with vigorously and promptly at all administrative and professional levels. In the interest of fostering safety, efficiency, and effectiveness in routine HAA testing in blood banks, therefore, the Committee recommends:

4. That training programs for HAA testing be established for blood bank technical and professional personnel. These programs should be instituted as a matter of high priority by

all appropriate federal and state health agencies and by all interested and capable medical organizations.

5. That the training programs be designed as continuing activities in which course content is modified as the general level of technical and professional competence in HAA testing improves and as new tests are introduced for general use. Demonstration of the use of HAA detection kits, using a panel of positive and negative sera handled as unknowns, should be a prominent part of the instruction.

6. That the training programs include recognition that adequate safeguards against electric shock to operators of electrophoresis equipment used in HAA testing should be incorporated in the equipment and that personnel should be instructed in the necessary precautions in the use of such equipment.

7. That the training programs include the teaching of adequate precautions to minimize the risk of exposure of personnel to infectious materials included in test kits and that the application of such procedures be closely supervised in the blood banks.

8. That appropriate quality-control procedures for HAA testing be instituted in all laboratories where the test is done and that the concerned federal and state licensure and regulatory agencies and professional organizations establish and enforce appropriate proficiency standards; it is highly important that positive and negative quality-control and proficiency monitoring provide for the verification of all blood samples found to be HAA-positive. If adequate facilities are not available locally such samples should be sent to a reference laboratory having the capability of performing tests of different sensitivity, such as the CF, HAI, or RIA test, for confirming results obtained by the CEP test.

It is estimated that within a year after the beginning of routine HAA testing, as many as 10,000 persons who appear to be in good health will be found to be HAA-positive. Such persons must be informed of their condition, and they should be instructed not to donate blood again. However, the question of what medical advice to give them is difficult to answer. Follow-up studies to gather data on this problem are urgently needed.

The problem of disposal of units of HAA-positive blood lends itself to a number of possible solutions. This blood has potential value for research endeavors and for the preparation of various diagnostic and therapeutic items. The Committee is of the opinion that flexible policies, designed both to protect exposed personnel and to conserve blood resources, are in order.

Definitive evidence as to the safety of transfusing HAA-negative blood containing measurable quantities of antibody to HAA is still not available.

References

1. *Ad Hoc* Committee on Hepatitis-Associated Antigen (HAA) Tests, National Academy of Sciences – National Research Council. Statement concerning the use of hepatitis-associated antigen tests for donor screening in blood banks. *Transfusion* 11:1-3, 1971
2. Memorandum: Viral hepatitis and tests for the Australia (hepatitis-associated) antigen and antibody. *Bull WHO*, 42:957-992, 1970

Acknowledgement

Preparation of this report was made possible by funds provided by contracts with the Department of Defense (DADA17-69-C-9084) and the National Institutes of Health (PH43-64-44, Task Order 3), and by grants from the American Association of Blood Banks and the American National Red Cross.

EPIDEMIOLOGIC NOTES AND REPORTS
FATAL MALARIA - California

On Jan. 9, 1971, a 59-year-old American who had been working as a heavy equipment operator in West Irian, Indonesian New Guinea, arrived in Yuba City, California. Because he felt ill, he consulted a physician who admitted him to a local hospital that same day. On admission, he complained of fever, chills, headache, and diarrhea associated with cramps of approximately 10 days duration. On physical examination, he was lethargic, disoriented, and icteric. The differential diagnosis included malaria, gall bladder disease, cholera, trypanosomiasis, amebiasis, and acute flu syndrome. Since he was disoriented on admission, it is not known whether he had taken any chemosuppressives for malaria.

The initial blood smear was negative for malaria. Other laboratory results included: hemoglobin 15.3 gm percent, white blood cell count 4,900/mm³, total bilirubin 1.8 mg percent, direct 0.5 mg percent, SGOT 32 units, BUN 49 mg percent, and uric acid 7.5 mg percent; the urine showed many granular casts. Direct Coombs' test was negative, and febrile agglutinins reacted a 1:320 against paratyphoid A antigen and 1:40 against both paratyphoid B and typhoid H.

A chest X-ray showed elevation of the right diaphragm, an electrocardiogram indicated an interventricular conduction

defect, and cholecystography revealed an enlarged gall bladder with diminished function.

Although the patient's blood smears remained negative for malaria parasites, antimalarial treatment was initiated late on January 12; he first received amodiaquine, then chloroquine, quinine, and pyrimethamine. On the following day, trophozoites and gametocytes of *Plasmodium falciparum* were seen on a peripheral blood smear. The patient's temperature rose to 105°F, his urine appeared black, and he died suddenly.

Postmortem examination revealed congestion of small vessels of all organs and of the red blood cells within the vessels. There was heavy deposition of malaria pigment in the brain, lungs, liver, and kidneys, and a peripheral blood smear revealed very heavy parasitization with all stages of *P. falciparum*. (Reported by Walter Bozak, M.D., Charles E. Clement, M.D., attending physicians, Lee A. Skaggs, M.D., Pathologist, Ride-out Hospital, Yuba City, California; Rae Lindsay, M.D., Health Officer, Sutter-Yuba County Health Department, California; Ronald R. Roberto, M.D., Medical Epidemiologist, Infectious Disease Element, and James Chin, M.D., Chief, Communicable Disease Division, California State Health Department.)

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

DISEASE	14th WEEK ENDED		MEDIAN 1966 - 1970	CUMULATIVE, FIRST 14 WEEKS		
	April 10, 1971	April 11, 1970		1971	1970	MEDIAN 1966 - 1970
Aseptic meningitis	31	23	25	690	376	390
Brucellosis	5	2	3	31	41	41
Diphtheria	6	7	4	57	94	40
Encephalitis, primary:						
Arthropod-borne & unspecified	21	20	22	291	271	272
Encephalitis, post-infectious	8	11	11	86	109	123
Hepatitis, serum	148	116	96	2,272	1,785	1,011
Hepatitis, infectious	1,014	1,178	912	16,850	15,226	11,729
Malaria	106	53	31	1,066	919	622
Measles (rubeola)	3,224	1,976	1,976	29,641	16,702	16,702
Meningococcal infections, total	67	78	78	924	963	1,080
Civilian	51	67	67	783	871	981
Military	16	11	10	141	92	99
Mumps	4,375	3,110	---	50,929	36,503	---
Poliomyelitis, total	—	1	—	4	2	3
Paralytic	—	1	—	3	2	3
Rubella (German measles)	1,860	2,598	2,073	17,419	21,690	16,756
Tetanus	2	1	1	19	22	26
Tularemia	3	2	—	26	25	26
Typhoid fever	2	4	4	65	61	65
Typhus, tick-borne (Rky. Mt. spotted fever)	—	1	—	5	2	4
Rabies in animals	115	75	88	1,189	936	1,040

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	—	Psittacosis: Calif.—1	9
Botulism:	—	Rabies in Man:	—
Leprosy:	33	Rubella congenital syndrome: Calif.—1	20
Leptospirosis:	8	Trichinosis: N.J.—1	26
Plague:	—	Typhus, murine:	2

INTERNATIONAL NOTES SMALLPOX VACCINATION

The Foreign Quarantine Program of the Center for Disease Control has issued the following statement concerning smallpox vaccination requirements for entry into the United States.

