CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

January 21, 1994 / Vol. 43 / No. 2

MMWR
MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Carbon Monoxide Levels During Indoor Sporting Events — Cincinnati, 1992–1993

Carbon monoxide (CO) produced by internal combustion engines is an indoor health hazard. High CO levels can occur during indoor sporting events—such as tractor pulls*—that involve vehicles modified to achieve high horsepower. In January and March 1992 and January 1993, the Cincinnati Health Department evaluated CO levels during tractor pulls, monster-truck jumps, and a mud race event held in an indoor arena with a seating capacity of approximately 16,000 persons. This report summarizes findings from the evaluations.

The engines of vehicles involved in the events in Cincinnati used a variety of high-octane fuels and had limited exhaust systems but no emission-control devices. During each of these events, 10–15 vehicles were operated—usually one at a time—during the 2–3-hour event. In addition, approximately 3–4 other support vehicles were used for towing and resurfacing grounds. For each of the three events, attendance was approximately 40% of the arena's capacity; in addition, the ventilation system's supply and exhaust operated maximally, and the ground level commercial truck entrance was opened completely. CO levels were recorded in the arena at approximately 15-minute intervals before each event and during the event. