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International Notes

Human Plague — India, 1994

Since August 26, 1994, outbreaks of bubonic and pneumonic plague have been reported in south-central, southwestern, and northern India. Because most of the reports are unconfirmed, the extent of the outbreaks is unclear. On August 26, following reports of a rat die-off, the first human cases were reported in Bir district, Maharashtra state, approximately 300 km east of Bombay. On September 22, cases of pneumonic plague were reported from the city of Surat, Gujarat state, approximately 200 km north of Bombay. As of September 26, several hundred pneumonic plague cases and numerous deaths have been reported from Surat. On September 26 and 27, cases were reported from Bombay and Calcutta, and on September 27, cases of pneumonic plague were reported from Delhi.

Reported by: Div of Quarantine, National Center for Prevention Svcs; Bacterial Zoonoses Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: Plague is caused by infection with *Yersinia pestis*, a bacterium carried by rodents and transmitted by fleas commonly found in parts of Asia, Africa, and North and South America (*1,2*). Sporadic human cases associated with epizootics in wild rodents occur annually in the western United States (*3*); however, no pneumonic plague cases resulting from person-to-person spread have been reported in the United States since 1924 (*1*). In India, large plague outbreaks occurred during the first half of the 20th century; however, the last laboratory-confirmed human cases were reported in 1966 (*4,5*). In 1992 (the most recent year for which complete data are available), human plague cases were reported from nine countries (Brazil, China, Madagascar, Mongolia, Myanmar, Peru, the United States, Vietnam, and Zaire) (*5*).

Most human plague is the bubonic form, which results from the bites of infected fleas; however, plague also can be transmitted to humans by handling infected animals or by inhaling infectious aerosols from persons with pneumonic plague. The incubation period for plague ranges from 1 to 7 days, and manifestations of the illness include rapid onset of fever, chills, headache, malaise, myalgias, and prostration, often with nausea. In particular, bubonic plague is characterized by painful swelling of lymph nodes (buboes) in the inguinal, axillary, or cervical regions; pneumonic plague is characterized by cough and dyspnea; and septicemic plague may result in fulminant

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gram-negative shock without localized signs of infection (2,*6*). Multiple clinical presentations can occur in one patient.

Travelers to India and other plague-endemic countries are at low risk for infection with *Y. pestis*. To reduce risk, travelers should avoid areas with recently reported human plague cases. Persons who must travel to these areas should 1) avoid rat-infested areas—especially areas where dead rats have been observed; 2) apply insect repellents to ankles and legs, and apply repellents and insecticides to clothing and outer bedding as directed by the manufacturer; 3) avoid handling dead or sick animals; and 4) if the risk for exposure is high, take prophylactic antibiotics. For adults, the preferred antibiotic for prophylaxis is tetracycline or doxycycline, and for children aged ≤8 years, sulfonamides (*2*). Because maximal antibody responses from plague vaccine require administration of multiple doses over several months, plague vaccine is not recommended for immediate protection during outbreaks.

International travelers should be advised to report immediately to a physician any febrile illness beginning within 7 days after leaving India. Although imported cases are expected to be rare, physicians should be alert for evidence of plague in persons who have traveled to plague-endemic areas and who developed a febrile illness within 7 days after leaving the area. All suspected plague patients should be hospitalized and isolated, specimens should be obtained from patients for laboratory diagnosis, chest roentgenogram should be performed, and antibiotic therapy should be promptly initiated. For all suspected cases, appropriate diagnostic specimens include blood for culture and serum antibodies; for suspected pneumonic cases, sputum samples; and for suspected bubonic cases, aspirates from affected lymph nodes. Streptomycin is the preferred drug for treatment of plague, but gentamicin, tetracyclines, and chloramphenicol also are effective (*2,7*). Prompt treatment can reduce overall plague mortality from 60%–100% to 10%–15%.

Prophylactic antibiotic treatment should be administered to all persons who have had face-to-face contact or who have occupied a closed space with a person with pneumonic plague. Household contacts of bubonic plague patients also should receive prophylactic antibiotic treatment.

Suspected human plague cases in international travelers should be reported through state and local health departments to CDC's Division of Quarantine, National Center for Prevention Services, telephone (404) 639-8107 or (404) 639-2888 (nights, Sundays, and holidays). Specimens for confirmatory testing can be submitted through state health departments to CDC. Inquiries about the availability of streptomycin should be directed to Pfizer, Inc.,* telephone (800) 254-4445. Additional informa- tion about plague is available to physicians and the general public from the CDC Voice Information System, telephone (404) 332-4555, and to physicians and laboratory personnel from CDC's Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, telephone (303) 221-6453.

References

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*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Human Plague — Continued

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Current Trends

Update: Influenza Activity — Worldwide, 1994

From October 1993 through August 1994, influenza activity occurred at moderate to moderately severe levels worldwide. Influenza A(H3N2) viruses predominated during the 1993–94 season, but influenza B viruses also were isolated from persons with sporadic illness and from outbreak-associated cases. Cocirculation of influenza A(H3N2) and influenza B viruses is continuing throughout the world; however, the isolation of influenza A(H1N1) viruses has been extremely rare (*1*). This report summarizes influenza activity worldwide from March through August 1994.

Africa. In Africa, influenza activity occurred from May through July. Zambia and South Africa reported influenza B as the predominant virus isolated. South Africa identified sporadic cases of influenza A(H3N2).

Asia. Cocirculation of influenza A(H3N2) and influenza B viruses has been reported in Asia. During March and April, both influenza A and B were reported during outbreaks in Taiwan. Thailand reported influenza B in March and April and influenza A and B from May through July, with influenza B predominating. Hong Kong reported only influenza B through June; during July, moderate levels of influenza A(H3N2) activity occurred. Since March, only influenza B viruses have been isolated in China in association with outbreaks or sporadic cases of influenza-like illness (ILI).

Europe. In March, all reporting countries except Russia reported influenza activity either at or approaching normal levels. In Russia, influenza activity continued through March with the isolation of both influenza A and B viruses. Isolation of influenza A(H3N2) viruses from sporadic cases was reported in the United Kingdom in June. Since June, the Netherlands and the United Kingdom each have reported one influenza B isolate.

North America. In the United States, type A(H3N2) viruses from outbreaks continued to be reported in March along with isolates from sporadic cases that continued into April. Sporadic cases of influenza B occurred in March, April, and May. Influenza A viruses were isolated from six sporadic cases in July and August. Of these, three have been indentified as influenza A(H3N2). Canada reported the detection of both influenza A and B through the beginning of May.

