CENTERS FOR DISEASE CONTROL

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

October 7, 1988 / Vol. 37 / No. 39

Epidemiologic Notes and Reports

Transmission of HIV Through Bone Transplantation: Case Report and Public Health Recommendations

In February 1988, a bone transplant recipient was diagnosed with acquired immunodeficiency syndrome (AIDS) after being found positive for antibody to human immunodeficiency virus (HIV) and developing *Pneumocystis carinii* pneumonia (PCP). The recipient had no known risk for HIV infection other than the bone grafting procedure, and the bone donor was subsequently found to have been infected with HIV. A summary of the investigation of the recipient and the donor follows.

Recipient. In November 1984, a woman with progressive idiopathic scoliosis underwent a fusion of a lateral curvature of her spine. She received no blood transfusions. Allograft bone obtained from the hospital bone bank was used in the procedure. The recipient was seen by a physician 21 days after surgery for complaints of fevers with temperatures to 102 F, night sweats, diarrhea, nausea with vomiting, and enlarged lymph nodes. On physical examination, the physician noted bilateral cervical and axillary lymphadenopathy. The patient's symptoms resolved over the next 3 days.

In July 1986, 20 months after receiving the bone allograft, the recipient was evaluated again when she complained of enlarged axillary lymph nodes that she had found during a breast self-examination. The physician noted "almond-sized" axillary and anterior cervical glands. No change in the size of these nodes was found on a second examination by another physician 6 months later, and no further diagnostic procedures were performed.

In February 1988, the patient returned to her physician with a 2-week history of malaise, fever, nonproductive cough, and generalized chest pain. On physical examination, the physician noted oral and vaginal candidiasis and generalized lymphadenopathy. She was tested and found positive for HIV antibody and was subsequently diagnosed with PCP and AIDS. The patient's illness improved with therapy that included pentamidine, azidothymidine, and ventilatory support; she has not developed other HIV-related illness.

HIV — Continued

On interview, the recipient denied the use of intravenous drugs or previous blood transfusions. She was employed as a health-care worker, and although she had washed gynecologic specula without using gloves, she had never had a needlestick injury or a mucous membrane exposure to blood or other body secretions in the course of her work. She had been married since 4 years before the transplantation and denied other sex partners. Her husband also denied extramarital sex partners and denied any other risk for HIV infection since 1979. He was tested for HIV antibody in February and April 1988; both tests were negative.

Donor. The bone donor was a 52-year-old man who had donated his left femoral head, which was excised during a hip arthroplasty procedure performed for degenerative joint disease in November 1984. At the time of tissue procurement, the donor said that he had had a "cyst" removed from the left side of his neck in July 1984. It was not recorded in the medical record whether the donor was asked about known risks associated with AIDS. On physical examination at the time of donation, a 2-cm node in the right cervical area was found. The donor's bone was harvested under sterile conditions and stored at –80 C, and no sterilizing procedures were performed. The bone was used in the recipient's surgery 24 days after procurement.

In July 1986, the donor developed PCP, was tested and found positive for HIV antibody, and was diagnosed as having AIDS. At that time, the donor reported previous intravenous-drug use and denied other risks for HIV infection. The donor's wife was also tested and found positive for HIV antibody. Subsequent review of the donor's medical record from another hospital revealed that a lymph node, not a cyst, was biopsied in July 1984. The pathology report noted nonspecific hyperplastic changes, and no further evaluation was performed. The donor died in April 1987 of recurrent PCP and atypical mycobacteriosis.

Reported by: AIDS Program, Center for Infectious Diseases, CDC.

Editorial Note: This is the first reported case of HIV transmission by bone transplantation. Also, the recipient is the first person reported to CDC as having transplantation-associated AIDS. Previous reports have identified transmission of HIV through transplantation of kidney, liver, heart, pancreas (*1–3*), possibly by skin (*4*), and by artificial insemination (*5*), but none of these infected recipients have been reported as having developed AIDS.

Bone grafts may be procured from the recipient's own bone (autograft) or from either living donors who are having bone removed during surgical procedures or cadaveric donors (allograft) (*6,7*). The use of bone autografts will reduce the risk of HIV transmission by bone transplantation.

The Public Health Service has recommended that all donors of tissue and organ allografts be evaluated for risks associated with HIV infection and tested for HIV antibody (*1,8,9*). On August 10, 1988, representatives of the American Association of Tissue Banks (AATB), American Academy of Orthopedic Surgery, Food and Drug Administration, and CDC met to discuss draft recommendations for the prevention of HIV transmission by bone transplantation. Based on this meeting and previous recommendations, the Public Health Service also recommends the following measures to prevent HIV transmission*:

For donors of bone allografts, as well as other organ and tissue allografts, the assessment of risks for HIV infection should include reviewing the donor's medical

*These Public Health Service recommendations may not reflect the views of all individual consultants or the organizations they represented.

HIV – Continued

record, testing the donor for HIV antibody, and interviewing living donors. The interview should consist of standardized questions that identify risks for HIV infection. The donor's responses to these questions should be recorded on a form signed by the donor acknowledging that the recorded responses are correct. The completed form should be kept in the tissue bank with other records for the donor.

As previously recommended by AATB, all living donors of bone should be retested at least 90 days after tissue procurement, and only bone from living donors negative for HIV antibody on this repeat testing should be distributed for transplantation (*10*). Bone from donors not available for retesting, including cadaveric donors, should be used when bone from retested living donors is not available or is not appropriate for use in the anticipated surgical procedure.

References

1. CDC. Human immunodeficiency virus infection transmitted from an organ donor screened for HIV antibody—North Carolina. MMWR 1987;36:306–8.
2. Neumayer H-H, Fassbinder W, Kresse S, Wagner K. Human T-lymphotropic virus III antibody screening in kidney transplant recipients and patients receiving maintenance hemodialysis. Transplant Proc 1987;XIX:2169–71.
3. Erice A, Rhame F, Sullivan C, Dunn D, Jackson B, Balfour HH Jr. Human immunodeficiency virus (HIV) infection in organ transplant recipients (OTRS). IV International Conference on AIDS. Book 2. Stockholm, June 12–16,1988:363.
4. Clarke JA. HIV transmission and skin grafts [Letter]. Lancet 1987;1:983.
5. Stewart GJ, Tyler JPP, Cunningham AL, Barr JA, Driscoll GL, Gold J. Transmission of human T-cell lymphotropic virus type III (HTLV-III) by artificial insemination by donor. Lancet 1985;2:581–4.
6. Goldberg VM, Stevenson S. Natural history of autografts and allografts. Clin Orthop 1987; 225:7–16.
7. Mankin HJ, Doppelt S, Tomford W. Clinical experience with allograft implantation: the first ten years. Clin Orthop 1983;174:69–86.
8. CDC. Testing donors of organs, tissues, and semen for antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus. MMWR 1985;34:294.
9. CDC. Semen banking, organ and tissue transplantation, and HIV antibody testing. MMWR 1988;37:57–8,63.
10. American Association of Tissue Banks. Standards for surgical bone banking. Arlington, Virginia: American Association of Tissue Banks, 1987. (Revision to standards, effective January 15, 1988, section C1.330).

International Notes

Update: Influenza Activity – Worldwide – and Influenza Vaccine Availability – United States

UPDATE

In 1988, influenza-like illness worldwide has been associated with all three virus types—A(H3N2), A(H1N1) and B. Different viruses predominated in different countries.