"Although the United States can require evidence of smallpox vaccination from all persons entering the United States, this will only be enforced for those who within the past 14 days have been in countries reporting smallpox. Persons inquiring about immunization requirements should be informed that it is desirable and recommended that they be vaccinated prior to departure. They will be held or vaccinated at the port of entry in the United States only if they have visited a smallpox reporting country within the 2 weeks prior to arrival or in the unlikely event they have been exposed to smallpox on their plane or on a connecting flight."

It is of utmost importance to note that this statement represents a modification of procedures at United States

ports of entry. It is not an elimination of the requirement for proof of immunization against smallpox. Retention of the requirement allows for flexibility by the Public Health Service in its effort to protect the public against the introduction of quarantinable diseases.

This change in procedures will facilitate admission of travelers from smallpox free countries while allowing for greater attention to persons coming from countries reporting smallpox. Some countries require proof of immunization against smallpox, irrespective of itinerary. All, however, can enforce the requirement for persons who, within the preceding 14 days, have been in an area reporting cases of smallpox.

Many countries exempt residents from this requirement when they arrive directly from the United States. When travel includes several countries, however, the requirement may be enforced. The traveler should be advised to consult his local health department when his travel plans are complete.

PLAGUE — Bolivia

In August and October 1970, 31 cases of bubonic plague were reported in four localities in an area which includes both banks of the Machariapu River, north of Apolo in Caupolicán Province, Department of La Paz, Bolivia. These localities are situated at altitudes of 8,200 to 10,000 feet above sea level. The inhabitants descended toward the river in the course of their agricultural activities, and they probably acquired plague infection at altitudes of 5,000 to 6,000 feet. When the ill persons returned to their homes, the infection was spread to family members and neighbors by means of fleas. In August,

18 cases, with seven deaths, were reported in the localities of Altos and Altumcama, on the right bank of the river. In October, 12 cases, with one death, were reported in Cruz Pata and one case in Tigri Rumi on the left bank. Tigri Rumi was affected by an outbreak in 1969.

In 1970, no plague activity was observed in the endemic foci of the Departments of Chuquisaca and Santa Cruz. (Reported by the Regional Office of the World Health Organization Pan American Sanitary Bureau, Weekly Epidemiological Report, Vol. 43, No. 10, March 10, 1971.)

SUMMARY OF REPORTED CASES OF INFECTIOUS SYPHILIS

CASES OF PRIMARY AND SECONDARY SYPHILIS: By Reporting Areas March 1970 and March 1971 - Provisional Data

Reporting Area	March		Cumulative Jan.-March		Reporting Area	March		Cumulative Jan.-March	
	1971	1970	1971	1970		1971	1970	1971	1970
NEW ENGLAND.....	71	53	171	135	EAST SOUTH CENTRAL.....	91	55	252	144
Maine.....	2	3	4	4	Kentucky.....	32	16	81	32
New Hampshire.....	1	1	1	1	Tennessee.....	29	19	76	50
Vermont.....	-	-	1	-	Alabama.....	7	7	25	30
Massachusetts.....	33	23	83	80	Mississippi.....	23	13	70	32
Rhode Island.....	7	2	14	12					
Connecticut.....	28	24	68	38	WEST SOUTH CENTRAL.....	363	279	1,018	789
MIDDLE ATLANTIC.....	510	372	1,518	1,216	Arkansas.....	20	22	58	59
Upstate New York.....	34	24	115	89	Louisiana.....	61	43	157	140
New York City.....	349	270	1,031	900	Oklahoma.....	14	6	24	21
Pa. (Excl. Phila.).....	15	9	43	30	Texas.....	268	208	779	569
Philadelphia.....	15	9	39	44					
New Jersey.....	96	60	290	153	MOUNTAIN.....	37	49	131	145
EAST NORTH CENTRAL.....	218	206	640	651	Montana.....	-	-	-	1
Ohio.....	42	29	117	96	Idaho.....	-	-	-	1
Indiana.....	23	51	80	125	Wyoming.....	-	-	1	-
Downstate Illinois.....	16	10	36	31	Colorado.....	5	9	11	16
Chicago.....	76	66	208	213	New Mexico.....	8	1	26	27
Michigan.....	53	37	177	162	Arizona.....	13	30	51	71
Wisconsin.....	8	13	22	24	Utah.....	1	1	6	2
					Nevada.....	10	8	36	27
WEST NORTH CENTRAL.....	42	47	126	142	PACIFIC.....	337	185	785	532
Minnesota.....	6	6	18	23	Washington.....	21	2	41	10
Iowa.....	2	2	2	3	Oregon.....	3	3	5	8
Missouri.....	27	19	79	69	California.....	312	178	733	510
North Dakota.....	-	-	-	1	Alaska.....	-	1	3	1
South Dakota.....	2	1	3	6	Hawaii.....	1	1	3	3
Nebraska.....	1	2	8	7	U. S. TOTAL.....	2,141	1,617	6,041	4,931
Kansas.....	4	17	16	33					
SOUTH ATLANTIC.....	472	371	1,400	1,177	TERRITORIES.....	97	78	215	279
Delaware.....	5	21	9	30	Puerto Rico.....	94	73	207	271
Maryland.....	48	27	135	122	Virgin Islands.....	3	5	8	8
District of Columbia.....	50	48	147	120					
Virginia.....	42	25	97	64					
West Virginia.....	2	2	7	7					
North Carolina.....	29	37	109	137					
South Carolina.....	30	24	76	85					
Georgia.....	106	78	366	292					
Florida.....	160	109	454	320					

Note: Cumulative Totals include revised and delayed reports through previous months.

INTERNATIONAL NOTES
CHANGES IN
VACCINATION CERTIFICATE REQUIREMENTS FOR INTERNATIONAL TRAVEL

Vaccination Certificate Requirements for International Travel was published as a Supplement to *Morbidity and Mortality Weekly Report* in Vol. 19, No. 21, for the week ending May 30, 1970. Since that time, some countries have modified their requirements according to the evolution of the cholera outbreak; some have also made changes in smallpox and yellow

fever certificate requirements.

The Vaccination Certificate Requirements of May 30, 1970, with changes as indicated in the following list, represent the current status of requirements for all countries updated through April 5, 1971.