Central and South America. Based on serologic studies, an increase in acute respiratory illness (ARI) in Panama in June was attributed to influenza A(H3N2). Sporadic isolation of influenza A and B viruses was reported in Argentina, Brazil, and Chile from April through June. In April, an outbreak of ARI associated with influenza A(H3N2)

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viruses was reported in Porto Velho, Brazil. Influenza A(H3N2) predominated in Santiago, Chile, in mid-July when ILI morbidity peaked.

Oceania. In Australia, influenza activity increased markedly by the end of June, and outbreaks occurred throughout the country in July. Epidemic-level activity was reported in mid-August in Newcastle. Although most isolates were influenza A(H3N2) viruses, influenza B viruses were isolated from sporadic cases. Outbreaks of influenza occurred in New Zealand from May through July; influenza A(H3N2) viruses were isolated more frequently than influenza B viruses.

Characterization of influenza virus isolates. From October 1, 1993, through August 31, 1994, 648 influenza isolates collected worldwide were antigenically characterized by the World Health Organization Collaborating Center for Surveillance, Epidemiology, and Control of Influenza at CDC. Of these, 369 (57%) were from North America, 155 (24%) from Asia, and 124 (19%) from Europe. Of 648 viruses analyzed, 519 (80%) were subtyped as influenza A(H3N2) viruses, and 129 (20%) were influenza B viruses. More than 99% of influenza A(H3N2) viruses analyzed were antigenically related to A/Beijing/32/92 (the vaccine strain for 1993–94); however, 125 (24%) of these viruses were more closely related to A/Shangdong/09/93, a variant of A/Beijing/32/92 that was selected for the vaccine strain for 1994–95 (*1*). Of the 129 influenza B viruses analyzed, 102 (79%) were closely related to the 1993–94 and 1994–95 influenza B vaccine strain, B/Panama/45/90. Although influenza A(H1N1) viruses have been isolated rarely, those characterized are similar antigenically to A/Texas/36/91, the 1994–95 vaccine strain.

Reported by: World Health Organization National Influenza Centers, Communicable Disease Div, World Health Organization, Geneva. World Health Organization Collaborating Center for Surveillance, Epidemiology, and Control of Influenza, Influenza Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: The antigenic components of influenza vaccine are updated annually to include viruses that are antigenically similar to the strains of the three distinct groups of influenza viruses that have been in worldwide circulation. The vaccine for the 1994–95 season contains A/Shangdong/09/93-like (H3N2), B/Panama/45/90-like, and A/Texas/36/91-like (H1N1) antigens . Most of the influenza viruses isolated since March 1994 are antigenically similar to the 1994–95 influenza vaccine strains. Based on recent patterns of worldwide influenza activity, both influenza type A(H3N2) and type B are expected to circulate in the United States during the 1994–95 influenza season.

Vaccination against influenza is recommended by the Advisory Committee on Immunization Practices for 1) persons aged ≥65 years; 2) persons who reside in nursing homes or other chronic-care facilities; 3) persons with chronic cardiovascular or pulmonary disorders, including children with asthma; 4) persons who required medical follow-up or hospitalization during the previous year because of diabetes and other chronic metabolic diseases, renal dysfunction, hemoglobinopathies, or immunosuppression; and 5) children and adolescents who are receiving long-term aspirin therapy and therefore may be at risk for developing Reye syndrome after influenza. In addition, vaccination is recommended for health-care workers and other persons who are in close contact with persons in high-risk groups, including household members.

The optimal time for organized vaccination campaigns is from mid-October through mid-November. However, persons at high risk who visit health-care providers for routine care or who are hospitalized should be offered influenza vaccine before the

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recommended time. In addition, health-care providers should continue to offer vaccine to high-risk persons even after influenza activity is documented in a community.

Information regarding influenza surveillance is available through the CDC Voice Information System (influenza update), telephone (404) 332-4555, or through the CDC Information Service on the Public Health Network electronic bulletin board. From October through May, the information is updated weekly. Periodic updates about influenza are published in the *MMWR*, and information on local influenza activity is available through county and state health departments.

Reference

1. CDC. Update: influenza activity—United States and worldwide, 1993–94 season, and composition of the 1994–95 influenza vaccine. MMWR 1994;43:179–83.

International Notes

Rift Valley Fever — Egypt, 1993

In June 1993, several persons in Aswan Governorate (1993 population: 952,000) in southern Egypt sought medical care for acute loss of vision following an illness characterized by fever, headache, retro-orbital pain, and myalgias. Ophthalmologists who examined these persons noted paramacular retinal hemorrhages and edema, and Rift Valley fever (RVF) was suspected; serologic studies of these patients confirmed the diagnosis of acute RVF (*1,2*). In August 1993, serologic surveys were conducted in two villages to estimate the prevalence of RVF virus (RVFV) antibody among persons residing in selected rural communities in Aswan Governorate. This report summarizes the findings of these serosurveys and two nested epidemiologic studies conducted in the same villages 2 weeks later.

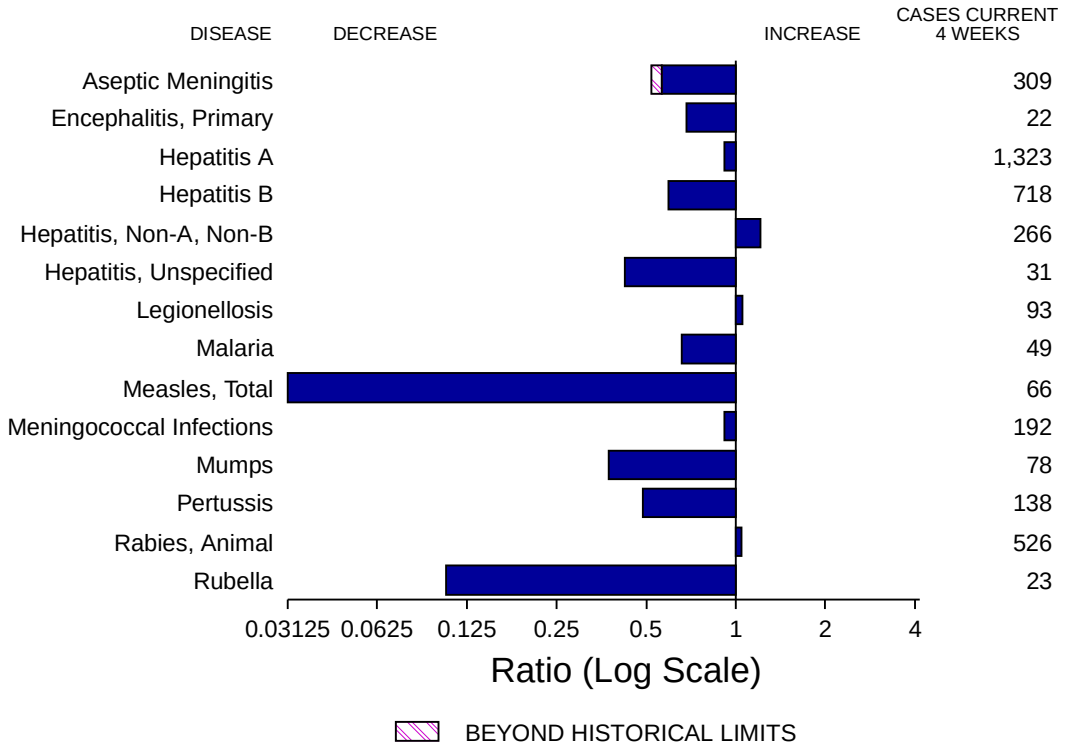
All persons aged >1 year in households randomly chosen for survey were interviewed, and a blood specimen was obtained with informed consent (with parents as proxy for children aged <10 years). Specimens were analyzed for immunoglobulin M (IgM) and immunoglobulin G (IgG) antibody by enzyme-linked immunosorbent assay (*3*).