Oceania. In New Zealand, where influenza activity has been greater than in recent years, activity began in April and peaked in June. Virus isolates have been almost exclusively type A(H3N2). Persons of all ages have been infected, and one influenza-associated death has been confirmed. In Australia, type A(H1N1) virus predominated; in western Australia, type A(H3N2) virus has also been isolated. In Fiji, outbreaks of influenza type A(H1N1) during August were reported.

Influenza Activity — Continued

Asia. In June, outbreaks of influenza A(H1N1) occurred among schoolchildren in southern China. In addition, Hong Kong and Singapore reported sporadic cases of all types of influenza in children and adults. The Republic of Korea, which reported outbreaks of all types of influenza in Seoul earlier this year, has reported only sporadic cases since April. Taiwan, where type B virus was reported early in the year, reported localized outbreaks of type A(H1N1) virus in June and July.

South America. Chile and Uruguay have reported widespread influenza A(H3N2) activity that began in May and peaked in June. In Uruguay, influenza B was also isolated in June. Argentina and Panama reported influenza type B isolates from June through August; however, since mid-September, Panama has reported serologically confirmed influenza A(H3N2). Viral isolations are pending.

Europe and United States. Influenza has been isolated in Europe and the United States throughout the summer. England reported an outbreak of influenza A(H3N2) among young men in a military unit in July, and Czechoslovakia reported type A(H1N1) virus activity in June. In the United States, influenza B isolates were reported from Arizona during June, July, and August and from Texas in late July. Type A(H1N1) virus was isolated from a child with non-Hodgkin's lymphoma in Washington, D.C., in late July.

INFLUENZA VACCINE AVAILABILITY—UNITED STATES

Production of the trivalent influenza vaccine for the 1988–89 season has been delayed because of decreased growth of at least one of the constituent strains of the influenza viruses. The reduced rate of vaccine production has resulted in a 4–6-week delay in vaccine distribution for some areas. However, each of the three vaccine manufacturers expect to complete distribution of orders by late October. Health-care providers and public health departments should ensure that priority is given to targeting vaccination activities toward persons at high risk for influenza-associated complications (*1*).

Reported by: National Influenza Centers. Communicable Diseases Div, World Health Organization, Geneva. Participating state and territorial epidemiologists and state laboratory directors. Office of Biologics, Div of Virology, Food and Drug Administration. WHO Collaborating Center for Influenza, Influenza Br, and Epidemiology Office, Div of Viral Diseases, Center for Infectious Diseases; Div of Immunization, Center for Prevention Svcs, CDC.

Reference

1. Immunization Practices Advisory Committee. Prevention and control of influenza. MMWR 1988;37:361–4,369–73.

Current Trends

Recommendations for Diagnosing and Treating Syphilis in HIV-Infected Patients

The clinical manifestations, serologic responses, efficacy of treatment, and occurrence of complications of syphilis may be altered in patients coinfected with human immunodeficiency virus (HIV). Because syphilis is a disease with a broad range of manifestations and variable course, assessing reports of unusual clinical or lab-

Syphilis — Continued

oratory findings in HIV-coinfected patients is difficult (*1*). On March 21 and 22, 1988, experts* from academic medical centers and state and local health departments met at CDC to discuss the diagnosis and treatment of syphilis in HIV-infected patients. The following recommendations were developed based on these discussions.

DIAGNOSIS OF SYPHILIS IN HIV-INFECTED PATIENTS

Most HIV-infected patients appear to have a normal serologic response to *Treponema pallidum* infection (*2*). However, in some HIV-infected patients with biopsy-confirmed secondary syphilis, both nontreponemal and treponemal tests for syphilis are negative (*3*). In addition, some patients infected with both *T. pallidum* and HIV have had unusually high titers on nontreponemal serologic tests for syphilis (CDC, unpublished data, 1987–88), possibly because of HIV-related polyclonal B-cell stimulation. The frequency of unusual clinical and laboratory manifestations of syphilis in patients coinfected with HIV is unknown.

Recommendations

1. Persons with HIV infection acquired through sexual contact or intravenous (IV)-drug abuse should be tested for syphilis, and all sexually active persons with syphilis should be tested for HIV (with the informed consent of the patient). HIV test results are clinically important in managing patients with syphilis and, with appropriate confidentiality safeguards, should be made available to medical personnel who care for these patients.
2. When clinical findings suggest syphilis is present, but serologic tests are negative, other tests should be used to determine if syphilis is present. These tests include dark-field microscopy and direct fluorescent antibody for *T. pallidum* (DFA-TP) staining of lesion exudate and examination of biopsy tissue using DFA-TP or Steiner stain (*4*).†
3. Laboratories should titrate nontreponemal tests to a final endpoint, rather than reporting results as greater than an arbitrary cutoff (e.g.,>1:512). Specific results permit more accurate determination of response to therapy and also help identify unusual serologic responses to syphilis.
4. Neurosyphilis should be considered in the differential diagnosis of neurologic disease in HIV-infected persons.
5. Consultation should be obtained to evaluate unusual serologic test results in patients suspected of having syphilis or in those being followed for response to treatment.

*Expert consultants: M Rein, MD, Univ of Virginia School of Medicine; G Bolan, MD, San Francisco Dept of Public Health; W Boyd, Georgia Dept of Human Resources; D Burke, Tennessee Dept of Health and Environment; W Greaves, MD, Howard Univ Hospital; V Mesa, MD, Detroit Dept of Health; E Hook, III, MD, Johns Hopkins Univ School of Medicine; J Hadler, MD, Connecticut State Dept of Health Svcs; D Des Jarlais, PhD, State of New York Div of Substance Abuse Svcs; S Lukehart, PhD, Univ of Washington School of Medicine; M Lovett, MD, Univ of California, Los Angeles, School of Medicine; R Magana, PhD, Orange County (California) Health Dept; W McCormack, MD, Downstate Medical Center, Brooklyn, New York; S Schultz, MD, New York City Dept of Health; E Tramont, MD, Walter Reed Army Medical Center; H Jaffe, MD, CDC.

†In evaluating biopsy specimens, histologic stains (Warthin Starry Silver, Steiner) must be interpreted with caution since other spirochetes and artifacts may be misidentified as *T. pallidum* with these silver stains.

Syphilis — Continued

TREATMENT AND FOLLOW-UP

Case reports have suggested that treatment failures, including progression to neurosyphilis, may occur more frequently in patients coinfected with HIV than in those with syphilis alone (*5,6*). This has not yet been confirmed, but because an intact cellular immune response is important in the host response to *T. pallidum* infection (*7*) and because HIV infection impairs cellular immune response in some patients, an increased frequency of treatment failure is plausible.

Recommended treatment schedules for neurosyphilis have included benzathine penicillin (*8*), although treatment with benzathine penicillin in currently recommended dosages does not achieve treponemicidal antibiotic levels in the cerebrospinal fluid (CSF) of most patients with syphilis, and rare treatment failures have been reported (*9-11*).