(Reported by the Foreign Quarantine Program, CDC.)

Country	Vaccination Against			Country	Vaccination Against		
	Cholera	Yellow Fever	Smallpox		Cholera	Yellow Fever	Smallpox
Albania	I			Malaysia, West		II	
Algeria	—		I	Mali	II		
Austria	II			Malta		II	
Belgium	II			Mongolia		—	
Cameroon	II			Nepal		II	
Chad	II			Portugal (except			
Congo, Brazzaville	II			Madeira and the			
El Salvador	II			Azores)		—	
Ethiopia	I	I		Madeira and the			
Finland	II			Azores	II	III*	II
Gabon	II			Rhodesia	II		
Gambia	II			Sao Tome & Principe		III*	
Gibraltar	II			Seychelles	I*		
Greece		II		Sierre Leone	II		
Honduras, British		II		Surinam	II		
Iceland	II			Switzerland	II		
Indonesia	I	II		Thailand			II
Iraq		II		United Kingdom	II		
Ivory Coast	I*			United States of			
Laos		II		America	—		
Lebanon		II		Upper Volta	I*		
Liberia	II			Venezuela	II		
Luxembourg	II			Zambia	II		

Explanation of Symbols

- = No requirement
- I = Vaccination required of arrivals from all countries.
- II = Vaccination required of arrivals from infected areas.
- III = Vaccination required of arrivals from yellow fever endemic zones.

*The asterisk indicates that conformity of the measure with the International Health Regulations is questionable. The World Health Organization is investigating.

EPIDEMIOLOGIC NOTES AND REPORTS
AN OUTBREAK OF VARICELLA ON A PEDIATRIC WARD — Georgia

Between Feb. 18 and March 11, 1971, six cases of varicella occurred in a hospital in Augusta, Georgia: five on the pediatric ward and one in an adjacent nursery. In the same period, two cases of varicella also occurred in recently discharged patients.

The index case was in a 6-year-old boy with epilepsy who had been admitted to the pediatric ward on February 16. His rash began on February 18, and he was discharged as soon as possible. Eleven days later, on March 4, a 4½-month-old infant in the hospital experienced varicella, and on March 11, three more pediatric patients started showing signs of the disease. An infant in the adjacent nursery became ill with varicella on March 4; the two recently discharged patients had onsets of signs and symptoms on February 20 and March 8.

In an effort to prevent continuing spread of the disease, the ward was closed to all new patients without a definite history of varicella. When possible, patients were discharged. The remaining patients were isolated in their rooms,

with closed doors and open windows. Gowns and masks were required for all medical and nursing personnel and visitors; visitors were restricted to parents only. The air conditioning was turned off to reduce the intermixing of air among patient rooms and corridors. Rotation of personnel to other hospital areas was discontinued, and susceptible staff were placed on sick leave for 18 days. Non-essential patient travel off the ward was suspended.

As of March 11, there were four susceptible patients on the ward with possible immunological dysfunction. Both Zoster Immune Globulin (ZIG) and frozen plasma from a recently convalescent herpes zoster patient were available for use on March 12, and three of these high-risk patients received the zoster convalescent plasma (8-10 cc/kg) that day. One of the patients with onset of varicella on March 11 also received this plasma.

Laboratory studies showed negative varicella-zoster complement fixing (V-Z CF) antibody titers in the three patients

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VARICELLA — (Continued from page 127)

at risk who had received the plasma and in the three patients with onset of varicella on March 11. One of these, a 3-year-old with neuroblastoma, had a history of varicella at age 1. A titer of 1:16 was found in blood specimens from the susceptible high-risk patient who had not received the plasma.

No further cases of varicella have occurred since March 11. Isolation measures are still in effect.

(Reported by Charles Linder, M.D., attending pediatrician, Mary Jo Carter, M.D., Chairman of the Infectious Disease Committee, Eugene Talmadge Memorial Hospital, Augusta, Georgia; John E. McCroan, Ph.D., Director, Epidemiology Branch, Georgia Department of Public Health; and an EIS Officer.)

Editorial Note

Nosocomial varicella is of particular public health importance, since those most vulnerable are clustered in a hospital ward. For children with immunological dysfunction

(e.g., with leukemia, other malignancies or hereditary immune deficiencies; on steroids, antimetabolites, or cytotoxic drugs) this disease poses the threat of pneumonia, encephalitis, and death.

Zoster convalescent plasma and (human) immune serum globulin can modify the signs and symptoms of varicella. Though ZIG has been shown to prevent varicella when given to a susceptible child within 72 hours of household exposure (1), it was not indicated in the present outbreak, since all those at high risk had been exposed to both the March 4 and 11 cases. ZIG, prepared from high-titered (V-Z CF) zoster convalescent plasma, is in very short supply. As sources of this high-titered plasma are developed, it is hoped that outbreaks such as this can be prevented.

Reference

1. Brunell PA, Ross A, Miller LH, Kuo B: Prevention of varicella by Zoster Immune Globulin. *New Eng J Med* 280:1191-1194, 1969

CHIMPANZEE-ASSOCIATED HEPATITIS — California

Between Dec. 24, 1970, and Jan. 5, 1971, eight cases of infectious hepatitis occurred among 16 people associated with an animal hospital in Culver City, California. The patients included three veterinarians, a lab technician, two veterinary assistants, the wife of one of the veterinarians, and a chimpanzee trainer. All patients had symptoms of hepatitis, and five were jaundiced. All had abnormal liver function tests consistent with viral hepatitis and negative tests for hepatitis-associated antigen. Blood samples were also collected from other exposed employees and clients of the hospital and from household contacts, but no additional cases were found. On Jan. 25, 1971, however, a ninth case occurred in a part-time employee of the hospital, possibly representing secondary spread of infection.

None of the nine patients had been exposed to known cases of viral hepatitis, blood transfusions, contaminated food or water, or needles. None had traveled recently or could recall sharing common meals or attending large social gatherings. Seven of the nine patients, however, had had direct contact with two chimpanzees which had arrived at the hospital from Sierra Leone, West Africa, via Ferndale, Michigan, on Nov. 25, 1970. The other two patients had been indirectly exposed to these chimpanzees.

One chimp had been ill on arrival and died 2 weeks later, apparently from parasitic infestation. No blood was available for liver function studies, and postmortem results are pending. The second chimp remained healthy and began work at a movie studio on December 1. Although over 100 people have come in contact with this second chimp, none have contracted hepatitis. This animal had normal liver chemistries recorded early in January 1971.

Of the seven hospital employees who did not become ill, only two had been directly exposed to these chimpanzees; one of these had had hepatitis 1 year before. The other five

had had minimal contact with the two chimpanzees. None of the hospital employees had received immune serum globulin within the past year or had used special precautions while handling the chimps.

The two chimpanzees had arrived with six others in Ferndale, Michigan, from Sierra Leone on Nov. 20, 1970. One of the six other animals was sent to a zoo in Bridgeport, Connecticut, and has been implicated as a source of hepatitis for at least eight people. No cases have been reported in association with the other five chimpanzees.

(Reported by Martin Dinnes, D.V.M., Jon Bernstein, D.V.M., veterinarians, Culver City Animal Hospital, Culver City, California; Edward Aaron, D.V.M., veterinarian, Ichiro Kamei M.D., Chief, Acute Communicable Disease Control Division, County of Los Angeles Health Department, California; Selma Dritz, M.D., Assistant Health Officer, City Health Department, San Francisco; Ronald R. Roberto, M.D., Medical Epidemiologist, Infectious Disease Element, California State Department of Health; James C. Hart, M.D., Director, Division of Preventable Diseases, Connecticut State Department of Health; E. R. Price, D.V.M., Director, Bureau of Veterinary Public Health, Missouri Division of Health, Jefferson, City, Missouri; and an EIS Officer.)

Editorial Note

Within the past 12 months, four outbreaks of chimpanzee-associated hepatitis have been reported to CDC. (Two of the outbreaks are referred to above.) Another occurred in San Francisco, California, in May 1970 and involved a veterinarian and an animal handler. The fourth occurred in St. Louis, Missouri, and involved 14 cases. These outbreaks illustrate the risk of hepatitis for handlers of chimpanzees. Persons who work with newly imported higher primates should be advised to handle the animals and their excreta carefully and to take immune serum globulin for protection.

INTERNATIONAL NOTES
QUARANTINE MEASURES

*Changes in the "Supplement — United States Designated
Yellow Fever Vaccination Centers," MMWR, Vol. 20, No. 9*

The following additions should be made in the list of
United States Designated Yellow Fever Vaccination Centers.

FLORIDA**Orlando**

Orange County Health Dept.
832 West Central Blvd., 32802
802, 241-4311, ext. 326
Clinic hours: Mon., 8 a.m. - 3 p.m.
Fee charged

WASHINGTON**Olympia**

Thurston-Mason Health District
Thurston County Court House
Annex, 98501
206, 352-4851, ext. 80
Clinic hours: Mon.-Fri., 8 a.m.-5 p.m.
No fee

The following corrections should be made in the list of
United States Designated Yellow Fever Vaccination Centers.

CALIFORNIA**Hollywood**

World Wide Immunization Center, 90028
Change clinic hours to: by appointment
Wed., 10-11 a.m.; Tues. & Fri., 5-6 p.m.

MICHIGAN**Detroit**

Overseas Medical Center, 48202
Change clinic hours to: Mon., Tues.,
Thurs., & Fri., 9 a.m.-5 p.m.

NEW YORK**New York**

U.S. Public Health Service Outpatient
Clinic, 10014
Change telephone number to:
212, 620-3284

Purchase

Pepsi-Cola Co.
Anderson Hill Rd., 10577
Change telephone number to:
914, 253-2000

Syracuse

Syracuse City Hospital
Change name to A. C. Silverman
Public Health Hospital, 13210

TEXAS**El Paso**

U.S. Quarantine Station, 79901
Correction: No fee is charged

Wichita Falls

City-County Health Center (change from
Unit)
Change address to: 1700 Third St., 76301

*Changes in the "Supplement — Vaccination Certificate
Requirements for International Travel,"
MMWR, Vol. 19, No. 21*

The following changes should be made in the Vaccina-
tion Certificate Requirements for International Travel.

Afars and the Issas, French Territory of the

Delete the note concerning cholera, and insert: Cholera —
And from Ethiopia, Somali, Southern Yemen, and Yemen.*
Bahrain

Delete the note concerning cholera published in MMWR,
Vol. 20, No. 7, 1971. (The note "and from all countries any
parts of which are infected*" is maintained.)

Belgium

Delete the note concerning smallpox, and insert: Small-
pox — Except: European countries, Algeria, Azores and
Madeira, Canary Islands, Libya, Morocco, Reunion, Tunisia,
Bermuda, Canada, the Caribbean Islands, French Guiana,
Greenland, Guadeloupe, Guyana, Martinique, Mexico, Nether-
lands Antilles, St. Pierre and Miquelon, Surinam, United
States of America, Israel, Turkey, and travelers arriving from
Australia, New Zealand and Japan by trans-polar, trans-
pacific or trans-Siberia flights. No certificate required from
travelers who have been resident for more than 14 days in
the above countries immediately before arrival in Belgium.
This certificate is, however, required from arrivals from all
infected areas.

France

Delete the note concerning smallpox, and insert: Small-
pox — And from countries in Africa (except Algeria, Azores
and Madeira, Canary Islands, Libya, Morocco, Tunisia), in the
Americas (except Bermuda, Canada, the Caribbean Islands,
Greenland, Guyana, Mexico, Netherlands Antilles, St. Pierre

and Miquelon, Surinam, United States of America), in Asia
(except Israel, Turkey) and in Oceania. No certificate re-
quired from travelers arriving from Australia, New Zealand or
Japan by trans-polar, trans-pacific or trans-Siberia flights. No
certificate required from sea travelers who have left an in-
fected area or a non-exempted country more than 14 days
before arrival.

Hungary

1. In the note concerning cholera, delete: Iran, Iraq,
United Arab Republic.

2. In the note concerning smallpox, after "provided these
countries are free from smallpox" insert: and travelers arriv-
ing from Mongolia via USSR.

Indonesia

Insert: Cholera — Travelers leaving Indonesia are re-
quired to possess a certificate.

Ireland

Delete the note concerning smallpox, and insert: Small-
pox — And from countries in Africa (except Algeria, Azores
and Madeira, Canary Islands, Libya, Morocco, Reunion,
Tunisia), in the Americas (except Bermuda, Canada, the Carib-
bean Islands, French Guiana, Greenland, Guadeloupe, Guyana,
Martinique, Mexico, Netherlands Antilles, St. Pierre and
Miquelon, Surinam, United States of America), in Asia (ex-
cept Israel, Turkey) and in Oceania. No certificate required
from travelers arriving from Australia, New Zealand or Japan
by trans-polar, trans-pacific or trans-Siberia flights.

(Continued on page 134)

Morbidity and Mortality Weekly Report

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

APRIL 10, 1971 AND APRIL 11, 1970 (14th WEEK)

AREA	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	DIPH- THERIA	ENCEPHALITIS			HEPATITIS			MALARIA	
				Primary including unsp. cases		Post In- fectious	Serum	Infectious			
				1971	1970	1971	1971	1970	1971	1971	1970
UNITED STATES.....	31	5	6	21	20	8	148	1,014	1,178	106	1,066
NEW ENGLAND.....	3	-	-	1	2	1	9	80	95	1	37
Maine.....	-	-	-	-	-	-	-	8	11	-	2
New Hampshire.....	1	-	-	-	-	-	-	10	3	-	1
Vermont.....	-	-	-	-	-	-	-	6	1	-	1
Massachusetts.....	-	-	-	1	-	-	3	24	60	-	26
Rhode Island.....	2	-	-	-	2	-	-	18	10	-	3
Connecticut.....	-	-	-	-	-	1	6	14	10	1	4
MIDDLE ATLANTIC.....	6	1	-	2	-	-	66	172	217	2	105
New York City.....	5	-	-	-	-	-	37	42	25	-	10
New York, Up-State...	1	-	-	1	-	-	10	44	29	1	24
New Jersey.....	-	-	-	-	-	-	12	40	56	1	49
Pennsylvania.....	-	1	-	1	-	-	7	46	107	-	22
EAST NORTH CENTRAL.....	5	-	-	8	6	-	8	166	214	6	47
Ohio.....	1	-	-	5	2	-	1	32	47	1	11
Indiana.....	1	-	-	-	-	-	-	19	11	1	3
Illinois.....	-	-	-	2	3	-	-	25	43	-	10
Michigan.....	3	-	-	1	1	-	7	79	107	4	16
Wisconsin.....	-	-	-	-	-	-	-	11	6	-	7
WEST NORTH CENTRAL.....	-	3	1	-	2	-	3	33	57	4	85
Minnesota.....	-	-	-	-	-	-	1	2	7	-	11
Iowa.....	-	2	-	-	-	-	-	6	17	-	9
Missouri.....	-	1	-	-	-	-	-	6	14	1	18
North Dakota.....	-	-	-	-	-	-	-	6	-	-	-
South Dakota.....	-	-	-	-	-	-	-	1	1	-	-
Nebraska.....	-	-	1	-	-	-	-	6	3	1	6
Kansas.....	-	-	-	-	2	-	2	6	15	2	41
SOUTH ATLANTIC.....	4	-	-	3	1	-	22	114	133	6	160
Delaware.....	-	-	-	1	-	-	-	1	2	-	-
Maryland.....	1	-	-	1	-	-	10	28	23	-	26
Dist. of Columbia....	-	-	-	-	-	-	2	2	-	-	-
Virginia.....	1	-	-	-	1	-	1	13	11	-	19
West Virginia.....	-	-	-	-	-	-	-	6	5	-	6
North Carolina.....	-	-	-	1	-	-	5	24	34	1	50
South Carolina.....	-	-	-	-	-	-	1	6	13	-	8
Georgia.....	-	-	-	-	-	-	-	17	10	5	29
Florida.....	2	-	-	-	-	-	3	17	35	-	22
EAST SOUTH CENTRAL.....	8	-	-	3	1	-	3	47	70	1	96
Kentucky.....	1	-	-	3	-	-	-	23	30	-	80
Tennessee.....	1	-	-	-	1	-	3	15	26	-	-
Alabama.....	6	-	-	-	-	-	-	2	7	1	14
Mississippi.....	-	-	-	-	-	-	-	7	7	-	2
WEST SOUTH CENTRAL.....	1	1	5	1	-	3	-	93	105	69	258
Arkansas.....	-	-	-	-	-	3	-	1	2	4	9
Louisiana.....	-	-	4	-	-	-	-	-	9	-	23
Oklahoma.....	-	1	-	1	-	-	-	9	17	1	37
Texas.....	1	-	1	-	-	-	-	83	77	64	189
MOUNTAIN.....	-	-	-	-	2	-	3	75	73	5	71
Montana.....	-	-	-	-	2	-	-	1	-	-	1
Idaho.....	-	-	-	-	-	-	1	10	-	-	2
Wyoming.....	-	-	-	-	-	-	-	1	1	-	1
Colorado.....	-	-	-	-	-	-	-	25	19	5	51
New Mexico.....	-	-	-	-	-	-	-	4	12	-	5
Arizona.....	-	-	-	-	-	-	1	19	19	-	7
Utah.....	-	-	-	-	-	-	1	14	6	-	3
Nevada.....	-	-	-	-	-	-	-	1	16	-	1
PACIFIC.....	4	-	-	3	6	4	34	234	214	12	207
Washington.....	-	-	-	-	-	-	-	20	36	-	1
Oregon.....	-	-	-	-	-	-	1	33	12	-	6
California.....	4	-	-	2	6	4	33	175	148	10	175
Alaska.....	-	-	-	1	-	-	-	2	14	-	2
Hawaii.....	-	-	-	-	-	-	-	4	4	2	23
Puerto Rico.....	-	-	-	-	-	-	-	8	29	-	2
Virgin Islands.....	-	-	-	-	-	-	-	-	-	-	-

*Delayed reports: Aseptic meningitis: Okla. 1(1970) Hepatitis, infectious: N.J. delete 4, Ind. delete 1,
Diphtheria: Wis. 1 Okla. 11, Hawaii delete 1, P.R. 16(1971) 8 (1970)
Encephalitis, primary: Wis. 1
Hepatitis, serum: Hawaii delete 1 Malaria: Minn. 6, Iowa 1, Nev. 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