In one village (population: 2400) that was chosen for survey because a fatal case of RVFV encephalitis occurred there, 39 (12%) of 326 persons in 42 households were seropositive for RVFV IgM antibody. In a nested case-control study with 20 RVFV IgM seropositive persons (cases) and three sex-, age- (±10 years), and neighborhood-matched seronegative persons (controls) per case, acute RVF was associated with contact with the blood of a slaughtered animal during the preceding 6 months (matched odds ratio [OR]=11.3; 95% confidence interval [CI]=1.3–102.7) and with sleeping outdoors every night (OR=9.3; 95% CI=1.7–52.6).

In the second village (population: 2600), 30 (8.4%) of 359 persons in 52 households were seropositive for RVFV IgM antibody. In a retrospective cohort study nested in the original survey, the risk for IgM seropositivity was associated with attending the slaughtering of an animal (relative risk [RR]=2.5; 95% CI=1.2–5.1), sleeping outdoors every night (RR=2.7; 95% CI=1.3–5.6), and having a history of schistosomiasis (RR=3.6; 95% CI=1.8–7.1). Of those children aged <13 years and born at least 2 years after the 1977 epidemic in Egypt, 28 (13%) of 215 had serologic evidence of RVFV infection (i.e.,

(Continued on page 699)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending September 24, 1994, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending September 24, 1994 (38th Week)

	Cum. 1994		Cum. 1994
AIDS*	53,596	Measles: imported	166
Anthrax	-	indigenous	665
Botulism: Foodborne	45	Plague	14
Infant	50	Poliomyelitis, Paralytic[§]	1
Other	6	Psittacosis	28
Brucellosis	70	Rabies, human	1
Cholera	10	Syphilis, primary & secondary	15,643
Congenital rubella syndrome	3	Syphilis, congenital, age < 1 year[¶]	532
Diphtheria	1	Tetanus	25
Encephalitis, post-infectious	86	Toxic shock syndrome	138
Gonorrhea	277,666	Trichinosis	27
Haemophilus influenzae (invasive disease)[†]	848	Tuberculosis	15,461
Hansen Disease	84	Tularemia	70
Leptospirosis	23	Typhoid fever	317
Lyme Disease	7,873	Typhus fever, tickborne (RMSF)	326

*Updated monthly to the Division of HIV/AIDS, National Center for Infectious Diseases; last update August 30, 1994.
[†]Of 809 cases of known age, 223 (28%) were reported among children less than 5 years of age.
[§]The remaining 5 suspected cases with onset in 1994 have not yet been confirmed. In 1993, 3 of 10 suspected cases were confirmed. Two of the confirmed cases of 1993 were vaccine-associated and one was classified as imported.
[¶]Total reported to the Division of Sexually Transmitted Diseases and HIV Prevention, National Center for Prevention Services, through first quarter 1994.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending September 24, 1994, and September 25, 1993 (38th Week)