(Continued on page 607)

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

Disease	39th Week Ending			Cumulative, 39th Week Ending		
	Oct. 1, 1988	Oct. 3, 1987	Median 1983-1987	Oct. 1, 1988	Oct. 3, 1987	Median 1983-1987
Acquired Immunodeficiency Syndrome (AIDS)	358	U *	127	23,357	13,778	5,766
Aseptic meningitis	221	316	429	4,463	8,465	7,449
Encephalitis: Primary (arthropod-borne & unspec)	20	34	36	584	975	896
Post-infectious	2	2	1	97	86	87
Gonorrhea: Civilian	14,368	15,820	19,095	513,743	581,707	658,130
Military	129	332	436	8,883	12,436	16,004
Hepatitis: Type A	646	477	477	18,673	18,394	16,523
Type B	450	419	482	16,935	19,098	19,100
Non A, Non B	38	40	68	1,921	2,282	2,674
Unspecified	55	64	135	1,587	2,364	3,706
Legionellosis	12	24	24	693	721	553
Leprosy	5	2	4	120	148	189
Malaria	33	19	19	724	698	717
Measles: Total†	49	16	23	2,320	3,353	2,508
Indigenous	48	16	16	2,089	2,950	2,083
Imported	1	-	4	231	403	282
Meningococcal infections	37	30	34	2,194	2,226	2,108
Mumps	74	118	49	3,601	10,580	2,532
Pertussis	71	62	91	1,928	1,900	1,900
Rubella (German measles)	10	1	7	176	305	560
Syphilis (Primary & Secondary): Civilian	938	689	706	30,227	26,246	20,976
Military	4	1	4	124	128	135
Toxic Shock syndrome	11	3	11	252	252	285
Tuberculosis	465	440	459	15,829	15,936	15,936
Tularemia	2	3	5	151	160	160
Typhoid Fever	10	8	10	269	255	256
Typhus fever, tick-borne (RMSF)	22	11	16	557	530	622
Rabies, animal	93	102	136	3,201	3,685	4,097

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1988		Cum. 1988
Anthrax	-	Leptospirosis (Hawaii 1)	26
Botulism: Foodborne (Tex. 1)	18	Plague	14
Infant (Hawaii 1)	28	Poliomyelitis, Paralytic	-
Other	3	Psittacosis	66
Brucellosis (Mo. 1, Tex. 1, Calif. 1)	47	Rabies, human	-
Cholera (Md. 1)	4	Tetanus (La. 1)	37
Congenital rubella syndrome	3	Trichinosis (Calif. 1)	37
Congenital syphilis, ages < 1 year	302		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†One of the 49 reported cases for this week was 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 October 1, 1988 and October 3, 1987 (39th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	23,357	4,463	584	97	513,743	581,707	18,673	16,935	1,921	1,587	693	120
NEW ENGLAND	977	279	19	4	15,921	17,870	651	932	103	73	34	15
Maine	26	14	1	-	314	532	17	45	4	1	3	-
N.H.	28	38	1	3	201	296	37	58	7	4	4	-
Vt.	10	16	6	-	95	163	13	30	6	4	1	-
Mass.	533	116	8	1	5,540	6,311	307	576	69	49	23	14
R.I.	61	56	-	-	1,462	1,590	73	68	10	-	3	1
Conn.	319	39	3	-	8,309	8,978	204	155	7	15	-	-
MID. ATLANTIC	7,808	424	51	4	81,226	90,637	1,236	2,299	136	181	175	8
Upstate N.Y.	1,015	270	32	1	11,458	13,478	551	577	52	17	70	-
N.Y. City	4,243	93	8	3	34,501	46,380	248	931	12	129	34	7
N.J.	1,930	61	11	-	11,659	12,040	256	564	50	32	40	1
Pa.	620	-	-	-	23,608	18,739	181	227	22	3	31	-
E.N. CENTRAL	1,659	720	147	12	85,857	88,907	1,262	1,809	172	92	144	4
Ohio	391	242	51	3	19,549	19,617	267	411	28	16	54	-
Ind.	80	73	17	-	6,513	7,130	127	263	18	21	18	-
Ill.	754	79	32	9	25,607	27,139	373	405	61	21	-	3
Mich.	356	290	34	-	27,826	27,230	304	528	43	31	49	-
Wis.	78	36	13	-	6,362	7,791	191	202	22	3	23	1
W.N. CENTRAL	547	187	43	8	21,886	23,637	1,083	781	85	27	62	1
Minn.	122	29	11	3	2,923	3,586	83	107	17	3	3	-
Iowa	31	27	9	1	1,624	2,266	38	72	13	2	16	-
Mo.	277	72	1	-	12,447	12,374	629	451	36	14	14	-
N. Dak.	4	-	4	-	126	222	6	8	3	4	1	-
S. Dak.	5	16	3	1	388	453	12	4	2	-	14	-
Nebr.	33	9	9	2	1,231	1,507	44	40	2	-	5	-
Kans.	75	34	6	1	3,147	3,229	271	99	12	4	9	1
S. ATLANTIC	3,992	969	88	36	146,571	152,039	1,747	3,618	294	250	112	
Del.	56	32	3	-	2,242	2,579	33	113	7	3	12	-
Md.	411	138	7	3	15,111	17,402	227	522	33	22	17	1
D.C.	379	17	1	1	11,048	10,233	14	35	3	1	1	-
Va.	285	112	27	4	10,573	11,239	293	243	58	162	9	-
W. Va.	16	26	20	-	1,035	1,088	12	56	3	3	-	-
N.C.	212	110	19	-	20,659	21,784	241	628	72	-	29	-
S.C.	133	17	-	1	11,422	11,855	36	391	11	5	17	-
Ga.	547	107	1	-	28,078	27,180	443	484	12	6	15	-
Fla.	1,953	410	10	27	46,403	48,679	448	1,146	95	48	12	-
E.S. CENTRAL	602	310	51	8	40,698	43,885	631	1,082	142	9	39	2
Ky.	71	108	16	1	4,168	4,463	437	232	55	2	17	-
Tenn.	285	31	13	-	13,690	15,398	125	505	35	-	8	-
Ala.	155	144	22	2	12,549	13,946	43	263	43	7	11	2
Miss.	91	27	-	5	10,291	10,078	26	82	9	-	3	-
W.S. CENTRAL	2,115	570	66	3	55,976	67,001	2,209	1,489	166	401	16	23
Ark.	71	10	5	-	5,627	7,577	263	79	4	13	3	-
La.	270	88	19	1	11,148	11,739	110	259	21	11	5	1
Okla.	99	52	4	-	5,331	7,253	392	137	35	22	8	-
Tex.	1,675	420	38	2	33,870	40,432	1,444	1,014	106	355	-	22
MOUNTAIN	682	164	24	2	11,136	15,440	2,587	1,253	203	127	35	1
Mont.	11	3	-	-	333	432	30	43	10	4	1	-
Idaho	9	1	-	-	280	553	114	84	5	3	-	-
Wyo.	6	2	-	-	155	339	5	12	3	-	3	-
Colo.	253	63	3	-	2,362	3,467	173	154	60	59	8	1
N. Mex.	36	13	2	-	1,103	1,664	453	183	16	2	2	-
Ariz.	221	51	10	1	4,076	5,295	1,371	496	59	39	13	-
Utah	51	20	4	1	416	468	254	106	35	16	3	-
Nev.	95	11	5	-	2,411	3,222	187	175	15	4	5	-
PACIFIC	4,975	840	95	20	54,472	82,291	7,267	3,672	620	427	76	65
Wash.	283	-	6	4	5,199	6,656	1,649	639	152	50	15	4
Oreg.	141	-	-	-	2,417	3,069	1,037	453	65	21	-	1
Calif.	4,462	744	84	16	45,609	70,648	4,181	2,494	394	345	58	52
Alaska	16	16	3	-	762	1,278	391	47	5	6	-	1
Hawaii	73	80	2	-	485	640	9	39	4	5	3	7
Guam	1	-	-	-	97	156	9	11	-	2	1	4
P.R.	846	50	3	1	984	1,537	34	205	36	34	-	3
V.I.	32	-	-	-	338	207	1	6	2	-	-	-
Amer. Samoa	-	-	-	-	65	69	3	2	-	5	-	2
C.N.M.I.	-	-	-	-	34	-	1	2	-	4	-	1