APRIL 10, 1971 AND APRIL 11, 1970 (14th WEEK) - CONTINUED

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		POLIOMYELITIS		
	1971	Cumulative		1971	Cumulative		1971	Cum. 1971	Total 1971	Paralytic	
		1971	1970		1971	1970				1971	Cum. 1971
UNITED STATES.....	3,224	29,641	16,702	67	924	963	4,375	50,929	-	-	3
NEW ENGLAND.....	150	1,059	251	2	38	37	215	3,129	-	-	-
Maine.....	75	576	2	-	5	-	30	578	-	-	-
New Hampshire.....	20	58	14	-	4	3	2	345	-	-	-
Vermont.....	12	51	1	-	-	3	-	-	-	-	-
Massachusetts.....	13	189	188	2	16	14	68	786	-	-	-
Rhode Island.....	1	23	14	-	2	3	87	752	-	-	-
Connecticut.....	29	162	32	-	11	14	28	668	-	-	-
MIDDLE ATLANTIC.....	246	3,057	2,414	4	113	157	254	3,567	-	-	-
New York City.....	140	1,862	398	2	16	37	53	625	-	-	-
New York, Up-State....	17	237	86	-	34	29	NN	NN	-	-	-
New Jersey.....	43	306	981	-	29	58	70	1,030	-	-	-
Pennsylvania.....	46	652	949	2	34	33	131	1,912	-	-	-
EAST NORTH CENTRAL.....	611	5,829	3,734	11	104	116	1,994	20,841	-	-	-
Ohio.....	79	1,963	1,345	5	27	52	444	3,652	-	-	-
Indiana.....	132	783	143	2	8	11	226	2,897	-	-	-
Illinois.....	196	1,524	1,607	1	34	27	271	2,197	-	-	-
Michigan.....	106	481	364	3	28	22	439	5,295	-	-	-
Wisconsin.....	98	1,078	275	-	7	4	614	6,800	-	-	-
WEST NORTH CENTRAL.....	365	2,437	1,668	6	85	52	499	3,273	-	-	-
Minnesota.....	-	36	22	2	13	5	57	561	-	-	-
Iowa.....	52	615	55	-	6	7	237	1,736	-	-	-
Missouri.....	220	995	464	3	33	36	174	515	-	-	-
North Dakota.....	9	97	179	-	2	2	17	186	-	-	-
South Dakota.....	49	160	64	-	3	-	8	139	-	-	-
Nebraska.....	1	17	844	1	10	2	6	40	-	-	-
Kansas.....	34	517	40	-	18	-	-	96	-	-	-
SOUTH ATLANTIC.....	346	3,263	2,832	13	138	218	180	3,516	-	-	1
Delaware.....	1	13	163	-	-	2	3	65	-	-	-
Maryland.....	-	49	600	6	23	21	17	328	-	-	-
Dist. of Columbia....	-	4	299	-	7	1	5	55	-	-	-
Virginia.....	10	774	681	1	15	20	20	452	-	-	-
West Virginia.....	17	206	106	-	2	5	24	1,019	-	-	-
North Carolina.....	129	1,129	291	1	21	42	NN	NN	-	-	-
South Carolina.....	70	383	220	-	11	14	56	483	-	-	-
Georgia.....	8	134	2	-	11	25	-	1	-	-	1
Florida.....	111	571	470	5	48	88	55	1,113	-	-	-
EAST SOUTH CENTRAL.....	603	4,196	259	5	70	63	260	4,039	-	-	-
Kentucky.....	380	2,113	138	-	18	20	89	1,497	-	-	-
Tennessee.....	29	321	79	1	23	29	157	1,984	-	-	-
Alabama.....	16	692	24	3	18	9	9	487	-	-	-
Mississippi.....	178	1,070	18	1	11	5	5	71	-	-	-
WEST SOUTH CENTRAL.....	521	6,980	3,995	1	81	145	369	3,753	-	-	1
Arkansas.....	28	212	19	-	3	15	1	35	-	-	-
Louisiana.....	-	894	44	-	25	33	-	59	-	-	-
Oklahoma.....	39	587	163	-	6	10	7	120	-	-	-
Texas.....	454	5,287	3,769	1	47	87	361	3,539	-	-	1
MOUNTAIN.....	245	1,383	747	-	26	17	283	2,158	-	-	-
Montana.....	119	495	13	-	1	-	8	252	-	-	-
Idaho.....	6	144	5	-	2	3	1	97	-	-	-
Wyoming.....	-	27	-	-	-	1	1	97	-	-	-
Colorado.....	98	367	82	-	4	5	215	718	-	-	-
New Mexico.....	4	168	87	-	2	-	30	338	-	-	-
Arizona.....	17	122	550	-	8	6	28	579	-	-	-
Utah.....	1	57	6	-	8	2	-	77	-	-	-
Nevada.....	-	3	4	-	1	-	-	-	-	-	-
PACIFIC.....	137	1,437	802	25	269	158	321	6,653	-	-	1
Washington.....	43	376	74	-	12	18	86	3,207	-	-	-
Oregon.....	22	137	116	1	15	14	84	646	-	-	1
California.....	71	883	566	23	239	125	123	2,391	-	-	-
Alaska.....	-	8	1	-	-	-	4	52	-	-	-
Hawaii.....	1	33	45	1	3	1	24	357	-	-	-
Puerto Rico.....	4	89	612	-	-	2	36	371	-	-	-
Virgin Islands.....	-	5	4	-	-	1	-	2	-	-	-

*Delayed reports: Measles: Me. 12, Mass. delete 6, Ohio delete 1, La. delete 1, Okla. 9, Nev. 2, P.R. 24
Mumps: Okla. 2, P.R. 46

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDED
APRIL 10, 1971 AND APRIL 11, 1970 (14th WEEK) - CONTINUED