Reporting Area	AIDS*	Aseptic Meningitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionellosis	Lyme Disease
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	53,596	5,527	461	86	277,666	288,759	16,028	8,409	3,213	320	1,177	7,873
NEW ENGLAND	1,990	218	13	4	5,694	5,521	211	254	103	16	54	2,120
Maine	71	21	2	-	62	65	21	11	-	-	4	16
N.H.	44	21	-	2	78	43	13	17	8	-	-	17
Vt.	22	23	1	-	23	18	6	-	-	-	-	10
Mass.	1,031	64	8	1	2,300	2,177	84	159	75	14	39	178
R.I.	170	89	2	1	342	314	19	6	20	2	11	312
Conn.	652	-	-	-	2,889	2,904	68	61	-	-	-	1,587
MID. ATLANTIC	16,214	594	40	15	30,031	32,099	1,220	1,053	365	9	184	4,673
Upstate N.Y.	1,504	278	21	2	7,139	7,079	410	284	181	5	47	2,932
N.Y. City	9,831	106	6	5	10,249	8,604	485	243	1	-	8	12
N.J.	3,252	-	-	-	3,830	3,042	218	275	154	-	33	1,000
Pa.	1,627	210	13	8	8,813	13,374	107	251	29	4	96	729
E.N. CENTRAL	4,228	999	117	20	53,324	60,638	1,571	826	229	8	365	74
Ohio	797	265	36	3	15,802	16,608	630	125	17	-	167	52
Ind.	441	145	10	1	6,366	6,122	282	141	9	-	96	13
Ill.	2,035	222	39	5	13,412	20,062	306	163	44	3	20	4
Mich.	703	360	28	11	12,977	12,993	206	281	156	5	57	5
Wis.	252	7	4	-	4,767	4,853	147	116	3	-	25	-
W.N. CENTRAL	1,083	293	21	6	15,081	16,266	767	467	126	11	95	177
Minn.	274	20	2	-	2,435	1,669	165	46	17	1	1	119
Iowa	59	87	-	1	1,109	1,207	44	24	8	9	28	13
Mo.	486	108	7	4	8,708	9,905	356	349	79	1	42	28
N. Dak.	18	10	3	-	18	35	4	-	-	-	4	-
S. Dak.	11	2	2	-	137	197	30	2	-	-	1	-
Nebr.	65	14	4	1	-	484	89	19	8	-	14	9
Kans.	170	52	3	-	2,674	2,769	79	27	14	-	5	8
S. ATLANTIC	11,932	1,091	102	26	77,657	73,789	1,064	1,794	484	32	263	626
Del.	188	30	1	-	1,398	1,045	16	4	1	-	26	39
Md.	1,597	188	17	4	13,243	11,709	149	295	27	7	66	260
D.C.	986	45	-	1	5,355	3,432	18	40	-	-	9	6
Va.	778	190	26	6	9,821	8,648	126	92	20	5	6	113
W. Va.	40	22	21	-	580	454	10	29	23	-	3	15
N.C.	887	181	36	1	20,075	18,576	100	211	50	-	19	69
S.C.	780	24	-	-	9,676	7,873	31	25	7	-	10	7
Ga.	1,371	47	1	-	-	4,660	24	523	167	-	92	99
Fla.	5,305	364	-	14	17,509	17,392	590	575	189	20	32	18
E.S. CENTRAL	1,441	371	28	2	33,086	33,146	406	785	645	2	48	34
Ky.	226	124	12	1	3,667	3,496	116	62	21	-	8	17
Tenn.	483	76	10	-	9,789	10,378	163	662	609	1	25	11
Ala.	422	132	5	1	11,742	11,579	77	61	15	1	11	6
Miss.	310	39	1	-	7,888	7,693	50	-	-	-	4	-
W.S. CENTRAL	5,361	618	41	2	35,138	32,834	2,382	1,107	424	65	36	96
Ark.	182	38	-	-	5,018	5,077	151	22	7	1	7	8
La.	864	26	5	-	8,774	8,863	120	129	128	1	12	1
Okla.	193	-	-	-	2,957	3,471	227	243	236	1	11	52
Tex.	4,122	554	36	2	18,389	15,423	1,884	713	53	62	6	35
MOUNTAIN	1,551	217	8	3	6,305	8,487	3,028	473	342	42	69	13
Mont.	18	7	-	-	66	53	18	21	10	-	14	-
Idaho	45	5	-	-	65	139	260	65	64	1	1	3
Wyo.	16	4	2	2	57	64	24	20	131	-	4	3
Colo.	580	89	1	-	2,262	2,816	375	78	55	13	15	-
N. Mex.	118	12	-	-	707	711	857	162	43	9	3	5
Ariz.	421	44	-	-	2,358	3,004	964	30	8	11	7	-
Utah	96	30	1	1	178	333	366	56	19	1	7	1
Nev.	257	26	4	-	612	1,367	164	41	12	7	18	1
PACIFIC	9,796	1,126	91	8	21,350	25,979	5,379	1,650	495	135	63	60
Wash.	636	-	-	-	2,134	2,827	267	53	52	1	6	-
Oreg.	431	-	-	-	570	900	413	38	14	1	-	-
Calif.	8,570	1,013	89	7	17,528	21,414	4,487	1,526	423	130	54	60
Alaska	32	16	2	-	648	461	168	9	-	-	-	-
Hawaii	127	97	-	1	470	377	44	24	6	3	3	-
Guam	1	9	-	-	91	75	23	2	-	7	2	-
P.R.	1,578	24	-	3	333	374	50	257	111	10	-	-
V.I.	34	-	-	-	20	79	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	21	37	7	-	-	-	-	-
C.N.M.I.	-	-	-	-	34	67	4	1	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS, National Center for Infectious Diseases; last update August 30, 1994.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending September 24, 1994, and September 25, 1993 (38th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	Cum. 1994	1994	Cum. 1994	1994	Cum. 1994	Cum. 1993	1994	Cum. 1994	Cum. 1993
UNITED STATES	753	-	665	-	166	265	1,957	20	1,026	92	2,420	4,159	1	208	164
NEW ENGLAND	59	-	14	-	14	61	100	-	16	13	265	546	-	127	1
Maine	4	-	1	-	4	1	19	-	3	-	12	15	-	-	1
N.H.	3	-	1	-	-	2	6	-	4	1	52	130	-	-	-
Vt.	3	-	2	-	1	31	2	-	-	4	35	65	-	-	-
Mass.	27	-	2	-	6	17	41	-	1	8	139	275	-	123	-
R.I.	6	-	4	-	3	1	-	-	2	-	5	7	-	2	-
Conn.	16	-	4	-	-	9	32	-	6	-	22	54	-	2	-
MID. ATLANTIC	148	-	169	-	23	21	196	7	87	35	445	662	-	9	58
Upstate N.Y.	39	-	12	-	3	5	69	2	24	4	182	212	-	6	16
N.Y. City	55	-	14	-	3	7	11	3	11	2	82	49	-	1	22
N.J.	33	-	139	-	14	9	47	-	6	-	10	68	-	2	15
Pa.	21	-	4	-	3	-	69	2	46	29	171	333	-	-	5
E.N. CENTRAL	76	-	59	-	41	28	313	-	161	-	306	1,030	-	11	7
Ohio	12	-	15	-	-	9	86	-	42	-	106	246	-	-	1
Ind.	13	-	-	-	1	-	51	-	7	-	48	90	-	-	2
Ill.	31	-	17	-	39	9	98	-	75	-	68	345	-	3	1
Mich.	18	-	24	-	1	6	47	-	33	-	35	60	-	8	2
Wis.	2	-	3	-	-	4	31	-	4	-	49	289	-	-	1
W.N. CENTRAL	32	-	126	-	44	3	135	1	49	6	128	357	-	2	1
Minn.	11	-	-	-	-	-	11	-	5	-	51	190	-	-	-
Iowa	4	-	6	-	1	-	18	1	13	-	9	27	-	-	-
Mo.	11	-	118	-	42	1	68	-	26	-	33	103	-	2	1
N. Dak.	1	-	-	-	-	-	1	-	3	-	4	5	-	-	-
S. Dak.	-	-	-	-	-	-	8	-	-	6	14	8	-	-	-
Nebr.	3	-	1	-	1	-	9	-	2	-	7	8	-	-	-
Kans.	2	-	1	-	-	2	20	-	-	-	10	16	-	-	-
S. ATLANTIC	162	-	49	-	6	26	336	-	150	2	232	355	-	11	6
Del.	3	-	-	-	-	-	5	-	-	-	2	9	-	-	-
Md.	78	-	2	-	2	4	30	-	46	-	66	101	-	-	2
D.C.	12	-	-	-	-	-	4	-	-	2	7	11	-	-	-
Va.	21	-	1	-	1	2	53	-	35	-	29	50	-	-	-
W. Va.	-	-	36	-	-	-	12	-	3	-	4	8	-	-	-
N.C.	9	-	2	-	1	-	42	-	36	-	58	52	-	-	-
S.C.	4	-	-	-	-	-	19	-	7	-	12	13	-	-	-
Ga.	19	-	2	-	-	-	65	-	8	-	22	41	-	2	-
Fla.	16	-	6	-	2	20	106	-	15	-	32	70	-	9	4
E.S. CENTRAL	27	-	28	-	-	1	116	-	18	2	113	251	-	-	-
Ky.	9	-	-	-	-	-	33	-	-	-	57	34	-	-	-
Tenn.	8	-	28	-	-	-	26	-	7	-	18	153	-	-	-
Ala.	9	-	-	-	-	1	57	-	5	2	31	54	-	-	-
Miss.	1	-	-	-	-	-	-	-	6	-	7	10	-	-	-
W.S. CENTRAL	35	-	9	-	7	10	249	11	203	1	109	115	-	12	17
Ark.	3	-	-	-	1	-	38	-	1	1	22	8	-	-	-
La.	6	-	-	-	1	1	29	-	22	-	10	9	-	-	1
Okla.	3	-	-	-	-	-	25	-	23	-	22	56	-	4	1
Tex.	23	-	9	-	5	9	157	11	157	-	55	42	-	8	15
MOUNTAIN	24	-	148	-	17	5	127	-	116	5	312	304	-	6	10
Mont.	-	-	-	-	-	-	6	-	-	2	6	7	-	-	-
Idaho	2	-	-	-	-	-	15	-	7	2	44	85	-	-	1
Wyo.	1	-	-	-	-	-	6	-	2	-	-	1	-	-	-
Colo.	11	-	16	-	3	3	26	-	2	1	109	101	-	-	2
N. Mex.	3	-	-	-	-	-	13	N	N	-	20	34	-	1	-
Ariz.	1	-	1	-	1	1	41	-	80	-	115	46	-	-	2
Utah	4	-	131	-	2	-	15	-	12	-	16	27	-	4	4
Nev.	2	-	-	-	11	1	5	-	12	-	2	3	-	1	1
PACIFIC	190	-	63	-	14	110	385	1	226	28	510	539	1	30	64
Wash.	7	-	-	-	-	-	26	-	6	-	26	56	-	-	-
Oreg.	10	-	-	-	1	4	67	N	N	-	38	41	-	2	-
Calif.	158	-	56	-	9	84	284	1	201	27	429	433	1	23	35
Alaska	1	-	7	-	-	2	2	-	3	1	1	5	-	1	1
Hawaii	14	-	-	-	4	20	6	-	16	-	16	4	-	4	28
Guam	3	U	211	U	-	2	1	U	4	U	2	-	U	1	-
P.R.	2	-	13	-	-	338	14	-	2	-	1	6	-	-	-
V.I.	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	1	U	2	2	U	-	-
C.N.M.I.	1	U	26	U	-	1	-	U	2	U	-	1	U	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending September 24, 1994, and September 25, 1993 (38th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1993	Cum. 1994	Cum. 1994	Cum. 1994	Cum. 1994
UNITED STATES	15,643	19,565	138	15,461	16,372	70	317	326	4,584
NEW ENGLAND	166	252	4	367	365	1	22	13	1,358
Maine	4	4	1	21	17	-	-	-	-
N.H.	3	22	-	14	15	-	-	-	112
Vt.	-	1	1	7	4	-	-	-	104
Mass.	72	105	2	186	202	1	18	8	519
R.I.	12	11	-	35	46	-	1	-	44
Conn.	75	109	-	104	81	-	3	5	579
MID. ATLANTIC	1,003	1,716	23	3,073	3,435	1	86	14	584
Upstate N.Y.	127	161	13	238	511	1	8	5	207
N.Y. City	437	826	-	1,890	2,044	-	60	1	-
N.J.	163	220	-	563	379	-	17	2	208
Pa.	276	509	10	382	501	-	1	6	169
E.N. CENTRAL	2,094	3,175	27	1,536	1,648	8	57	41	47
Ohio	882	885	9	250	229	1	6	24	4
Ind.	186	272	2	134	164	2	6	5	12
Ill.	585	1,212	7	786	870	3	34	10	13
Mich.	211	427	9	322	320	1	4	2	10
Wis.	230	379	-	44	65	1	7	-	8
W.N. CENTRAL	890	1,272	20	415	341	29	1	28	152
Minn.	40	49	1	95	42	1	-	-	13
Iowa	46	54	7	43	39	-	-	1	65
Mo.	764	1,051	5	183	176	19	1	13	14
N. Dak.	-	4	1	7	6	-	-	-	8
S. Dak.	-	2	-	20	11	1	-	10	24
Nebr.	-	10	2	18	16	2	-	1	-
Kans.	40	102	4	49	51	6	-	3	28
S. ATLANTIC	4,537	4,988	7	2,621	3,311	2	42	154	1,482
Del.	21	86	-	26	36	-	1	-	41
Md.	213	270	-	227	283	1	11	14	405
D.C.	167	259	-	95	127	-	1	-	2
Va.	599	470	1	214	309	-	7	15	298
W. Va.	8	10	-	60	61	-	-	2	59
N.C.	1,245	1,418	1	355	375	-	-	54	127
S.C.	579	734	-	266	288	-	-	12	139
Ga.	1,116	837	1	591	571	1	2	54	281
Fla.	589	904	4	787	1,261	-	20	3	130
E.S. CENTRAL	2,809	2,942	4	976	1,181	-	2	26	142
Ky.	155	249	2	237	276	-	1	7	14
Tenn.	742	847	2	289	356	-	1	13	34
Ala.	518	620	-	306	371	-	-	2	94
Miss.	1,394	1,226	-	144	178	-	-	4	-
W.S. CENTRAL	3,400	4,125	1	2,181	1,876	17	11	37	514
Ark.	374	413	-	218	140	16	-	7	24
La.	1,318	1,904	-	94	192	-	3	-	55
Okla.	100	235	1	198	110	1	2	25	28
Tex.	1,608	1,573	-	1,671	1,434	-	6	5	407
MOUNTAIN	186	184	7	375	403	9	9	13	110
Mont.	3	1	-	9	13	3	-	4	14
Idaho	1	-	1	11	10	-	-	-	3
Wyo.	-	7	-	8	2	-	-	2	17
Colo.	101	57	4	21	64	1	3	4	10
N. Mex.	18	24	-	43	46	1	1	1	6
Ariz.	33	77	-	169	163	-	1	1	39
Utah	7	4	2	38	25	2	2	-	14
Nev.	23	14	-	76	80	2	2	1	7
PACIFIC	558	911	45	3,917	3,812	3	87	-	195
Wash.	28	45	2	203	190	-	3	-	-
Oreg.	21	36	-	90	-	2	4	-	8
Calif.	503	819	40	3,388	3,384	-	76	-	158
Alaska	4	6	-	42	46	1	-	-	29
Hawaii	2	5	3	194	192	-	4	-	-
Guam	4	3	-	84	42	-	1	-	-
P.R.	217	395	-	120	165	-	-	-	51
V.I.	24	34	-	-	2	-	-	-	-
Amer. Samoa	1	-	-	4	4	-	1	-	-