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending October 1, 1988 and October 3, 1987 (39th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	Cum. 1988	1988	Cum. 1988	1988	Cum. 1988	Cum. 1987	1988	Cum. 1988	Cum. 1987
UNITED STATES	724	48	2,089	1	231	3,353	2,194	74	3,601	71	1,928	1,900	10	176	305
NEW ENGLAND	56	-	81	-	50	269	186	4	113	2	131	125	1	9	1
Maine	2	-	7	-	-	3	8	-	-	-	11	26	-	-	1
N.H.	3	-	66	-	44	162	22	4	102	-	34	27	1	4	-
Vt.	4	-	-	-	-	26	13	-	4	-	3	4	-	-	-
Mass.	30	-	1	-	2	54	84	-	7	2	55	42	-	4	-
R.I.	6	-	-	-	-	2	21	-	-	-	10	1	-	1	-
Conn.	11	-	7	-	4	22	38	-	-	-	18	25	-	-	-
MID. ATLANTIC	117	1	804	-	47	577	225	12	304	13	134	218	2	14	11
Upstate N.Y.	30	-	19	-	18	40	105	3	86	9	82	124	-	2	9
N.Y. City	64	1	44	-	5	460	55	-	94	-	4	8	-	7	1
N.J.	11	-	217	-	11	39	63	9	44	4	8	13	2	3	1
Pa.	12	-	524	-	13	38	2	-	80	-	40	73	-	2	-
E.N. CENTRAL	35	-	132	-	48	331	299	11	726	9	206	222	-	26	37
Ohio	8	-	2	-	23	5	105	1	109	3	43	55	-	1	-
Ind.	3	-	57	-	-	-	24	-	70	6	67	15	-	-	-
Ill.	2	-	55	-	16	151	66	4	269	-	29	15	-	21	26
Mich.	19	-	18	-	5	29	66	6	183	-	33	45	-	4	9
Wis.	3	-	-	-	4	146	38	-	95	-	34	92	-	-	2
W.N. CENTRAL	17	-	11	-	2	230	80	1	122	1	110	119	-	2	1
Minn.	5	-	10	-	1	39	18	-	-	-	49	13	-	-	-
Iowa	2	-	-	-	-	-	-	-	32	-	21	48	-	-	1
Mo.	6	-	1	-	1	189	27	1	31	-	17	30	-	-	-
N. Dak.	-	-	-	-	-	1	-	-	-	-	11	11	-	-	-
S. Dak.	-	-	-	-	-	-	3	-	1	-	5	3	-	-	-
Nebr.	1	-	-	-	-	-	12	-	11	-	-	1	-	-	-
Kans.	3	-	-	-	-	1	20	-	47	1	7	13	-	2	-
S. ATLANTIC	95	6	335	1	17	142	381	10	576	6	207	272	-	17	15
Del.	1	-	-	-	-	32	2	-	-	-	7	5	-	-	2
Md.	12	-	11	-	3	7	47	-	105	-	32	15	-	1	2
D.C.	11	-	-	-	-	1	7	6	233	-	1	-	-	-	1
Va.	14	4	168	-	2	1	42	-	119	-	21	48	-	11	1
W. Va.	1	-	6	-	-	-	7	-	13	-	8	35	-	-	-
N.C.	13	-	-	-	4	5	61	2	45	1	59	113	-	-	1
S.C.	9	-	-	-	-	2	33	-	5	-	1	-	-	-	-
Ga.	5	-	-	-	-	1	57	-	27	-	31	23	-	2	1
Fla.	29	2	150	1†	8	93	125	2	29	5	47	33	-	3	7
E.S. CENTRAL	13	-	56	-	-	6	213	2	425	3	85	36	-	2	3
Ky.	-	-	35	-	-	-	49	-	208	-	12	1	-	-	2
Tenn.	-	-	1	-	-	-	118	2	202	1	26	9	-	2	1
Ala.	8	-	-	-	-	4	33	-	12	2	44	20	-	-	-
Miss.	5	-	20	-	-	2	13	N	N	-	3	6	-	-	-
W.S. CENTRAL	64	-	14	-	3	409	144	22	706	21	125	233	1	11	11
Ark.	3	-	-	-	1	-	17	-	99	2	21	12	1	4	2
La.	10	-	-	-	-	-	42	2	268	1	17	43	-	-	-
Okla.	9	-	8	-	-	3	14	16	188	18	60	127	-	1	5
Tex.	42	-	6	-	2	406	71	4	151	-	27	51	-	6	4
MOUNTAIN	35	-	117	-	21	495	63	4	170	2	570	163	-	6	24
Mont.	5	-	5	-	19	128	2	-	2	-	2	6	-	-	8
Idaho	2	-	-	-	1	-	7	-	3	2	293	47	-	-	1
Wyo.	-	-	-	-	-	2	-	-	3	-	1	5	-	-	1
Colo.	11	-	112	-	1	9	15	1	29	-	20	56	-	2	-
N. Mex.	2	-	-	-	-	317	11	N	N	-	45	11	-	-	-
Ariz.	9	-	-	-	-	35	18	3	112	-	183	30	-	-	4
Utah	4	-	-	-	-	1	9	-	7	-	25	8	-	3	10
Nev.	2	-	-	-	-	3	1	-	14	-	1	-	-	1	-
PACIFIC	292	41	539	-	43	894	603	8	459	14	360	512	6	89	202
Wash.	16	5	7	-	-	41	54	1	43	7	91	74	-	-	2
Oreg.	12	-	4	-	-	80	35	N	N	-	29	59	-	-	2
Calif.	252	35	524	-	35	769	491	6	382	6	188	178	3	61	127
Alaska	3	1	1	-	-	-	6	-	9	1	7	6	-	-	2
Hawaii	9	-	3	-	8	4	17	1	14	-	45	195	3	28	69
Guam	-	-	-	-	1	2	-	-	2	-	-	-	-	1	1
P.R.	2	-	190	-	-	737	8	-	8	-	14	16	-	2	2
V.I.	-	-	-	-	-	-	-	-	31	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C.N.M.I.	1	-	-	-	-	-	1	-	2	-	-	-	-	-	-

