CENTERS FOR DISEASE CONTROL

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Perspectives in Disease Prevention and Health Promotion

Guidelines for Diabetic Eye Disease Control — Kentucky

Diabetic eye disease is the leading cause of new cases of blindness in the United States in adults <75 years of age. Furthermore, people with diabetes are at increased risk for visual loss due to diabetic retinopathy, glaucoma, and cataracts. Early identification and treatment of diabetic retinopathy can reduce severe visual loss by 60%. Since detection of proliferative eye disease is subtle, it is best performed by persons specially trained in eye disease. However, since patients with retinopathy are usually asymptomatic at the most treatable stage of their disease, they may not seek an examination at that time. For these reasons, policymakers in the state of Kentucky felt that specific guidelines for diabetic eye disease management were necessary. A panel of national and state experts addressed this issue at a meeting sponsored by the diabetes coordinating center of the World Health Organization in Kentucky.

Guidelines for Diabetic Eye Disease Control

Eye care for the patient with diabetes requires a partnership between the primary physician, the eye-care specialist, and the patient. The primary care physician not only plays a fundamental role in medical management of the patient, including control of blood glucose and blood pressure, but also assumes responsibility for patient education and coordination of care. Consequently, the primary care physician should be aware of recommendations for ophthalmic care. These guidelines are intended to familiarize all involved health professionals with these needs.

1. All patients should be informed (a) that sight-threatening eye disease is a common complication of diabetes mellitus and can often be present even with good vision and (b) that early detection and appropriate treatment of diabetic eye disease greatly reduce the risk of visual loss.
2. Patients with diabetes mellitus should have their first complete eye examination after 5 years duration of diabetes if they are between 10 and 30 years of age or at the time of diagnosis of diabetes if they are over 30 years of age.
3. This initial eye examination should include a history of visual symptoms, a measurement of visual acuity and intraocular pressure, and an ophthalmoscopic examination through dilated pupils.

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4. After the initial eye examination, persons with diabetes mellitus should receive the above ophthalmic examinations annually unless more or less frequent examinations are indicated by the presence or absence of abnormalities.
5. It is desirable that any woman who has insulin-dependent diabetes mellitus and who is planning (considering) pregnancy within 12 months should be under the care of an ophthalmologist.
6. A woman with established diabetes mellitus (diagnosed prior to conception) who becomes pregnant should be examined for retinopathy by an ophthalmologist in the first trimester and thereafter at the discretion of the ophthalmologist.
7. Patients should be referred to an ophthalmologist promptly for unexplained visual symptoms, reduced corrected visual acuity, increased intraocular pressure, any retinal abnormalities, or any other ocular pathology that threatens vision.
8. All patients should be under the care of a retinal specialist or other ophthalmologist experienced in the management of diabetic retinopathy when the following conditions are suspected or have been positively identified:
   - Preproliferative retinopathy (multiple cotton-wool spots, multiple intraretinal hemorrhages, intraretinal microvascular abnormalities, or venous beading).
   - Proliferative retinopathy (retinal neovascularization, preretinal or vitreous hemorrhage, fibrosis, or traction retinal detachment).
   - Macular edema (hard lipid exudates and/or retinal thickening inside the temporalvascular arcades).
9. Laser photocoagulation therapy is effective in reducing the risk of visual loss in patients with high-risk proliferative retinopathy and clinically significant macular edema. Vitrectomy can restore vision in certain patients with recent traction retinal detachment and/or vitreous hemorrhage. Laser therapy and vitrectomy should be performed by a retinal specialist or other ophthalmologist experienced in these procedures.
10. Patients with functionally decreased visual acuity should undergo low vision evaluation and rehabilitation.

These guidelines are currently being considered for approval by state and national groups. A task force is developing an implementation plan for Kentucky.

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Epidemiologic Notes and Reports

An Imported Case of Rabies in an Immunized Dog

On November 7, 1986, rabies was diagnosed in a dog euthanized November 4th in a Westchester County, New York, animal hospital. For years, Westchester County has reported rabies only in bats.

The dog, a mixed Rhodesian Ridgeback, was acquired in December 1983 in Bamenda, Cameroon, by the owners, Americans living in West Africa. The dog had been regularly vaccinated against rabies. It had received its first inactivated rabies vaccine in February 1984, when it was 10 to 12 weeks old. A second dose was administered 1 year later. The dog ar-

Rabies — Continued

rived in the United States on January 16, 1986, and received a third dose of inactivated rabies vaccine in early March. The dog had not been bitten by any animal after its arrival in the United States. The owner reported, however, that just before leaving Cameroon on January 14, 1986, the dog had been scratched by a stray dog in a hotel lobby in Douala, Cameroon. The wound was cleaned thoroughly, but no rabies vaccine was administered at that time.

On October 3I, I986, the owner, a school teacher in Yonkers, New York, brought the dog to school with her. Two students were exposed to the dog's saliva, and fifteen other students and a teacher had minor contact with the dog. That afternoon, the dog was noted to have paralysis of the lower jaw and was taken to a local animal hospital. The dog was ambulant, remained docile, and did not exhibit any furious signs. It was discharged with a diagnosis of a "viral infection", and instructions were given to force-feed it. The dog was again seen in the clinic the morning of November I, but because of deteriorating neurologic conditions was taken to a second animal clinic on November 2. It was kept overnight and discharged November 3. That evening the dog was returned to the first animal hospital and was euthanized the next day. Direct flourescent antibody testing and isolation of the virus in neuroblastoma cells at the New York State Health Department confirmed the diagnosis of rabies. Analysis by monoclonal antibodies (*l,2*) indicated that the virus differed from strains isolated from bats or terrestrial wildlife in the United States. It was, however, identical to rabies strains isolated in West Africa, a finding that suggested the dog had acquired rabies there.