C.N.M.I.	2	3	-	24	26	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending September 24, 1994 (38th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	583	447	72	39	15	10	41
Boston, Mass.	149	104	21	12	6	6	17
Bridgeport, Conn.	33	21	3	6	3	-	3
Cambridge, Mass.	25	19	4	2	-	-	1
Fall River, Mass.	36	33	2	-	-	1	1
Hartford, Conn.	40	29	4	5	-	2	2
Lowell, Mass.	30	24	4	1	1	-	1
Lynn, Mass.	17	14	2	1	-	-	-
New Bedford, Mass.	34	28	3	3	-	-	1
New Haven, Conn.	40	32	6	2	-	-	3
Providence, R.I.	28	24	2	1	1	-	2
Somerville, Mass.	6	5	1	-	-	-	-
Springfield, Mass.	59	47	8	3	1	-	6
Waterbury, Conn.	32	24	4	2	2	-	-
Worcester, Mass.	54	43	8	1	1	1	4
MID. ATLANTIC	2,021	1,293	377	272	42	37	92
Albany, N.Y.	45	30	7	5	1	2	-
Allentown, Pa.	14	12	1	1	-	-	-
Buffalo, N.Y.	U	U	U	U	U	U	U
Camden, N.J.	34	17	10	6	1	-	-
Elizabeth, N.J.	21	15	3	3	-	-	1
Erie, Pa.§	27	25	2	-	-	-	-
Jersey City, N.J.	51	31	9	6	-	5	-
New York City, N.Y.	1,336	823	260	205	33	15	53
Newark, N.J.	51	20	16	11	3	1	-
Paterson, N.J.	30	13	9	5	-	3	2
Philadelphia, Pa.	U	U	U	U	U	U	U
Pittsburgh, Pa.§	57	42	10	4	-	1	6
Reading, Pa.	13	10	2	1	-	-	2
Rochester, N.Y.	136	102	25	6	1	2	18
Schenectady, N.Y.	28	22	5	1	-	-	1
Scranton, Pa.§	18	15	1	2	-	-	-
Syracuse, N.Y.	94	73	12	5	2	2	6
Trenton, N.J.	29	14	2	7	1	5	-
Utica, N.Y.	12	10	1	1	-	-	1
Yonkers, N.Y.	25	19	2	3	-	1	2
E.N. CENTRAL	2,182	1,345	401	257	121	58	102
Akron, Ohio	51	37	9	2	2	1	-
Canton, Ohio	41	32	7	-	1	1	3
Chicago, Ill.	507	193	105	121	72	16	16
Cincinnati, Ohio	114	76	18	10	5	5	4
Cleveland, Ohio	135	77	29	17	6	6	1
Columbus, Ohio	171	114	36	15	4	2	13
Dayton, Ohio	125	87	29	5	3	1	8
Detroit, Mich.	216	130	43	33	7	3	4
Evansville, Ind.	54	43	9	1	1	-	2
Fort Wayne, Ind.	66	46	11	4	3	2	4
Gary, Ind.	9	5	1	2	1	-	1
Grand Rapids, Mich.	52	35	7	4	1	5	6
Indianapolis, Ind.	177	117	26	18	8	8	13
Madison, Wis.	55	38	10	3	2	2	3
Milwaukee, Wis.	112	78	23	5	2	4	10
Peoria, Ill.	38	29	4	4	-	1	2
Rockford, Ill.	44	35	7	2	-	-	3
South Bend, Ind.	55	41	6	5	2	1	2
Toledo, Ohio	93	74	15	3	1	-	6
Youngstown, Ohio	67	58	6	3	-	-	1
W.N. CENTRAL	787	538	136	62	14	25	43
Des Moines, Iowa	34	30	3	-	-	1	-
Duluth, Minn.	30	23	4	2	-	1	2
Kansas City, Kans.	42	27	7	7	1	-	-
Kansas City, Mo.	111	59	22	9	4	6	4
Lincoln, Nebr.	27	22	4	1	-	-	4
Minneapolis, Minn.	206	144	39	16	3	4	22
Omaha, Nebr.	69	50	11	6	-	2	3
St. Louis, Mo.	137	86	30	10	4	7	1
St. Paul, Minn.	65	47	9	7	-	2	5
Wichita, Kans.	66	50	7	4	2	2	2
S. ATLANTIC	1,319	831	237	173	42	35	59
Atlanta, Ga.	197	120	34	31	6	6	4
Baltimore, Md.	183	106	32	30	7	8	16
Charlotte, N.C.	95	73	18	1	3	-	4
Jacksonville, Fla.	121	85	20	12	2	2	10
Miami, Fla.	120	76	20	19	2	3	-
Norfolk, Va.	62	34	15	7	3	3	2
Richmond, Va.	83	61	13	7	2	-	1
Savannah, Ga.	54	37	6	8	1	2	3
St. Petersburg, Fla.	78	55	14	3	4	2	2
Tampa, Fla.	162	111	34	12	1	3	13
Washington, D.C.	159	70	31	41	11	6	4
Wilmington, Del.	5	3	-	2	-	-	-
E.S. CENTRAL	695	460	137	56	29	13	46
Birmingham, Ala.	120	78	25	8	5	4	2
Chattanooga, Tenn.	65	39	15	5	3	3	5
Knoxville, Tenn.	63	38	16	4	4	1	6
Lexington, Ky.	60	32	16	11	-	1	2
Memphis, Tenn.	169	112	32	12	11	2	18
Mobile, Ala.	70	51	16	2	1	-	4
Montgomery, Ala.	59	41	6	9	2	1	2
Nashville, Tenn.	89	69	11	5	3	1	7
W.S. CENTRAL	1,412	886	268	166	53	36	77
Austin, Tex.	66	47	11	7	1	-	4
Baton Rouge, La.	29	24	1	2	1	1	-
Corpus Christi, Tex.	40	24	7	7	1	1	3
Dallas, Tex.	198	121	37	27	10	3	4
El Paso, Tex.	69	35	21	9	3	1	7
Ft. Worth, Tex.	98	69	17	6	3	3	4
Houston, Tex.	348	213	70	48	9	8	27
Little Rock, Ark.	53	28	11	8	6	-	1
New Orleans, La.	154	83	25	27	5	11	-
San Antonio, Tex.	193	124	41	15	9	4	13
Shreveport, La.	63	45	14	2	1	1	7
Tulsa, Okla.	101	73	13	8	4	3	7
MOUNTAIN	741	480	122	81	33	25	43
Albuquerque, N.M.	60	39	14	3	1	3	3
Colo. Springs, Colo.	32	19	8	4	-	1	2
Denver, Colo.	62	42	7	8	3	2	5
Las Vegas, Nev.	173	97	36	27	8	5	7
Ogden, Utah	22	15	5	2	-	-	3
Phoenix, Ariz.	141	96	14	15	9	7	9
Pueblo, Colo.	27	19	5	1	2	-	1
Salt Lake City, Utah	98	65	15	7	7	4	6
Tucson, Ariz.	126	88	18	14	3	3	7
PACIFIC	1,850	1,259	301	205	46	34	104
Berkeley, Calif.	11	7	2	2	-	-	-
Fresno, Calif.	108	77	15	9	2	5	4
Glendale, Calif.	16	15	1	-	-	-	1
Honolulu, Hawaii	66	45	13	4	2	2	-
Long Beach, Calif.	85	65	9	9	1	1	12
Los Angeles, Calif.	512	330	84	74	17	3	20
Pasadena, Calif.	32	27	3	2	-	-	2
Portland, Oreg.	134	90	23	13	5	2	-
Sacramento, Calif.	156	105	30	13	3	5	18
San Diego, Calif.	156	104	25	19	6	2	16
San Francisco, Calif.	114	77	20	15	1	1	9
San Jose, Calif.	171	128	23	11	3	6	16
Santa Cruz, Calif.	24	14	5	4	1	-	1
Seattle, Wash.	121	79	19	16	4	3	3
Spokane, Wash.	41	30	9	-	-	2	-
Tacoma, Wash.	103	66	20	14	1	2	2
TOTAL	11,590¶	7,539	2,051	1,311	395	273	607