*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 October 1, 1988 and October 3, 1987 (39th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1987	Cum. 1988	Cum. 1988	Cum. 1988	Cum. 1988
UNITED STATES	30,227	26,246	252	15,829	15,936	151	269	557	3,201
NEW ENGLAND	827	453	20	390	491	4	28	12	13
Maine	12	1	4	18	22	-	-	-	1
N.H.	6	3	4	8	16	-	-	-	5
Vt.	3	2	2	4	10	-	1	-	-
Mass.	321	210	8	224	275	3	15	7	-
R.I.	26	9	-	32	42	-	5	2	-
Conn.	459	228	2	104	126	1	7	3	7
MID. ATLANTIC	7,552	4,936	36	3,080	2,777	-	54	18	346
Upstate N.Y.	419	204	19	399	376	-	10	10	35
N.Y. City	5,415	3,605	6	1,703	1,319	-	33	6	-
N.J.	714	521	3	478	520	-	11	-	13
Pa.	1,004	606	8	500	562	-	-	2	298
E.N. CENTRAL	860	719	37	1,742	1,801	1	24	50	115
Ohio	81	84	24	331	338	-	5	38	5
Ind.	43	50	1	177	180	-	2	2	17
Ill.	385	383	1	744	798	-	12	7	26
Mich.	327	155	11	410	402	1	4	2	33
Wis.	24	47	-	80	83	-	1	1	34
W.N. CENTRAL	177	149	32	408	456	70	4	84	370
Minn.	17	14	5	67	92	3	2	2	112
Iowa	17	24	5	45	32	-	-	-	13
Mo.	110	70	7	206	249	41	2	53	17
N. Dak.	1	1	2	10	7	1	-	-	82
S. Dak.	-	10	3	26	23	16	-	7	101
Nebr.	26	10	4	12	18	2	-	1	14
Kans.	6	20	6	42	35	7	-	21	31
S. ATLANTIC	10,602	8,920	17	3,387	3,405	5	29	171	1,090
Del.	81	60	1	29	34	2	-	1	46
Md.	556	477	3	330	304	-	1	22	253
D.C.	527	281	-	150	114	-	1	-	7
Va.	317	224	-	302	327	2	11	15	286
W. Va.	34	10	-	59	82	-	1	2	84
N.C.	583	522	8	362	380	-	1	94	8
S.C.	551	548	2	363	353	-	-	19	86
Ga.	1,854	1,251	-	555	596	1	2	14	211
Fla.	6,099	5,547	3	1,237	1,215	-	12	4	109
E.S. CENTRAL	1,505	1,453	20	1,418	1,394	9	3	81	238
Ky.	50	13	9	379	319	5	1	28	96
Tenn.	652	572	8	416	408	3	-	37	66
Ala.	445	379	3	409	412	-	1	9	71
Miss.	358	489	-	214	255	1	1	7	5
W.S. CENTRAL	3,216	3,247	26	1,987	1,865	45	8	125	418
Ark.	183	202	1	218	221	29	-	22	66
La.	626	606	-	229	211	-	4	2	7
Okla.	120	129	8	185	173	13	-	87	28
Tex.	2,287	2,310	17	1,355	1,260	3	4	14	317
MOUNTAIN	643	538	29	415	482	11	8	11	299
Mont.	3	9	-	15	11	-	1	6	165
Idaho	2	5	5	18	26	-	-	1	10
Wyo.	1	3	-	5	2	2	-	3	33
Colo.	81	90	3	43	127	5	3	1	26
N. Mex.	43	48	1	77	76	2	1	-	11
Ariz.	125	250	11	193	200	1	3	-	33
Utah	14	22	9	18	18	1	-	-	5
Nev.	374	111	-	46	22	-	-	-	16
PACIFIC	4,845	5,831	35	3,002	3,265	6	111	5	312
Wash.	138	120	4	164	191	-	9	1	-
Oreg.	221	215	1	117	91	-	7	1	-
Calif.	4,451	5,482	30	2,572	2,789	4	92	3	302
Alaska	10	3	-	32	48	2	-	-	10
Hawaii	25	11	-	117	146	-	3	-	-
Guam	3	2	-	17	26	-	-	-	-
P.R.	502	691	-	181	222	-	4	-	55
V.I.	1	5	-	6	2	-	-	-	-
Amer. Samoa	-	-	-	3	7	-	1	-	-
C.N.M.I.	1	-	-	17	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending October 1, 1988 (39th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	617	407	118	49	26	17	52
Boston, Mass.	174	105	36	18	8	7	21
Bridgeport, Conn.	47	36	7	3	1	-	1
Cambridge, Mass.	20	17	3	-	-	-	1
Fall River, Mass.	22	17	5	-	-	-	-
Hartford, Conn.	59	39	9	6	3	2	3
Lowell, Mass.	27	17	7	2	-	1	3
Lynn, Mass.	16	11	5	-	-	-	1
New Bedford, Mass.	24	18	5	1	-	-	-
New Haven, Conn.	40	23	7	4	4	2	5
Providence, R.I.	49	36	8	2	2	1	-
Somerville, Mass.	5	4	1	-	-	-	2
Springfield, Mass.	37	27	7	2	1	-	4
Waterbury, Conn.	31	20	3	7	1	-	2
Worcester, Mass.	66	37	15	4	6	4	9
MID. ATLANTIC	2,898	1,827	570	330	74	96	122
Albany, N.Y.	41	27	6	2	2	4	-
Allentown, Pa.	15	10	2	1	-	2	1
Buffalo, N.Y.	100	72	18	6	2	2	6
Camden, N.J.	41	26	5	5	-	5	-
Elizabeth, N.J.	28	17	9	-	-	1	4
Erie, Pa.†	43	29	8	2	3	1	2
Jersey City, N.J.	77	52	15	3	1	6	-
N.Y. City, N.Y.	1,476	882	288	217	31	58	51
Newark, N.J.	89	39	21	17	9	3	7
Paterson, N.J.	36	22	7	4	1	2	3
Philadelphia, Pa.	509	325	109	50	20	5	21
Pittsburgh, Pa.†	71	53	11	4	1	2	3
Reading, Pa.	25	20	2	3	-	-	1
Rochester, N.Y.	116	82	25	5	1	3	11
Schenectady, N.Y.	29	19	7	2	1	-	3
Scranton, Pa.†	35	28	7	-	-	-	2
Syracuse, N.Y.	98	67	21	6	2	2	5
Trenton, N.J.	23	19	3	1	-	-	1
Utica, N.Y.	18	15	2	1	-	-	1
Yonkers, N.Y.	28	23	4	1	-	-	-
E.N. CENTRAL	2,373	1,527	501	183	73	89	100
Akron, Ohio	42	28	10	4	-	-	5
Canton, Ohio	42	32	7	3	-	-	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	147	89	37	10	4	7	17
Cleveland, Ohio	177	113	36	17	7	4	4
Columbus, Ohio	221	128	59	17	9	8	1
Dayton, Ohio	113	70	21	11	8	3	4
Detroit, Mich.	210	119	47	18	11	15	7
Evansville, Ind.	55	40	11	4	-	-	4
Fort Wayne, Ind.	53	29	15	4	2	3	2
Gary, Ind.	18	10	3	5	-	-	1
Grand Rapids, Mich.	41	31	6	3	1	-	4
Indianapolis, Ind.	178	109	41	12	6	10	4
Madison, Wis.	40	26	8	2	1	3	4
Milwaukee, Wis.	159	120	26	8	4	1	8
Peoria, Ill.	56	37	4	7	4	4	4
Rockford, Ill.	50	34	5	6	3	2	3
South Bend, Ind.	38	23	13	-	-	2	2
Toledo, Ohio	107	78	20	2	2	5	6
Youngstown, Ohio	62	49	7	5	1	-	2
W.N. CENTRAL	763	495	163	56	27	22	39
Des Moines, Iowa	79	51	17	4	3	4	4
Duluth, Minn.	25	18	5	-	-	2	3
Kansas City, Kans.	40	27	6	5	1	1	-
Kansas City, Mo.	87	53	22	4	4	4	7
Lincoln, Nebr.	22	15	5	1	-	1	-
Minneapolis, Minn.	149	97	32	13	4	3	13
Omaha, Nebr.	105	71	22	5	3	4	9
St. Louis, Mo.	122	63	27	20	11	1	-
St. Paul, Minn.	63	46	13	3	-	1	-
Wichita, Kans.§	71	54	14	1	1	1	3
S. ATLANTIC	1,282	721	298	163	54	46	58
Atlanta, Ga.	207	103	50	39	10	5	6
Baltimore, Md.	163	91	42	22	6	2	2
Charlotte, N.C.	94	54	21	10	8	1	8
Jacksonville, Fla.	102	65	19	8	8	2	6
Miami, Fla.	111	50	35	18	4	4	3
Norfolk, Va.	64	36	15	5	4	4	2
Richmond, Va.	93	58	21	6	1	7	11
Savannah, Ga.	54	39	9	2	1	3	6
St. Petersburg, Fla.	85	65	8	4	2	6	6
Tampa, Fla.	74	42	19	9	3	1	1
Washington, D.C.	211	104	53	36	7	11	5
Wilmington, Del.	24	14	6	4	-	-	2
E.S. CENTRAL	678	432	130	76	18	22	39
Birmingham, Ala.	124	84	24	10	2	4	2
Chattanooga, Tenn.	55	25	14	14	1	1	5
Knoxville, Tenn.	86	61	12	8	2	3	11
Louisville, Ky.	94	66	13	10	1	4	4
Memphis, Tenn.	160	96	35	15	7	7	10
Mobile, Ala.	32	20	5	5	-	2	3
Montgomery, Ala.	28	21	6	1	-	-	-
Nashville, Tenn.	99	59	21	13	5	1	4
W.S. CENTRAL	1,680	1,008	372	174	79	47	63
Austin, Tex.	66	40	15	4	6	1	4
Baton Rouge, La.§	35	25	7	2	-	1	-
Corpus Christi, Tex.§	48	37	10	1	-	-	1
Dallas, Tex.	214	118	45	27	16	8	3
El Paso, Tex.	46	33	6	2	3	2	3
Fort Worth, Tex	84	47	19	9	5	4	5
Houston, Tex.§	726	429	168	89	24	16	18
Little Rock, Ark.	75	45	18	4	4	4	2
New Orleans, La.	107	59	23	16	7	2	-
San Antonio, Tex.	153	99	36	10	4	4	11
Shreveport, La.	74	43	15	6	7	3	10
Tulsa, Okla.	52	33	10	4	3	2	6
MOUNTAIN	624	403	131	56	15	19	28
Albuquerque, N. Mex.	56	32	12	10	1	1	1
Colo. Springs, Colo.	40	31	7	1	-	1	3
Denver, Colo.	94	63	23	4	1	3	5
Las Vegas, Nev.	101	62	21	14	3	1	4
Ogden, Utah	29	22	3	3	-	1	4
Phoenix, Ariz.	122	68	25	14	8	7	4
Pueblo, Colo.	31	22	6	1	2	-	-
Salt Lake City, Utah	65	44	15	3	-	3	1
Tucson, Ariz.	86	59	19	6	-	2	6
PACIFIC	1,831	1,195	325	204	57	45	98
Berkeley, Calif.	13	8	2	1	1	1	-
Fresno, Calif.	78	52	8	11	5	2	5
Glendale, Calif.	22	18	2	2	-	-	-
Honolulu, Hawaii	68	48	14	3	-	3	10
Long Beach, Calif.	66	44	15	5	1	1	9
Los Angeles Calif.	450	288	89	46	20	3	22
Oakland, Calif.	104	68	13	15	5	3	5
Pasadena, Calif.	34	26	3	3	1	1	3
Portland, Oreg.	140	95	26	6	6	6	2
Sacramento, Calif.	142	94	25	16	2	5	8
San Diego, Calif.	152	99	21	21	6	5	8
San Francisco, Calif.	160	97	23	28	4	8	4
San Jose, Calif.	164	99	43	14	4	4	15
Seattle, Wash.	158	107	24	26	1	-	1
Spokane, Wash.	43	30	7	4	-	2	5
Tacoma, Wash.	37	22	10	3	1	1	1
TOTAL	12,746††	8,015	2,608	1,291	423	403	599