A total of 37 individuals received post-exposure prophylaxis for possible exposure to the dog during its illness and the 2-week period prior to onset. This included the dog's owner, the veterinarians and their assistants, four neighbors, 17 students, and a teacher.

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Editorial Note: Dog rabies is endemic in most of Africa, Asia, and Latin America (*3*). In the United States, however, dog rabies has decreased dramatically, from 5,688 cases in I953 to 113 in 1985. Wildlife rabies, on the other hand, has increased considerably and accounts for 91% of all reported cases; the main reservoirs are skunks, raccoons, and bats (*4*). Epidemiologic studies (*5*) and monoclonal antibody analysis (*1,2*) have shown that dogs in the United States are usually infected by rabid terrestrial wildlife species.

Current Public Health Service quarantine regulations (*6,7*) require that all dogs imported from countries with endemic rabies have a valid certificate of rabies vaccination and be vaccinated against rabies at least 30 days prior to entering the United States. These requirements were fulfilled for this dog since it was vaccinated twice with an inactivated vaccine that normally gives a 3-year immunity.

Rabies must be suspected when dogs imported from rabies-endemic areas develop unexplained neurological disease, even if the dogs have been vaccinated. The 9½-month incubation period reported here is very rare (*8,9,10*), although a few cases with incubation periods >6 months have been reported in dogs released from quarantine in the United Kingdom (*8,9*). In addition, vaccine failures such as the one described here are uncommon (*10*) and represent only 4% to 6% of reported cases in the United States for 1971-1973 (*5*). Failures following the administration of inactivated rabies vaccines may result from an incomplete immunization schedule, poor handling of the vaccine, or inadequate immunologic response (*11*). Regarding vaccine potency, the three vaccine lots from which this dog was vaccinated had been tested and shown potent by the manufacturers and national testing agencies.

Rabies — Continued

References

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TABLE I. Summary—cases specified notifiable diseases, United States

Disease	7th Week Ending			Cumulative, 7th Week Ending		
	Feb. 21, 1987	Feb. 15, 1986	Median 1982-1986	Feb. 21, 1987	Feb. 15, 1986	Median 1982-1986
Acquired Immunodeficiency Syndrome (AIDS)	199	177	N	2,288	1,541	N
Aseptic meningitis	67	80	65	568	577	577
Encephalitis: Primary (arthropod-borne & unspec.)	16	13	13	96	114	112
Post-infectious	-	3	2	3	9	9
Gonorrhea: Civilian	11,813	14,701	15,645	108,630	109,417	113,330
Military	262	433	433	2,148	1,971	2,889
Hepatitis: Type A	466	417	380	2,982	2,975	2,784
Type B	465	453	441	2,874	2,976	2,976
Non A, Non B	36	65	N	333	388	N
Unspecified	71	104	103	457	669	669
Legionellosis	10	12	N	73	78	N
Leprosy	4	1	2	30	32	32
Malaria	14	8	10	84	80	82
Measles: Total*	45	53	18	167	219	83
Indigenous	34	53	N	133	210	N
Imported	11	-	N	34	9	N
Meningococcal infections: Total	68	55	57	457	390	410
Civilian	68	55	57	456	390	406
Military	-	-	-	1	-	-
Mumps	236	57	63	1,825	337	446
Pertussis	14	58	30	224	281	191
Rubella (German measles)	3	16	16	27	51	55
Syphilis (Primary & Secondary): Civilian	506	504	574	4,127	3,298	3,881
Military	1	1	6	41	24	45
Toxic Shock syndrome	7	2	N	38	33	N
Tuberculosis	280	381	410	2,122	2,096	2,386
Tularemia	-	1	1	10	9	11
Typhoid fever	2	1	7	25	26	40
Typhus fever, tick-borne (RMSF)	1	1	1	7	7	7
Rabies, animal	83	83	74	424	535	535

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1987		Cum 1987
Anthrax	-	Leptospirosis (Hawaii 1)	3
Botulism: Foodborne	-	Plague (Ariz. 1)	1
Infant (Calif. 1)	7	Poliomyelitis, Paralytic	-
Other	-	Psittacosis	7
Brucellosis (Iowa 1)	9	Rabies, human	-
Cholera	-	Tetanus (Calif. 1)	3
Congenital rubella syndrome	-	Trichinosis (Va. 5)	7
Congenital syphilis, ages < 1 year	-	Typhus fever, flea-borne (endemic, murine) (Calif. 1)	2
Diphtheria	1		

*Eleven of the 45 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending February 21, 1987 and February 15, 1986