AREA	RUBELLA		TETANUS		TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971	1971	Cum. 1971
UNITED STATES.....	1,860	17,419	2	19	3	26	2	65	—	5	115	1,189
NEW ENGLAND.....	79	641	—	—	—	—	1	3	—	—	4	94
Maine.....	10	134	—	—	—	—	—	—	—	—	4	88
New Hampshire.....	1	9	—	—	—	—	—	—	—	—	—	—
Vermont.....	13	30	—	—	—	—	—	—	—	—	—	6
Massachusetts.....	34	312	—	—	—	—	1	3	—	—	—	—
Rhode Island.....	7	38	—	—	—	—	—	—	—	—	—	—
Connecticut.....	14	118	—	—	—	—	—	—	—	—	—	—
MIDDLE ATLANTIC.....	98	1,110	—	4	—	—	—	6	—	1	8	65
New York City.....	25	165	—	4	—	—	—	3	—	—	—	—
New York, Up-State..	13	237	—	—	—	—	—	2	—	—	8	64
New Jersey.....	32	180	—	—	—	—	—	—	—	—	—	—
Pennsylvania.....	28	528	—	—	—	—	—	1	—	1	—	1
EAST NORTH CENTRAL....	406	3,638	1	2	—	1	—	4	—	—	20	87
Ohio.....	30	436	—	1	—	1	—	3	—	—	17	26
Indiana.....	46	665	1	1	—	—	—	—	—	—	2	8
Illinois.....	36	702	—	—	—	—	—	—	—	—	1	19
Michigan.....	218	1,201	—	—	—	—	—	1	—	—	—	18
Wisconsin.....	76	634	—	—	—	—	—	—	—	—	—	16
WEST NORTH CENTRAL....	550	1,667	1	1	2	4	—	—	—	—	29	262
Minnesota.....	20	186	1	1	—	—	—	—	—	—	3	53
Iowa.....	35	357	—	—	—	—	—	—	—	—	9	77
Missouri.....	463	876	—	—	2	4	—	—	—	—	9	55
North Dakota.....	7	37	—	—	—	—	—	—	—	—	3	54
South Dakota.....	3	26	—	—	—	—	—	—	—	—	—	—
Nebraska.....	4	32	—	—	—	—	—	—	—	—	—	—
Kansas.....	18	153	—	—	—	—	—	—	—	—	5	23
SOUTH ATLANTIC.....	77	1,135	—	7	—	12	1	15	—	1	7	134
Delaware.....	1	11	—	—	—	—	—	1	—	—	—	—
Maryland.....	2	66	—	—	—	3	—	3	—	—	—	—
Dist. of Columbia...	—	2	—	—	—	—	—	—	—	—	—	—
Virginia.....	2	94	—	—	—	5	—	1	—	—	2	38
West Virginia.....	5	159	—	—	—	—	—	1	—	—	2	58
North Carolina.....	—	14	—	—	—	4	—	2	—	1	—	—
South Carolina.....	40	255	—	—	—	—	—	—	—	—	—	—
Georgia.....	—	—	—	2	—	—	1	2	—	—	3	21
Florida.....	27	534	—	5	—	—	—	5	—	—	—	17
EAST SOUTH CENTRAL....	139	1,468	—	3	—	6	—	6	—	2	7	135
Kentucky.....	66	659	—	—	—	2	—	2	—	—	4	76
Tennessee.....	72	688	—	1	—	2	—	2	—	1	1	34
Alabama.....	—	75	—	1	—	2	—	2	—	—	2	25
Mississippi.....	1	46	—	1	—	—	—	—	—	1	—	—
WEST SOUTH CENTRAL....	123	2,578	—	—	1	1	—	5	—	1	36	293
Arkansas.....	4	247	—	—	—	—	—	—	—	—	4	27
Louisiana.....	—	94	—	—	1	1	—	3	—	—	1	10
Oklahoma.....	4	38	—	—	—	—	—	—	—	1	15	150
Texas.....	115	2,199	—	—	—	—	—	2	—	—	16	106
MOUNTAIN.....	30	1,082	—	—	—	2	—	2	—	—	1	4
Montana.....	5	90	—	—	—	1	—	—	—	—	—	—
Idaho.....	1	26	—	—	—	—	—	—	—	—	—	—
Wyoming.....	—	552	—	—	—	—	—	—	—	—	—	—
Colorado.....	4	125	—	—	—	—	—	—	—	—	—	—
New Mexico.....	11	129	—	—	—	—	—	—	—	—	—	2
Arizona.....	7	125	—	—	—	—	—	2	—	—	1	2
Utah.....	2	25	—	—	—	1	—	—	—	—	—	—
Nevada.....	—	10	—	—	—	—	—	—	—	—	—	—
PACIFIC.....	358	4,100	—	2	—	—	—	24	—	—	3	115
Washington.....	40	677	—	—	—	—	—	—	—	—	—	—
Oregon.....	33	304	—	—	—	—	—	—	—	—	—	—
California.....	285	3,016	—	2	—	—	—	24	—	—	2	88
Alaska.....	—	30	—	—	—	—	—	—	—	—	1	27
Hawaii.....	—	73	—	—	—	—	—	—	—	—	—	—
Puerto Rico.....	—	1	—	1	—	—	—	1	—	—	—	20
Virgin Islands.....	—	—	—	—	—	—	—	—	—	—	—	—

*Delayed reports: Rubella: Ohio 1, Okla. 4, Nev. 9, Hawaii delete 1
Rabies in animals: W.Va. delete 1, P.R. 4

Week No. 14 TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDED APRIL 10, 1971

14

(By place of occurrence and week of filing certificate. Excludes fetal deaths)

Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes	Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes
	All Ages	65 years and over				All Ages	65 years and over		
NEW ENGLAND:	689	404	60	32	SOUTH ATLANTIC:	1,353	714	45	93
Boston, Mass.-----	219	107	17	14	Atlanta, Ga.-----	132	59	1	10
Bridgeport, Conn.-----	42	30	5	3	Baltimore, Md.-----	268	144	7	11
Cambridge, Mass.-----	36	29	6	—	Charlotte, N. C.-----	57	26	—	5
Fall River, Mass.-----	17	9	2	2	Jacksonville, Fla.-----	81	45	7	6
Hartford, Conn.-----	43	21	2	2	Miami, Fla.-----	125	70	1	4
Lowell, Mass.-----	25	16	4	—	Norfolk, Va.-----	68	32	2	4
Lynn, Mass.-----	25	13	3	—	Richmond, Va.-----	94	50	5	2
New Bedford, Mass.-----	22	18	1	1	Savannah, Ga.-----	48	22	2	6
New Haven, Conn.-----	56	28	1	4	St. Petersburg, Fla.-----	94	74	5	2
Providence, R. I.-----	74	45	7	1	Tampa, Fla.-----	77	49	7	2
Somerville, Mass.-----	11	6	—	—	Washington, D. C.-----	252	106	6	36
Springfield, Mass.-----	38	23	5	2	Wilmington, Del.-----	57	37	2	5
Waterbury, Conn.-----	29	24	—	—					
Worcester, Mass.-----	52	35	7	3	EAST SOUTH CENTRAL:	722	383	32	31
MIDDLE ATLANTIC:	3,089	1,896	120	119	Birmingham, Ala.-----	137	73	1	3
Albany, N. Y.-----	67	43	2	4	Chattanooga, Tenn.-----	50	29	4	2
Allentown, Pa.-----	37	24	4	—	Knoxville, Tenn.-----	23	14	—	—
Buffalo, N. Y.-----	135	77	4	5	Louisville, Ky.-----	153	83	9	4
Camden, N. J.-----	50	27	4	2	Memphis, Tenn.-----	123	65	3	3
Elizabeth, N. J.-----	28	10	—	2	Mobile, Ala.-----	61	35	3	3
Erie, Pa.-----	33	18	4	2	Montgomery, Ala.-----	55	26	4	2
Jersey City, N. J.-----	68	39	3	6	Nashville, Tenn.-----	120	58	8	14
Newark, N. J.-----	66	35	2	7	WEST SOUTH CENTRAL:	1,129	575	37	62
New York City, N. Y.-----	1,685	1,036	52	50	Austin, Tex.-----	44	21	3	2
Paterson, N. J.-----	41	25	2	2	Baton Rouge, La.-----	38	21	1	2
Philadelphia, Pa.-----	301	191	6	9	Corpus Christi, Tex.-----	22	7	—	3
Pittsburgh, Pa.-----	154	83	5	7	Dallas, Tex.-----	175	97	8	12
Reading, Pa.-----	44	35	4	—	El Paso, Tex.-----	39	21	5	3
Rochester, N. Y.-----	136	98	10	9	Fort Worth, Tex.-----	65	39	2	4
Schenectady, N. Y.-----	28	19	3	—	Houston, Tex.-----	283	125	2	12
Scranton, Pa.-----	33	27	—	1	Little Rock, Ark.-----	47	32	3	1
Syracuse, N. Y.-----	87	49	6	9	New Orleans, La.-----	112	54	5	5
Trenton, N. J.-----	43	24	3	2	Oklahoma City, Okla.-----	78	45	1	3
Utica, N. Y.-----	22	16	4	—	San Antonio, Tex.-----	118	53	1	8
Yonkers, N. Y.-----	31	20	2	2	Shreveport, La.-----	66	40	4	4
EAST NORTH CENTRAL:	2,595	1,469	85	103	Tulsa, Okla.-----	42	20	2	3
Akron, Ohio-----	69	32	—	6	MOUNTAIN:	523	300	33	24
Canton, Ohio-----	33	16	2	4	Albuquerque, N. Mex.-----	65	35	9	6
Chicago, Ill.-----	722	392	23	24	Colorado Springs, Colo.-----	33	18	3	2
Cincinnati, Ohio-----	154	95	7	5	Denver, Colo.-----	121	62	9	3
Cleveland, Ohio-----	149	74	2	13	Ogden, Utah-----	20	13	2	—
Columbus, Ohio-----	188	95	—	11	Phoenix, Ariz.-----	122	73	—	4
Dayton, Ohio-----	80	47	2	2	Pueblo, Colo.-----	25	17	5	—
Detroit, Mich.-----	388	216	14	9	Salt Lake City, Utah-----	66	38	3	7
Evansville, Ind.-----	42	25	6	1	Tucson, Ariz.-----	71	44	2	2
Flint, Mich.-----	49	30	2	1	PACIFIC:	1,836	1,117	76	71
Fort Wayne, Ind.-----	34	22	2	1	Berkeley, Calif.-----	23	15	—	—
Gary, Ind.-----	41	21	3	1	Fresno, Calif.-----	64	40	4	4
Grand Rapids, Mich.-----	59	38	5	1	Glendale, Calif.-----	45	32	2	1
Indianapolis, Ind.-----	150	81	4	8	Honolulu, Hawaii-----	57	31	1	9
Madison, Wis.-----	36	20	2	3	Long Beach, Calif.-----	115	73	5	7
Milwaukee, Wis.-----	119	82	2	2	Los Angeles, Calif.-----	592	344	36	18
Peoria, Ill.-----	44	24	1	6	Oakland, Calif.-----	90	44	5	2
Rockford, Ill.-----	40	20	1	3	Pasadena, Calif.-----	34	22	—	1
South Bend, Ind.-----	32	23	2	—	Portland, Ore.-----	159	112	3	2
Toledo, Ohio-----	98	68	5	2	Sacramento, Calif.-----	55	35	3	1
Youngstown, Ohio-----	68	48	—	—	San Diego, Calif.-----	108	64	1	7
WEST NORTH CENTRAL:	921	572	33	44	San Francisco, Calif.-----	192	110	2	7
Des Moines, Iowa-----	65	39	2	1	San Jose, Calif.-----	41	28	2	1
Duluth, Minn.-----	34	22	3	—	Seattle, Wash.-----	146	84	4	4
Kansas City, Kans.-----	63	36	5	4	Spokane, Wash.-----	64	47	2	3
Kansas City, Mo.-----	156	102	2	5	Tacoma, Wash.-----	51	36	6	4
Lincoln, Nebr.-----	22	17	1	—	Total	12,857	7,430	521	579
Minneapolis, Minn.-----	98	67	3	8	Expected Number	13,116	7,652	503	519
Omaha, Nebr.-----	76	44	2	3	Cumulative Total (includes reported corrections for previous weeks)	192,941	112,831	8,197	8,620
St. Louis, Mo.-----	252	153	5	12					
St. Paul, Minn.-----	83	47	2	7					
Wichita, Kans.-----	72	45	8	4					
Las Vegas, Nev.*	10	6	2	—					