*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 available 4 weeks.

Syphilis – Continued

Recommendations

1. No change in therapy for early syphilis for HIV-coinfected patients is recommended. However, there is disagreement on this issue, and some authorities have advised CSF examination and/or treatment with a regimen appropriate for neurosyphilis for all patients coinfected with syphilis and HIV, regardless of the clinical stage of syphilis (*12*). In all cases, careful follow-up is necessary to assure adequacy of treatment.
2. Serologic testing after treatment for early syphilis is important for all patients, regardless of HIV infection status. In patients coinfected with HIV, quantitative nontreponemal tests should be repeated at 1, 2, and 3 months and at 3-month intervals thereafter until a satisfactory serologic response to treatment occurs. If the titer does not decrease appropriately (two-dilution decrease by 3 months for primary syphilis or by 6 months for secondary syphilis) (*13*) or if a sustained two-dilution or greater increase occurs, the patient should be reevaluated to consider the possibility of treatment failure or reinfection, and CSF should be examined. Sexually transmitted disease (STD) clinics and others providing STD treatment should assure adequate follow-up.
3. A CSF examination should precede and guide treatment of HIV-infected patients with latent syphilis present for longer than 1 year or for unknown duration. If an examination is not possible, patients should be treated for presumed neurosyphilis.
4. Benzathine penicillin regimens should not be used to treat either asymptomatic or symptomatic neurosyphilis in HIV-infected patients. Patients should be treated for at least 10 days with either aqueous crystalline penicillin G, 2–4 million units IV every 4 hours (12–24 million units each day), or aqueous procaine penicillin G, 2.4 million units intramuscularly daily, plus probenecid 500 mg orally 4 times daily (*8*).

Reported by: Div of Sexually Transmitted Diseases, Center for Prevention Svcs; AIDS Program and Sexually Transmitted Diseases Laboratory Program, Center for Infectious Diseases, CDC.

Editorial Note: The expert consultants also highlighted the following research priorities reiated to the diagnosis and treatment of syphilis in HIV-coinfected patients:

1. The effect of HIV infection on initial clinical and laboratory manifestations of syphilis and on the efficacy of current syphilis therapy should be prospectively studied.
2. A surveillance system should be developed to detect complications of syphilis, especially neurosyphilis, and unusual clinical and laboratory manifestations of syphilis in patients with and without HIV-coinfection.
3. The importance of CNS involvement in early syphilis should be determined in patients with and without HIV coinfection.
4. Better laboratory methods should be developed for detecting *T. pallidum* or *T. pallidum* antigens in CSF, blood, and lesions.
5. A better animal model of *T. pallidum* infection is needed to examine the effect of immunosuppression on the course of syphilis.

So that the frequency of unusual manifestations of syphilis can be determined, health-care providers are requested to notify their state epidemiologists of HIV-infected patients who meet one of the following conditions:

1. Neurosyphilis confirmed by CSF examination or histopathology;
2. Negative serologic tests for syphilis (nontreponemal [VDRL, RPR] or treponemal [FTA-ABS, MHA-TP, HATTS] tests) during secondary syphilis diagnosed by darkfield microscopy or histopathology of lesion material.