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

Rift Valley Fever — Continued

IgM or IgG antibody). Four of these children had no evidence of recent infection (i.e., only IgG).

To monitor the potential spread of RVF from southern Egypt (i.e., Aswan) to the Nile Delta region of northern Egypt in 1993, RVF surveillance was conducted at fever hospitals, among persons in high-risk occupational groups (e.g., abattoir and veterinary workers), and in selected animal populations. In October 1993, RVFV was isolated from a 17-year-old woman with fatal hemorrhagic disease hospitalized in Sharkiya in the Nile Delta. In 1993, RVF was documented among persons residing in the governorates of Dakhla, Damietta, Gharbiya, Giza, Ismailia, Kafr al-Sheikh, Minufiya, Port Said, Qena, and Sharkiya.

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Editorial Note: RVF, an acute febrile illness often with hemorrhagic manifestations (*4*), is caused by an RNA-containing virus of the Bunyaviridae family. RVF epizootics are characteristically associated with domesticated ruminants (e.g., sheep, cattle, buffalo, goats, and camels) and humans living in close proximity. The reservoir for RVFV is unknown. RVFV initially was detected in Kenya during the 1930s when a febrile illness, characterized by spontaneous abortions in ewes and high death rates in lambs, also caused fever and myalgias in veterinarians investigating the outbreak (*5*). During 1977–78, the first epidemic of RVF reported in Egypt and the largest recorded thus far was associated with approximately 18,000 cases and 598 deaths in humans (*4,6*). With the exception of the two outbreaks in Egypt, RVFV is known to circulate only in sub-Saharan Africa; outbreaks previously have been reported in Cameroon, Central African Republic, Madagascar, Mali, Mauritania, Mozambique, Nigeria, Senegal, South Africa, Sudan, Tanzania, Zambia, and Zimbabwe (*7,8*).

Retrospective serosurveys have indicated that RVFV was not present in Egypt before the 1977–78 epidemic (*4,6*). In the 1993 studies of RVF, among children born after the 1977 outbreak, nearly all those with RVFV antibody had serologic evidence of recent infection, suggesting that RVFV probably was not circulating in the study areas during the interepidemic period. Ongoing surveillance is being conducted at fever hospitals, among persons in high-risk occupational categories, and in sentinel animal populations. After the outbreak in Egypt was recognized in 1993, vaccination of livestock with killed RVFV vaccine was intensified. In 1994, live-attenuated RVFV vaccine was used to vaccinate nearly 6 million domesticated animals throughout Egypt. Because RVF cases continued to occur 3–4 years after the 1977 epidemic began, additional human cases may be expected during the next several years, particularly

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among persons at high risk, despite reported widespread animal vaccination with live attenuated vaccine.

The nested epidemiologic studies in this report indicated that sleeping outdoors every night could possibly be a risk factor for exposure to mosquito vectors. Similarly, the slaughter-related factors may be proxies for exposure(s) to infected animals. The findings in this report are among the first published studies systematically analyzing various risk factors for human RVFV infection in rural popula- tions in Africa (*8*).

The species of several genera of mosquitoes (including *Aedes*, *Anopheles*, *Culex*, *Erethmapodites*, and *Mansonia*) are capable of transmitting RVFV and may be important vectors during epizootics (*4,6–9*). Although widespread aerial insecticide application could decrease mosquito vectors, this strategy is expensive and difficult to implement. Human transmission may occur following exposure to either the blood or viscera of infected animals (e.g., during slaughtering) or to instruments, needles, or laboratory specimens contaminated with the virus (*8,10*). RVFV vaccine for humans is not commercially available.

Because of the epizootic nature of RVF, human infection occurs primarily among persons living in small villages and rural areas with exposure to potentially infected livestock or infected arthropod vectors (i.e., mosquitoes) or among persons in high-risk occupations (e.g., veterinarians and slaughterhouse workers). RVF infection has not been documented in either tourists or foreign nationals living in Egypt. Personal measures that may decrease RVF transmission include use of bednets and/or effective mosquito repellents containing diethyl meta-toluidine (if available) and minimizing exposures to blood or tissues (e.g., viscera, abortus, and retained placenta) of animals potentially infected with RVF. Universal precautions during the handling of blood, blood products, medical instruments, or syringes should minimize the risk for disease among workers in health facilities or laboratories.