*Mortality data are being collected from Las Vegas, Nev., for possible inclusion in this table, however, for statistical reasons, these data will be listed only and not included in the total, expected number, or cumulative total, until 5 years of data are collected.

+ Delayed Report for Week ended April 3, 1971

QUARANTINE MEASURES — (Continued from page 129)

Israel

Delete the note concerning cholera.

Italy

1. Delete the note concerning cholera, and insert: Cholera — And from all countries any parts of which are infected.*

2. Delete the note concerning smallpox, and insert: Smallpox — And from countries in Africa (except Algeria, Azores and Madeira, Canary Islands, Libya, Morocco, Reunion, Tunisia), in the Americas (except Bermuda, Canada, the Caribbean Islands, French Guiana, Greenland, Guadeloupe, Guyana, Martinique, Mexico, Netherlands Antilles, St. Pierre and Miquelon, Surinam, United States of America), in Asia (except Israel, Turkey) and in Oceania. No certificate required from travelers arriving from Australia, New Zealand or Japan by trans-polar, trans-pacific or trans-Siberia flights.

Kuwait

Delete the note concerning cholera, and insert: Cholera — And from the Trucial Sheikdoms.*

Netherlands

Delete the note concerning smallpox, and insert: Smallpox — And from countries in Africa (except Algeria, Azores and Madeira, Canary Islands, Libya, Morocco, Reunion, Tunisia), in the Americas (except Bermuda, Canada, the Caribbean Islands, French Guiana, Greenland, Guadeloupe, Guyana, Martinique, Mexico, Netherlands Antilles, St. Pierre and Miquelon, Surinam, United States of America), in Asia (ex-

cept Israel) and in Oceania. No certificate required from travelers arriving from Australia, New Zealand or Japan by trans-polar, trans-pacific or trans-Siberia flights.

New Zealand

In the note concerning smallpox, insert: American Samoa.

Senegal

Delete the note concerning cholera, and insert: Cholera — And from all countries any parts of which are infected.*

Turkey

Delete the note concerning cholera.

Uganda

Insert: Cholera — And from Kenya.*

United Kingdom

1. Delete the note concerning cholera.

2. Delete the note concerning smallpox, and insert: Smallpox — And from countries in Africa (except Algeria, Azores and Madeira, Canary Islands, Libya, Morocco, Reunion, Tunisia), in the Americas (except Bermuda, Canada, the Caribbean Islands, French Guiana, Greenland, Guadeloupe, Guyana, Martinique, Mexico, Netherlands Antilles, St. Pierre and Miquelon, Surinam, United States of America), in Asia (except Israel, Turkey) and in Oceania. No certificate required from travelers arriving from Australia, New Zealand or Japan by trans-polar, trans-pacific or trans-Siberia flights.

United States of America

Delete all information concerning cholera vaccination.

The Morbidity and Mortality Weekly Report, circulation 22,800, is published by the Center for Disease Control, Atlanta, Ga.

Director, Center for Disease Control
Director, Epidemiology Program, CDC
Editor, MMWR

David J. Sencer, M.D.
Philip S. Brachman, M.D.
Michael B. Gregg, M.D.

The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

Address all correspondence to

Center for Disease Control
Attn: Editor
Morbidity and Mortality Weekly Report
Atlanta, Georgia 30333

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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