Syphilis — Continued

The state epidemiologists will forward these reports without personal identifiers to the Division of Sexually Transmitted Diseases, Center for Prevention Services, CDC.

References

1. Beck-Sague CM, Alexander ER, Jaffe HW. Neurosyphilis and HIV infection [Letter]. N Engl J Med 1987;317:1473.
2. Schultz S, Araneta MRG, Joseph SC. Neurosyphilis and HIV infection [Letter]. N Engl J Med 1987;317:1474.
3. Hicks CB, Benson PM, Lupton GP, Tramont EC. Seronegative secondary syphilis in a patient infected with the human immunodeficiency virus (HIV) with Kaposi sarcoma: a diagnostic dilemma. Ann Intern Med 1987;107:492–4.
4. Swisher BL. Modified Steiner procedure for microwave staining of spirochetes and nonfilamentous bacteria. J Histotechnol 1987;10:241–3.
5. Berry CD, Hooton TM, Collier AC, Lukehart SA. Neurologic relapse after benzathine penicillin therapy for secondary syphilis in a patient with HIV infection. N Engl J Med 1987; 316:1587–9.
6. Johns DR, Tierney M, Felsenstein D. Alteration in the natural history of neurosyphilis by concurrent infection with the human immunodeficiency virus. N Engl J Med 1987; 316:1569–72.
7. Pavia CS, Folds JD, Baseman JB. Cell-mediated immunity during syphilis: a review. Br J Vener Dis 1978;54:144–50.
8. CDC. 1985 STD treatment guidelines. MMWR 1985;34(suppl 4S).
9. Greene BM, Miller NR, Bynum TE. Failure of penicillin G benzathine in the treatment of neurosyphilis. Arch Intern Med 1980;140:1117–8.
10. Mohr JA, Griffiths W, Jackson R, Saadah H, Bird P, Riddle J. Neurosyphilis and penicillin levels in cerebrospinal fluid. JAMA 1976;236:2208–9.
11. Cuddy PG. Benzathine penicillin G in the treatment of neurosyphilis. Drug Intell Clin Pharm 1982;16:205–10.
12. Tramont EC. Syphilis in the AIDS era. N Engl J Med 1987;316:1600–1.
13. Brown ST, Zaidi A, Larsen SA, Reynolds GH. Serological response to syphillis treatment: a new analysis of old data. JAMA 1985;253:1296-9.

Topics in Minority Health

Prevalence of Oral Lesions and Smokeless Tobacco Use in Northern Plains Indians

An estimated 22 million persons in the United States have used smokeless tobacco (*1*). According to the Office on Smoking and Health's 1986 Adult Use of Tobacco Survey, the current prevalence of smokeless tobacco use in adults ≥21 years of age is 2.2% for men and 0.5% for women (*2*). In addition, the prevalence varies by geographic region, ranging from 0.4% in Massachusetts and New York to 10.2% in West Virginia (*3*). Regional surveys indicate that 3%–26% of adolescent males and<3% of adolescent females currently use smokeless tobacco (*4*).

Surveys of American Indian/Alaska Native schoolchildren have reported prevalences of regular smokeless tobacco use* ranging from 24% to 64% (*5–7*; Aberdeen Area Indian Health Service [IHS], unpublished data). Preliminary results from the four studies discussed below confirm a greater prevalence of smokeless tobacco use in Indian adolescents than in Indian adults.

*Use of smokeless tobacco is considered to be regular if respondent answered affirmatively to questions regarding whether he or she used smokeless tobacco products "currently," "now," or "daily," depending upon the survey.

Smokeless Tobacco Use — Continued

ROSEBUD SIOUX RESERVATION

In March 1986, 1776 students in grades K–12 were surveyed at eight schools on the Rosebud Indian Reservation in rural South Dakota. All students in attendance the day of the survey completed the anonymous, self-administered questionnaire; 1581 (89%) were American Indians, and 195 (11%) were non-Indians.

Rates of smokeless tobacco use for the Indian students were higher than those for non-Indians (25% compared with 14%; $p = 0.03$, chi-square). Over one third of Indian boys and girls in grades 7–12 reported regular use of smokeless tobacco (Table 1). In addition, 21% of kindergarten children reported using smokeless tobacco.

The most popular tobacco product was snuff (58%), which was dipped, followed by rough-cut chewing tobacco, or chew (25%). Among regular users of smokeless tobacco, the duration of use was 1–3 years, with a mean frequency of 3.5 times per day, each dip or chew being held in the mouth an average of 30 minutes.

Of the 184 regular users in grades 7–12, 37% had oral lesions (defined as any white or red wrinkled area in the mouth or buccal mucosa) detected by a subsequent dental examination. The lesions were thought to be associated with use of smokeless tobacco. The student user with lesions had a mean duration of use of 3.4 years, with a mean frequency of use of 6.6 times per day, each dip or chew being held an average of 40 minutes. For students without lesions, the mean duration was 2.5 years, with a mean frequency of 2.9 times per day, and each dip or chew being held an average of 30 minutes.

MINNESOTA ADOLESCENT HEALTH SURVEY

During 1986–87, the University of Minnesota administered an anonymous health survey to over 36,000 Minnesota adolescents; 12,590 lived outside metropolitan areas, and the remainder lived in St. Paul, Minneapolis, and Duluth. In addition, 1056 adolescents from four rural South Dakota Indian reservations were surveyed.

The prevalence of smokeless tobacco use in South Dakota Indian adolescents (34.2%) was 10 times that of nonurban Minnesota non-Indian youth (3.4%) ($p<0.01$, chi-square) (Table 1), although both groups lived outside urban areas and would be expected to share certain characteristics. In addition, Indian adolescents reported that only 14% of their fathers and 3% of their mothers had ever used smokeless tobacco, suggesting that this behavior is not necessarily learned from parents.

TABLE 1. Prevalence of regular smokeless tobacco use among Indian and non-Indian students, by sex and grade — South Dakota and Minnesota, 1986–87

	Rosebud Survey				Adolescent Health Survey*			
	Indians — South Dakota				Indians — South Dakota		Non-Indians — rural Minnesota	
Grade	K–6		7–12		7–12		7–12	
	No. surveyed	% users	No. surveyed	% users	No. surveyed	% users	No. surveyed	% users
Sex								
Males	501	21.4	263	39.2	505	36.2	6,308	6.8
Females	509	14.9	308	35.1	551	32.4	6,282	0.0
Total	**1,010**	**18.1**	**571**	**37.0**	**1,056**	**34.2**	**12,590**	**3.4**

*Minnesota Adolescent Health Survey, University of Minnesota Adolescent Health Program and IHS, unpublished data, 1987.

Smokeless Tobacco Use — Continued

CHEYENNE RIVER SIOUX PLANNED APPROACH TO COMMUNITY HEALTH STUDY

In 1986, 417 randomly selected Tribal members ≥18 years of age completed the CDC Behavioral Risk Factor Surveillance Survey (BRFSS) as part of a Planned Approach to Community Health (PATCH) study conducted cooperatively by the Cheyenne River Sioux Tribe, the IHS, the South Dakota Department of Health, and CDC. Seventeen percent of men and 3% of women reported using smokeless tobacco regularly, and rates were higher in the younger age groups (Table 2).