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International Notes

Health Status of Displaced Persons Following Civil War — Burundi, December 1993–January 1994

In Burundi (1990 population: 5.7 million), located in central-east Africa, seasonal epidemics of dysentery caused by *Shigella dysenteriae* type 1 (Sd1) have been documented each year since 1980. The assassination of the president of Burundi on October 21, 1993, resulted in widespread violence involving major tribal groups. By December, an estimated 130,000 persons had become displaced within the country, and approximately 683,000 persons had fled to Rwanda, Tanzania, or Zaire. Many displaced persons fled from rural areas to villages and towns; sanitation in these areas became inadequate as a result of the rapid influx of many persons. Because the civil war disrupted government services, the national routine disease surveillance system ceased to function in November. To assess the health status of displaced persons, rapid surveillance systems were established at sentinel sites throughout Burundi and in refugee camps in Rwanda. This report summarizes findings from these surveillance activities during December 1993–January 1994.

Burundi

In December 1993, the Burundi Ministry of Health (MOH) established a sentinel disease reporting system which included the selection of one rural outpatient clinic in each of the 15 provinces. A one-page reporting form was designed to record for each week the number of new cases of seven diseases with epidemic potential (i.e., cholera, dysentery, and other diarrhea; lower respiratory tract infections; malaria; measles; and meningitis), intentional injuries, and the total number of new clinic visits. Standard case definitions developed by the MOH were disseminated to participating sites. Completed surveillance forms were sent weekly to the MOH; nongovernmental organizations (NGOs) collected and transported surveillance forms. The MOH then issued a weekly surveillance report for distribution to staff in health centers and hospitals, MOH officials at the national level, and NGOs involved with relief activities.

Because the populations of sentinel clinic catchment areas were not available to calculate disease incidence rates, the analysis of surveillance data focused on calculation of weekly proportional morbidity (i.e., number of new visits for a reported disease divided by total number of new visits for all diseases). Data were analyzed from the 12 sites reporting complete information for December 13, 1993–January 9, 1994. Dysentery and malaria (defined as diarrhea with visible blood and fever without another apparent cause, respectively) were the most common causes of morbidity, accounting for 29% and 28% of all new visits to health centers, respectively. In comparison, during December 14, 1992–January 10, 1993, national surveillance data indicated that dysentery and malaria accounted for 6% and 23% of all new visits to health centers. Lower respiratory tract infections and nonbloody diarrhea accounted for 3% of all new visits during the crisis; meningitis, measles, intentional injuries, and cholera each accounted for less than 1% of all new visits. Weekly estimates of proportional morbidity for dysentery and malaria and counts of the total number of new visits for any cause were stable during the 4-week period. The MOH and collaborating organizations used these

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sentinel data to establish dysentery and malaria as priority health problems and to mobilize resources.

Rwanda

By October 31, 1993, an estimated 300,000 refugees from Burundi had settled in Rwanda. Health posts were established by Médecins Sans Frontières (MSF) in each of four refugee camps (total population: 54,921) in the commune of Kibaye. Standard case definitions were used to collect surveillance information during all health post visits. Camp populations were determined by census. Mortality surveillance was conducted by counting the numbers of burial shrouds distributed, the numbers of new graves dug, the numbers of deaths reported to health posts by families, and daily visits by health workers to tents and shelters.

During December 1, 1993–January 17, 1994, the most commonly reported causes of new visits to health posts were malaria, dysentery, nonbloody diarrhea, and lower respiratory tract infections, accounting for 38%, 14%, 7%, and 6%, respectively, of all new visits to health posts. The mean weekly dysentery attack rate during this period was 3.8 cases per 100 persons; the rate was highest for children aged <5 years (5.8 cases per 100 children).

During this period, the average daily crude mortality rate was 3.0 deaths per 10,000 persons—an annualized rate of approximately 10%. Of the total 765 deaths, 433 (57%) were attributed to dysentery (estimated case-fatality rate=3.2%). Other causes of mortality were malaria (19%), acute lower respiratory tract infections (6%), and malnutrition (6%).

Based on these findings, MSF emphasized treatment of dysentery with a complete course of nalidixic acid and improvement of basic sanitation and hygiene. The weekly number of dysentery cases in these camps peaked during late November and rapidly decreased during December.

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Editorial Note: The surveillance approaches described in this report demonstrate how simple, rapid reporting systems can provide decision-makers with useful information about the health status of populations affected by conflict and massive population displacement. In particular, weekly proportional morbidity and daily death rates can be used to identify priority disease-control activities, monitor trends, and evaluate the effectiveness of health interventions. Proportional morbidity may be especially useful as a means of monitoring health status when population estimates are not available and incidence rates cannot be calculated. Death rates are one of the most sensitive indicators of health status; the goal of emergency relief efforts should be to reduce the crude mortality rate to less than one death per 10,000 persons (*1*). Standardized clinical case definitions can reduce variability in reporting, particularly when there is rapid turnover in clinic staff.

Since 1991, dysentery epidemics caused by Sd1 have occurred in eight countries in southern Africa (Angola, Burundi, Malawi, Mozambique, Rwanda, Tanzania, Zaire, and Zambia). Epidemic dysentery is a particular problem among refugee populations in which crowding and poor sanitation facilitate transmission. In refugee and displaced

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populations, epidemic dysentery has been characterized by substantially higher incidence rates than in nonrefugee populations (*2*) and high proportional mortality—a pattern underscored by the findings in Burundi. The proportion of dysentery-associated deaths among Burundian refugees in Rwanda (57%) was similar to that among Burundian refugees in Tanzania (50%) (*3*).

Treatment with an effective antimicrobial (e.g., ampicillin, cotrimoxazole, and some quinolone agents) can reduce the severity and duration of shigellosis if the organism is susceptible to the antimicrobial (*4*). Since 1993, Sd1 strains from Burundi have been resistant to ampicillin and cotrimoxazole and moderately susceptible to nalidixic acid; the case-fatality rate was lower among Burundian refugees in Rwanda treated with nalidixic acid (3%) than among patients in Burundi treated with cotrimoxazole before the crisis (10%) (*5*). However, because resistance to nalidixic acid among Sd1 isolates previously has been widespread in Burundi and is increasing again (*5,6*), the effectiveness of nalidixic acid as a treatment for Sd1 infections may diminish.

The problem of rapid acquisition of antimicrobial resistance in the treatment of *Shigella* dysentery in Africa underscores the need for identification of measures to prevent transmission of epidemic dysentery in refugee and internally displaced populations. For example, handwashing with soap and water can reduce secondary transmission of *Shigella* infections between household members; in Burundi, poor hygienic practices and lack of soap in the household are risk factors for acquiring dysentery (*2*). The most effective strategies to control transmission of Sd1 in refugee camps and among displaced persons may be distributing soap, ensuring access to water, promoting handwashing before eating or preparing food and after defecation, and properly disposing of fecal material.

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