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum 1987	1987	Cum 1987	Cum 1987	Cum 1987	Cum 1986	1987	1987	1987	1987	1987	Cum 1987
UNITED STATES	2,288	67	96	3	108,630	109,417	466	465	36	71	10	30
NEW ENGLAND	116	1	6	1	4,089	2,517	10	56	2	2	-	1
Maine	4	1	-	-	128	119	1	2	-	-	-	-
N H	4	-	-	-	65	72	-	11	2	-	-	-
Vt	-	-	1	-	27	43	-	2	-	-	-	-
Mass	66	-	3	-	1,534	1,123	4	39	-	2	-	1
R I	11	-	2	1	295	230	2	2	-	-	-	-
Conn	31	-	-	-	2,040	930	3	-	-	-	-	-
MID ATLANTIC	786	4	14	-	17,732	18,187	5	44	1	10	-	-
Upstate N Y	312	1	5	-	2,020	2,111	1	4	1	1	-	-
N Y City	310	3	3	-	10,488	11,030	2	27	-	9	-	-
N J	105	-	1	-	1,340	1,876	2	13	-	-	-	-
Pa	59	-	5	-	3,884	3,170	-	-	-	-	-	-
E N CENTRAL	143	7	28	-	11,779	16,588	20	28	3	2	4	1
Ohio	24	3	16	-	3,053	4,357	5	5	3	-	3	1
Ind	17	2	-	-	1,087	1,875	1	3	-	-	-	-
Ill	56	-	2	-	1,556	3,555	-	4	-	1	-	-
Mich	34	2	10	-	5,099	4,912	12	16	-	1	1	-
Wis	12	-	-	-	984	1,889	2	-	-	-	-	-
W N CENTRAL	28	8	2	-	4,651	5,032	21	12	2	-	2	-
Minn	15	2	1	-	802	753	1	-	-	-	-	-
Iowa	1	-	-	-	450	526	12	1	1	-	2	-
Mo	2	2	-	-	2,339	2,477	2	6	-	-	-	-
N Dak	-	-	-	-	55	50	-	-	-	-	-	-
S Dak	-	1	-	-	106	84	2	-	-	-	-	-
Nebr	4	2	1	-	274	279	1	-	-	-	-	-
Kans	6	1	-	-	625	863	3	5	1	-	-	-
S ATLANTIC	442	15	18	1	29,072	25,557	17	89	4	11	3	-
Del	6	-	1	-	425	445	-	-	-	-	-	-
Md	48	-	-	-	2,870	3,027	-	18	-	1	-	-
D C	59	-	-	-	1,905	2,329	-	-	-	-	-	-
Va	25	3	10	1	2,413	2,439	-	7	-	10	1	-
W Va	2	-	4	-	170	291	-	2	-	-	-	-
N C	23	3	3	-	4,200	3,639	2	9	-	-	-	-
S C	8	-	-	-	2,980	2,770	-	19	-	-	-	-
Ga	70	3	-	-	5,055	3,365	1	12	1	-	1	-
Fla	201	6	-	-	9,054	7,252	14	22	3	-	1	-
E S CENTRAL	11	2	6	1	8,172	9,333	3	20	2	1	-	-
Ky	4	-	2	-	849	1,072	-	1	-	-	-	-
Tenn	-	-	2	-	2,911	3,785	1	13	1	-	-	-
Ala	3	-	2	-	2,626	2,500	1	5	1	1	-	-
Miss	4	2	-	1	1,786	1,976	1	1	-	-	-	-
W S CENTRAL	58	4	6	-	12,262	13,414	40	27	1	7	-	4
Ark	3	-	-	-	1,314	1,265	-	-	-	-	-	-
La	42	-	-	-	2,504	2,357	1	3	-	-	-	-
Okla	11	1	2	-	1,339	1,576	3	2	-	-	-	-
Tex	2	3	4	-	7,105	8,216	36	22	1	7	-	4
MOUNTAIN	71	4	5	-	2,916	3,245	46	29	1	8	-	-
Mont	1	-	-	-	66	88	-	3	-	-	-	-
Idaho	1	-	-	-	104	101	-	1	-	-	-	-
Wyo	1	-	-	-	43	71	-	-	-	-	-	-
Colo	43	1	1	-	623	871	4	4	1	1	-	-
N Mex	9	-	1	-	322	389	14	5	-	-	-	-
Ariz	3	2	3	-	990	844	19	11	-	6	-	-
Utah	5	-	-	-	119	155	6	-	-	1	-	-
Nev	8	1	-	-	649	726	3	5	-	-	-	-
PACIFIC	633	22	11	-	17,957	15,544	304	160	20	30	1	24
Wash	23	-	3	-	742	1,323	99	31	-	2	1	2
Oreg	6	-	-	-	631	598	27	6	1	1	-	-
Calif	588	15	8	-	16,068	12,949	170	111	19	26	-	20
Alaska	2	-	-	-	349	513	8	11	-	1	-	-
Hawaii	14	7	-	-	167	161	-	1	-	-	-	2
Guam	-	U	-	-	26	5	U	U	U	U	U	-
P R	-	2	-	-	355	271	5	3	-	1	-	-
V I	-	-	-	-	31	26	1	-	-	-	-	-
Pac Trust Terr	-	U	-	-	23	-	U	U	U	U	U	-
Amer Samoa	-	U	-	-	12	-	U	U	U	U	U	-

N Not notifiable U Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending February 21, 1987 and February 15, 1986