MONTANA AMERICAN INDIAN HEALTH RISK ASSESSMENT—BLACKFEET RESERVATION AND GREAT FALLS, MONTANA

In 1987, 222 Great Falls Indians (urban) and 241 Blackfeet Reservation Indians participated in a survey conducted by IHS and CDC, and 691 Montana residents of all races participated in the CDC BRFSS. Persons surveyed ranged in age from 15 to 49 years. Members of both Indian groups were interviewed in person, and the other Montana residents were interviewed by telephone. Rates of smokeless tobacco use were higher for reservation Indians than for urban Indians or the random sample of Montana residents, higher for men than for women, and highest in the youngest age groups (Table 2).

Reported by: K Jewett, Cheyenne River Sioux Tribe, Eagle Butte; KA Senger, State Epidemiologist, South Dakota State Dept of Health. L Bergeisen, MD Resnick, PhD, RW Blum, MD, Adolescent Health Program, Dept of Pediatrics and School of Public Health, Univ of Minnesota, Minneapolis. D Pepion, Blackfeet Tribe, Browning; F Buckles, Native American Center, Great Falls; JK Gedrose, MN, State Epidemiologist, Montana State Dept of Health. B Bruerd, MPH, TK Welty, MD, J Bausch, DDS, Aberdeen Area Indian Health Svc; L Oge, Billings Area Indian Health Svc, Health Resources and Services Administration. Office on Smoking and Health, Div of Nutrition, and Div of Reproductive Health, Center for Health Promotion and Education, CDC.

Editorial Note: Smokeless tobacco use in Indian and non-Indian populations in the Northern Plains differs in at least three important respects: 1) a higher overall prevalence of smokeless tobacco use in Indian adolescents; 2) similar prevalence of use in adolescent Indian boys and girls (Table 1); and 3) younger age of onset of

TABLE 2. Prevalence of regular smokeless tobacco use among adult northern Plains Indians and Montanans, 1986–1987

	Cheyenne River Sioux Reservation (1986)		Great Falls urban Indians (1987)		Blackfeet Reservation (1987)		Montana all races (1987)	
Sex/Age (yrs)	No. surveyed	% users	No. surveyed	% users	No. surveyed	% users	No. surveyed	% users
Males								
15–24	27*	40.7	37	18.9	37	56.8	44*	33.0
25–34	33	18.2	42	7.1	48	25.0	110	9.9
≥35	64	6.3	27	0.0	40	20.0	132	10.4
Total	**124**	**16.9**	**106**	**9.4**	**125**	**32.8**	**286**	**16.2**
Females								
15–24	65*	12.3	34	2.9	33	12.1	73*	0.0
25–34	90	0.0	35	0.0	48	0.0	154	0.7
≥35	138	0.0	47	0.0	35	2.9	178	0.0
Total	**293**	**2.7**	**116**	**0.9**	**116**	**4.3**	**405**	**0.3**

*No one <18 years of age was surveyed.

Smokeless Tobacco Use — Continued

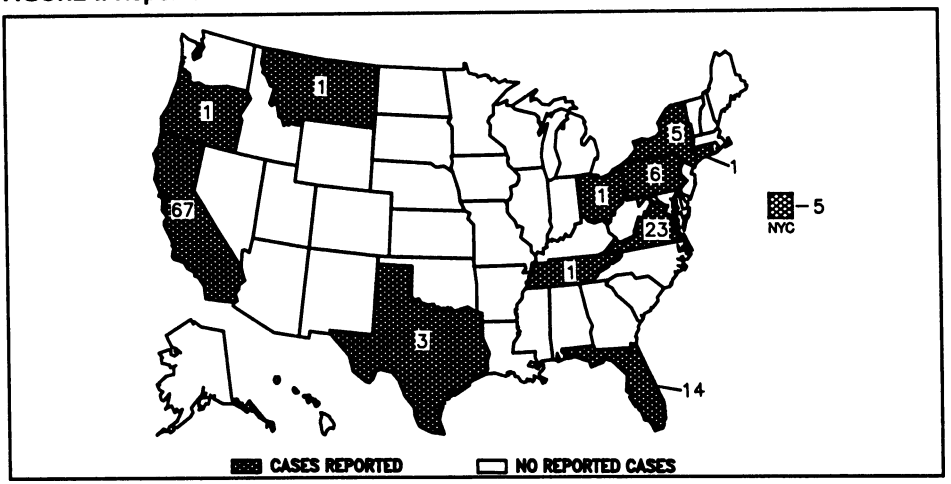
smokeless tobacco use in Indians. In addition, smokeless tobacco use is higher in Indian adolescents than in Indian adults. For both adults and adolescents, rates of use are higher in reservation Indians than in urban Indians (Aberdeen Area IHS, unpublished data) (Table 2).

Smokeless tobacco use has been causally linked with oral cancer and other oral conditions and can produce nicotine addiction similar to that of cigarette smoking (*4,8*). To address this public health problem in American Indians, IHS and tribal outreach activities could focus on the following areas: 1) education for youth, school administrators, and parents regarding the adverse health effects of smokeless tobacco use; 2) policy interventions to restrict the sale and distribution of smokeless tobacco to children; 3) implementation of tobacco use cessation programs; 4) screening and monitoring of adverse health effects; 5) further research to determine reasons for the high prevalence of smokeless tobacco use and to discover correlations for use by Indian youth; and 6) design, implementation, and evaluation of interventions to reduce smokeless tobacco use in Indian communities. The IHS, in cooperation with CDC and the Bureau of Indian Affairs, will initiate a school-based Indian-specific comprehensive health education curriculum, which includes a section addressing the high prevalence of smokeless tobacco use in Indian adolescents. Through IHS support, the Minnesota Adolescent Health Survey has recently been administered in many schools with a large population of American Indians and Alaska Natives so that base-line prevalence data are available to evaluate the impact of such community-based interventions.

References

1. Rouse BA. Epidemiology of smokeless tobacco use: a national study. NCI Monogr (in press).
2. Novotny TE, Pierce JP, Fiore MC, Hatziandreu E, Davis RM. Smokeless tobacco use in the United States: the Adult Use of Tobacco Surveys. NCI Monogr (in press).
3. CDC. Smokeless tobacco use in the United States—Behavioral Risk Factor Surveillance System, 1986. MMWR 1987;36:337–40.
4. Public Health Service. The health consequences of using smokeless tobacco: a report of the Advisory Committee to the Surgeon General. Bethesda, Maryland: US Department of Health and Human Services, Public Health Service, 1986; DHHS publication no. (NIH)86-2874.
5. CDC. Smokeless tobacco use in rural Alaska. MMWR 1987;36:140–3.
6. Schinke SP, Gilchrist LD, Schilling RF II, Walker RD, Locklear VS, Kitajima E. Smokeless tobacco use among native American adolescents [Letter]. N Engl J Med 1986;314:1051–2.
7. Wolfe MD, Carlos JP. Oral health effects of smokeless tobacco use in Navajo Indian adolescents. Community Dent Oral Epidemiol 1987;15:230–5.
8. Public Health Service. The health consequences of smoking: nicotine addiction. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (CDC)88-8406.

FIGURE I. Reported measles cases — United States, Weeks 35–38, 1988



The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

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: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

☆U.S. Government Printing Office: 1989-631-108/81529 Region IV

HHS Publication No. (CDC) 89-8017