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	1987	Cum 1987	Cum 1986
UNITED STATES	84	34	133	11	34	219	457	236	1,825	14	224	281	3	27	51
NEW ENGLAND	6	-	1	-	5	-	33	-	7	-	5	18	-	-	1
Maine	-	-	-	-	-	-	3	-	-	-	-	1	-	-	-
N.H.	-	-	-	-	-	-	5	-	5	-	1	9	-	-	1
Vt	-	-	1	-	5	-	4	-	1	-	1	1	-	-	-
Mass.	4	-	-	-	-	-	12	-	-	-	2	4	-	-	-
R.I.	2	-	-	-	-	-	4	-	-	-	-	1	-	-	-
Conn.	-	-	-	-	-	-	5	-	1	-	1	2	-	-	-
MID ATLANTIC	3	5	23	2	18	13	43	1	36	2	31	40	-	-	16
Upstate N.Y.	1	1	1	2†	4	2	24	-	12	2	22	31	-	-	12
N.Y. City	-	4	22	-	-	11	3	-	-	-	-	-	-	-	3
N.J.	-	-	-	-	1	-	-	1	11	-	1	-	-	-	1
Pa.	2	-	-	-	13	-	16	-	13	-	8	9	-	-	-
E.N. CENTRAL	1	1	24	3	4	92	62	155	1,266	-	28	84	2	4	3
Ohio	1	-	-	3†	4	-	26	-	24	-	15	36	-	-	-
Ind.	-	-	-	-	-	-	9	-	126	-	-	9	-	-	-
Ill.	-	1	2	-	-	57	4	98	804	-	-	15	2	3	1
Mich.	-	-	22	-	-	-	21	55	199	-	6	6	-	1	1
Wis.	-	-	-	-	-	35	2	2	113	-	7	18	-	-	1
W.N. CENTRAL	3	-	-	-	-	45	29	9	84	1	19	24	-	-	3
Minn.	2	-	-	-	-	-	8	3	30	-	2	12	-	-	-
Iowa	-	-	-	-	-	-	2	6	36	-	2	2	-	-	-
Mo.	1	-	-	-	-	-	8	-	3	-	7	1	-	-	1
N. Dak.	-	-	-	-	-	-	1	-	-	-	1	2	-	-	-
S. Dak.	-	-	-	-	-	-	1	-	8	-	1	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Kans.	-	-	-	-	-	45	9	-	7	1	6	6	-	-	2
S. ATLANTIC	11	-	-	-	-	25	92	3	17	3	50	44	-	1	1
Del.	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Md.	3	-	-	-	-	-	10	-	5	-	-	11	-	-	-
D.C.	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Va.	2	-	-	-	-	-	18	-	-	1	18	5	-	-	-
W. Va.	-	-	-	-	-	-	-	-	5	-	7	-	-	-	-
N.C.	1	-	-	-	-	-	8	-	2	2	20	5	-	-	-
S.C.	-	-	-	-	-	23	7	-	-	-	-	1	-	-	-
Ga.	2	-	-	-	-	-	22	-	1	-	4	17	-	-	-
Fla.	1	-	-	-	-	2	25	3	4	-	1	5	-	1	1
E.S. CENTRAL	1	-	-	-	-	-	23	45	311	1	4	8	-	2	1
Ky.	-	-	-	-	-	-	3	-	45	-	1	1	-	2	1
Tenn.	-	-	-	-	-	-	10	45	265	-	-	2	-	-	-
Ala.	-	-	-	-	-	-	8	-	1	1	1	5	-	-	-
Miss.	1	-	-	-	-	-	2	-	-	-	2	-	-	-	-
W.S. CENTRAL	4	1	2	1	1	-	35	12	40	-	6	7	-	-	7
Ark.	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
La.	-	-	-	-	-	-	3	-	4	-	-	-	-	-	-
Okla.	-	-	-	1†	1	-	8	N	N	-	6	7	-	-	-
Tex.	3	1	2	-	-	-	24	12	35	-	-	-	-	-	7
MOUNTAIN	2	6	7	-	1	11	18	4	24	2	21	28	-	1	-
Mont.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	1	-	-	1	11	7	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Colo.	-	-	-	-	-	-	5	1	3	1	7	5	-	-	-
N. Mex.	-	6	7	-	-	11	1	N	N	-	1	5	-	-	-
Ariz.	1	-	-	-	1	-	10	3	19	-	-	10	-	-	-
Utah	-	-	-	-	-	-	-	-	1	-	-	1	-	1	-
Nev.	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-
PACIFIC	53	21	76	5	5	33	122	7	40	5	60	28	1	19	19
Wash.	2	-	-	-	-	8	24	1	7	4	9	13	-	-	-
Oreg.	1	-	1	5†	5	-	10	N	N	-	8	1	-	1	-
Calif.	49	21	75	-	-	24	85	6	31	1	35	12	1	17	19
Alaska	1	-	-	-	-	-	2	-	-	-	2	1	-	-	-
Hawaii	-	-	-	-	-	1	1	-	2	-	6	1	-	1	-
Guam	-	U	1	U	-	-	1	U	-	U	-	-	U	-	-
P.R.	-	-	-	-	-	-	1	-	-	-	4	2	-	-	-
V.I.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending February 21, 1987 and February 15, 1986

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum 1987	Cum 1986	1987	Cum 1987	Cum 1986	Cum 1987	Cum 1987	Cum 1987	Cum 1987
UNITED STATES	4,127	3,298	7	2,122	2,096	10	25	7	424
NEW ENGLAND	64	83	-	36	72	-	2	-	-
Maine	-	3	-	1	10	-	-	-	-
N H	1	4	-	1	6	-	-	-	-
Vt	-	4	-	1	3	-	-	-	-
Mass	39	44	-	10	24	-	2	-	-
R I	-	5	-	3	4	-	-	-	-
Conn	24	23	-	20	25	-	-	-	-
MID ATLANTIC	557	436	-	413	411	-	3	-	56
Upstate N Y	15	23	-	85	72	-	1	-	6
N Y City	372	262	-	188	193	-	-	-	-
N J	63	100	-	79	78	-	2	-	-
Pa	107	51	-	61	68	-	-	-	50
E N CENTRAL	57	104	-	321	317	1	5	1	12
Ohio	11	8	-	56	47	1	2	1	-
Ind	6	24	-	19	36	-	1	-	-
Ill	22	46	-	119	154	-	-	-	7
Mich	13	14	-	120	61	-	2	-	-
Wis	5	12	-	7	19	-	-	-	5
W N CENTRAL	22	27	1	61	35	4	2	-	84
Minn	4	6	-	11	6	-	-	-	22
Iowa	4	3	-	5	4	2	-	-	29
Mo	11	15	-	36	22	2	2	-	3
N Dak	-	2	-	1	2	-	-	-	9
S Dak	2	-	-	2	-	-	-	-	14
Nebr	-	-	1	3	-	-	-	-	2
Kans	1	1	-	3	1	-	-	-	5
S ATLANTIC	1,394	933	-	449	373	1	4	1	113
Del	12	4	-	2	3	-	-	-	-
Md	73	59	-	37	15	-	-	-	22
D C	48	50	-	16	19	-	-	-	3
Va	37	69	-	45	22	1	-	-	52
W Va	1	3	-	15	15	-	1	-	7
N C	94	78	-	59	28	-	1	-	-
S C	93	110	-	58	66	-	-	1	3
Ga	237	139	-	42	39	-	-	-	17
Fla	799	421	-	175	166	-	2	-	9
E S CENTRAL	256	224	-	187	199	-	-	2	23
Ky	2	13	-	51	59	-	-	-	15
Tenn	111	94	-	-	45	-	-	1	-
Ala	64	73	-	77	84	-	-	-	8
Miss	79	44	-	59	11	-	-	1	-
W S CENTRAL	549	741	3	167	240	3	1	3	59
Ark	29	29	-	12	19	-	-	-	17
La	89	123	-	25	83	-	-	-	2
Okla	20	25	2	21	23	3	1	3	1
Tex	411	564	1	109	115	-	-	-	39
MOUNTAIN	88	86	1	48	37	1	1	-	29
Mont	3	-	-	2	1	-	-	-	14
Idaho	1	1	-	8	2	-	-	-	-
Wyo	-	-	-	-	-	-	-	-	10
Colo	15	29	-	-	1	-	-	-	-
N Mex	7	10	-	14	6	-	1	-	-
Ariz	42	31	1	21	18	1	-	-	5
Utah	-	3	-	-	-	-	-	-	-
Nev	20	12	-	3	9	-	-	-	-
PACIFIC	1,140	664	2	440	412	-	7	-	48
Wash	-	21	-	16	22	-	-	-	-
Oreg	24	17	-	15	16	-	-	-	-
Calif	1,115	618	2	369	347	-	6	-	47
Alaska	-	-	-	9	5	-	-	-	1
Hawaii	1	8	-	31	22	-	1	-	-
Guam	-	1	U	2	-	-	-	-	-
P R	139	108	-	28	36	-	-	-	7
V I	-	-	-	1	-	-	-	-	-
Pac Trust Terr	-	-	U	1	-	-	3	-	-
Amer Samoa	-	-	U	-	-	-	-	-	-

U Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending February 21, 1987 (7th Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	649	472	119	33	14	11	74
Boston, Mass.	145	97	28	10	4	6	35
Bridgeport, Conn.	54	41	8	5	-	-	5
Cambridge, Mass.	18	11	6	1	-	-	5
Fall River, Mass.	22	16	5	1	-	-	-
Hartford, Conn.	46	34	8	3	1	-	4
Lowell, Mass.	29	25	2	1	1	-	4
Lynn, Mass.	15	13	2	-	-	-	2
New Bedford, Mass.	33	25	7	1	-	-	1
New Haven, Conn.	64	41	14	5	2	2	-
Providence, R.I.	73	51	15	1	4	2	7
Somerville, Mass.	8	7	1	-	-	-	2
Springfield, Mass.	55	41	10	2	1	1	3
Waterbury, Conn.	31	25	4	2	-	-	5
Worcester, Mass.	56	45	9	1	1	-	1
MID ATLANTIC	3,084	2,023	625	277	80	78	188
Albany, N.Y.	51	36	9	2	1	3	3
Allentown, Pa.	23	21	2	-	-	-	2
Buffalo, N.Y.	130	88	29	5	6	2	8
Camden, N.J.	54	39	9	4	1	1	1
Elizabeth, N.J.	22	13	4	5	-	-	5
Erie, Pa.†	53	33	16	2	-	2	4
Jersey City, N.J.	49	23	14	4	2	6	4
N.Y. City, N.Y.	1,612	1,058	316	166	44	28	81
Newark, N.J.	86	41	19	16	4	6	9
Paterson, N.J.	40	29	4	4	2	1	2
Philadelphia, Pa.	488	312	110	39	8	19	29
Pittsburgh, Pa.†	56	42	7	2	4	-	4
Reading, Pa.	33	20	10	2	1	-	1
Rochester, N.Y.	147	104	28	9	2	4	16
Schenectady, N.Y.	34	24	6	3	-	1	2
Scranton, Pa.†	32	24	5	1	1	1	-
Syracuse, N.Y.	94	61	23	5	2	3	4
Trenton, N.J.	33	19	7	4	2	1	4
Utica, N.Y.	18	13	3	2	-	-	2
Yonkers, N.Y.	29	23	4	2	-	-	7
E.N. CENTRAL	2,288	1,528	458	164	53	85	99
Akron, Ohio	59	39	14	2	1	3	-
Canton, Ohio	37	26	6	1	1	3	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	140	94	22	9	4	11	12
Cleveland, Ohio	146	95	35	10	1	5	1
Columbus, Ohio	128	89	20	9	4	6	7
Dayton, Ohio	102	66	26	4	1	5	2
Detroit, Mich.	233	143	43	31	13	3	3
Evansville, Ind.	47	20	9	14	3	1	2
Fort Wayne, Ind.	58	36	14	4	2	2	3
Gary, Ind.§	16	12	3	1	-	-	-
Grand Rapids, Mich.	88	63	18	3	1	3	11
Indianapolis, Ind.	183	128	36	12	2	5	5
Madison, Wis.	39	27	9	1	1	1	2
Milwaukee, Wis.	153	110	29	4	3	7	4
Peoria, Ill.	46	35	7	2	1	1	9
Rockford, Ill.	48	32	12	3	1	-	5
South Bend, Ind.	49	35	7	4	1	2	4
Toledo, Ohio	100	78	13	4	2	3	8
Youngstown, Ohio	52	38	10	1	1	2	1
W.N. CENTRAL	769	521	161	42	27	18	46
Des Moines, Iowa	61	44	11	4	1	1	4
Duluth, Minn.	31	22	6	2	1	-	1
Kansas City, Kans.	38	29	3	4	1	1	4
Kansas City, Mo.	139	88	37	10	3	1	8
Lincoln, Nebr.	30	22	4	2	1	1	3
Minneapolis, Minn.	116	84	22	6	1	3	12
Omaha, Nebr.	79	55	12	3	4	5	4
St. Louis, Mo.	151	104	33	5	5	4	4
St. Paul, Minn.	60	40	12	2	4	2	-
Wichita, Kans.	64	33	21	4	6	-	6

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,210	747	290	98	32	40	46
Atlanta, Ga.	154	96	26	23	6	3	5
Baltimore, Md.	145	89	32	12	3	9	3
Charlotte, N.C.	76	42	24	4	-	6	4
Jacksonville, Fla.	126	81	29	12	3	1	8
Miami, Fla.	98	65	21	6	6	-	1
Norfolk, Va.	54	35	11	3	-	5	1
Richmond, Va.	76	47	20	4	3	2	3
Savannah, Ga.	40	25	10	5	-	-	3
St. Petersburg, Fla.	95	68	24	2	-	1	1
Tampa, Fla.	85	58	19	3	1	1	8
Washington, D.C.	235	120	70	23	10	12	8
Wilmington, Del.	26	21	4	1	-	-	1
E.S. CENTRAL	831	540	179	56	23	33	65
Birmingham, Ala.	111	71	22	7	4	7	9
Chattanooga, Tenn.	78	48	21	6	1	2	7
Knoxville, Tenn.	99	72	20	4	2	1	7
Louisville, Ky.	86	53	25	3	3	2	2
Memphis, Tenn.	187	114	36	19	2	16	19
Mobile, Ala.	105	73	19	10	3	-	9
Montgomery, Ala.	33	23	7	1	2	-	1
Nashville, Tenn.	132	86	29	6	6	5	11
W.S. CENTRAL	1,388	876	299	109	50	53	58
Austin, Tex.	59	37	9	5	3	5	6
Baton Rouge, La.	57	36	15	3	2	1	2
Corpus Christi, Tex.	41	25	10	3	2	1	-
Dallas, Tex.	219	126	50	24	8	11	11
El Paso, Tex.	59	40	9	4	2	4	1
Fort Worth, Tex.	98	62	23	4	3	6	2
Houston, Tex.§	312	179	74	33	14	12	8
Little Rock, Ark.	61	35	13	6	4	2	5
New Orleans, La.	130	86	30	8	2	4	1
San Antonio, Tex.	181	130	31	11	7	2	14
Shreveport, La.	76	52	18	5	-	1	5
Tulsa, Okla.	95	68	17	3	3	4	3
MOUNTAIN	718	467	148	61	26	16	38
Albuquerque, N.Mex.	67	44	12	8	1	2	6
Colo. Springs, Colo.	38	24	5	6	2	1	4
Denver, Colo.	119	80	22	9	5	3	6
Las Vegas, Nev.	99	61	22	14	2	-	7
Ogden, Utah	23	13	9	1	-	-	2
Phoenix, Ariz.	176	118	30	14	10	4	3
Pueblo, Colo.	23	19	2	2	-	-	-
Salt Lake City, Utah	42	22	12	3	3	2	1
Tucson, Ariz.	131	86	34	4	3	4	9
PACIFIC	1,667	1,114	302	162	45	34	111
Berkeley, Calif.	21	17	2	1	-	1	4
Fresno, Calif.	82	53	9	8	8	4	7
Glendale, Calif.	17	11	4	-	1	-	2
Honolulu, Hawaii	82	56	20	5	-	1	16
Long Beach, Calif.	47	34	10	3	-	-	3
Los Angeles, Calif.	368	222	73	48	16	1	15
Oakland, Calif.§	71	53	13	4	1	-	4
Pasadena, Calif.	26	18	2	3	-	3	3
Portland, Oreg.	114	83	22	9	-	-	4
Sacramento, Calif.	126	82	25	9	5	5	12
San Diego, Calif.	151	114	24	6	2	4	15
San Francisco, Calif.	189	119	29	32	6	3	7
San Jose, Calif.	147	95	32	11	4	5	8
Seattle, Wash.	123	82	21	15	1	4	5
Spokane, Wash.	54	36	9	5	1	3	5
Tacoma, Wash.	49	39	7	3	-	-	1
TOTAL	12,604††	8,288	2,581	1,002	350	368	725

*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.

§Data not available. Figures are estimates based on average of past 4 weeks.

Rabies — Continued

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Outbreak of Occupational Hepatitis — Connecticut

On September 28, 1986, a previously healthy, 40-year-old male factory worker who had experienced several days of abdominal pain and nausea was seen at the emergency room at Yale-New Haven Hospital, New Haven, Connecticut. Liver function tests revealed an elevated aspartate aminotransferase (AST) level of 949 U/L (normal = <35 U/L). Alkaline phosphatase and bilirubin assays were all normal. Hepatitis A IgM antibody and hepatitis B surface antigen and antibody were negative, as was an abdominal ultrasound.

Further history revealed that the patient had become ill after working for <2 weeks at a plant where fabrics are coated with a polyurethane polymer. He had no history of significant alcohol use or blood transfusions. When the patient was removed from the workplace, his symptoms resolved. Subsequent liver function tests have revealed partial resolution of his hepatitis. However, 2 months later, his alanine aminotransferase (ALT) level was still elevated at 207 U/L (normal = <32 U/L), and his AST level was 49 U/L. Within 1 month, three other co-workers were seen with similar symptoms and liver enzyme abnormalities.

Inspection of the patients' workplace showed that large quantities of dimethylformamide (DMF), a solvent which is widely used in manufacturing acrylic fibers and polyurethanes, were being used in poorly ventilated areas. DMF and smaller quantities of other solvents including toluene; methyl ethyl ketone; and 1,1,1 trichloroethane were mixed with polyurethane polymer, coated onto the fabric, and then evaporated from the polyurethane-coated fabric as it dried. The company has 66 employees, most of whom work directly in the production of polyurethane-coated materials. The employees are generally young (mean age = 35 years) and healthy.

Forty-five of the employees agreed to have liver screening tests, including AST, ALT, bilirubin, γ-glutamyl transpeptidase (GGT), alkaline phosphatase, and lactate dehydrogenase. Thirty of the 45 employees screened had elevated levels of AST, ALT, or GGT. Eleven had elevations that were more than twice the normal level for one or more of these liver enzymes. In all but one employee, the ALT level was greater than the AST level. In addition, workers directly involved with producing the polyurethane-coated material had higher liver enzyme elevations than did nonproduction workers.

Based on these findings, the professional staff at the Yale Occupational Medicine Program urged immediate termination of the production process until protective engineering controls had been adequately installed. These instructions have been followed. This cohort of workers will be followed to help ascertain whether DMF causes chronic liver damage.

Reported by C Redlich, MD, J Sparer, MSCE, D Cowan, W Beckett, MD, H Miller, M Cherniack, MD, M Cullen, MD, Occupational Medicine Program, Yale University Medical Center; Office of the Director, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Although the hepatotoxic effects of industrial chemicals such as carbon tetrachloride (CCl_4), chlordecone (kepone), and monovinyl chloride are widely known, occupa-

Hepatitis — Continued

tionally induced liver disease is regarded by some as a historic problem (*1*). However, there is continuing evidence that chemically induced hepatic disease is an important occupational health problem for selected U.S. workers. This outbreak of subacute hepatic disease, occurring during routine workplace exposure to DMF, without evidence of a chemical spill or accidental release, further emphasizes the importance of this problem.

Because of its excellent solvent properties and lack of volatility, DMF is widely used in manufacturing polymerized films, fibers, and coatings, particularly in acrylic and spandex fabrics. It is readily absorbed through the skin and lungs, metabolized by the liver, and excreted in urine. In several earlier toxicologic assays, chronic exposure to DMF produced liver abnormalities in cats, rats, rabbits, mice, and dogs (*2,3*). When these occurred, air concentrations were above the current federally permissible exposure limit (PEL) of 10 parts per million. There have been several reported cases of human liver injury accompanied by abdominal pain and elevated hepatic transaminases, but these have been attributed to accidental overexposures (*4,5*). An antabuse-like reaction of flushing and dizziness, caused by coincident ethanol ingestion, has also been described among DMF workers, but without measurable liver injury (*6*).

Since two-thirds of the tested employees had elevated liver enzymes even though there was no documentation of recent or chronic liver infection for any of them, this outbreak raises concerns about whether DMF poses a significant and overlooked human health hazard or whether other agents or factors could be responsible. When introduced independently, the other solvents used (methyl ethyl ketone; toluene; and 1,1,1 trichloroethane) have been only minimally associated with human or animal liver toxicity. A potentiating effect is indeed possible, however. Liver damage, induced by the well-known hepatotoxin carbon tetrachloride, can be aggravated by simultaneous exposure to a variety of organic chemicals of lesser or immeasurable hepatotoxicity (*7,8*).

There are precedents that reinforce the possibility that serious human hepatotoxins may not have yet been recognized. For some of the most severe occupational hepatotoxins, such as trinitrotoluene, dimethylnitrosamine, polychlorinated biphenyls, and tetrachloroethane, the epidemiologic identification of human liver disease preceded an adequate exploration of animal hepatotoxicity. On the other hand, human liver disease from the organochloride insecticide, kepone, reached national attention through reports in the lay press in the mid-1970s, although parallel animal toxicities had been demonstrated a decade earlier.

Adverse human effects from DMF and other dimethylamides merit a much closer look. Perhaps this review should also include the classes of halogenated hydrocarbons and nitroaromatics from which the most damaging identified hepatotoxins have emerged.

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Restaurant-Associated Botulism from Mushrooms Bottled In-House — Vancouver, British Columbia, Canada

Eleven suspected cases of botulism were reported in Vancouver, British Columbia, between February 18 and February 22, 1987. Five of the patients have been hospitalized; three of these are on respirators. All of the persons involved ate in the Five Sails Restaurant of the Pan Pacific Hotel on the Vancouver waterfront on February 13, 14, or 16. A case-control study using 32 controls demonstrated a highly significant correlation with eating chantarelle mushrooms bottled in-house (odds ratio [OR] infinite, $p = 0.000057$) or a lobster and red snapper meal that contained the mushrooms ($OR = 31$, $p = 0.0057$). Toxin has not yet been identified in sera from the patients; one specimen of liquid from the bottled mushrooms has yielded Type A botulinal toxin. Three bottles of the mushrooms were estimated to have been used between February 13 and 16; restaurant records revealed that 31 persons had been exposed to the mushrooms between February 12 and 17. The restaurant was closed on February 18; active case-finding is continuing in Vancouver and surrounding regions.

Reported by HE McLean, MD, S Peck, MB, G Eng, BSC, City of Vancouver Health Dept, RG Mathias, MD, Dept of Health Care and Epidemiology, University of British Columbia, WA Black, MD, British Columbia Provincial Laboratories, GB Morgan, Health Protection Branch, Health and Welfare Canada, Vancouver, British Columbia, Canada; Enteric Diseases Branch, Div of Bacterial Disease, Center for Infectious Diseases, CDC.

Editorial Note: Although restaurants are not frequently identified as the location of botulism outbreaks, they represent a risk of widespread public exposure to contaminated foods. While foods served in restaurants were associated with 4% of botulism outbreaks in the United States between 1976 and 1984, they resulted in 42% of the cases during that period (*1*). In addition, restaurant-associated outbreaks in major centers of transit such as Vancouver may result in widely-distributed cases which may therefore not be recognized for a substantial period of time (*2*). Patients with neurologic illness resembling botulism should be asked about recent travel to Vancouver. Clinicians in the United States can report any suspected associated cases to their state epidemiologist. Cases outside Canada and the United States can be reported to the Communicable Disease Division, Bureau of Epidemiology, Laboratory Center for Disease Control, Ottawa, Canada.

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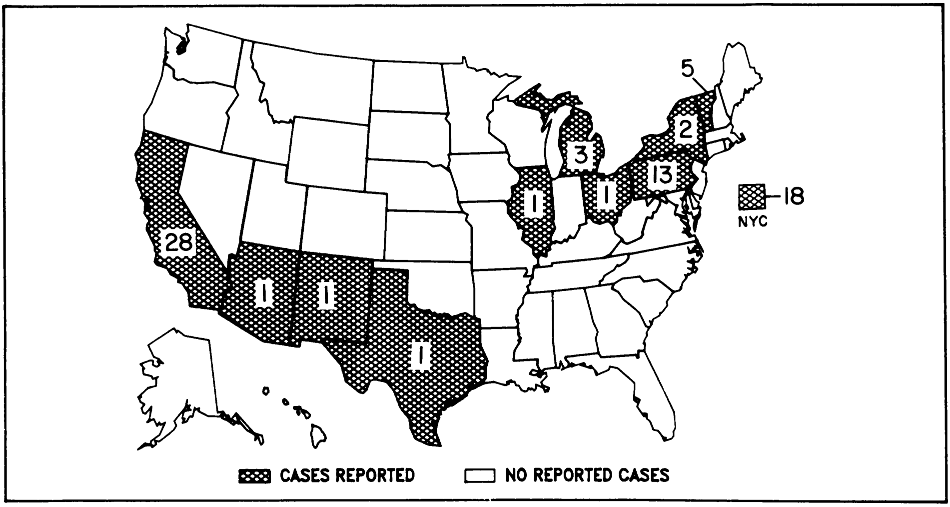
FIGURE I. Reported measles cases — United States, weeks 03-06, 1987



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The data in this report are provisional, based on weekly reports 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.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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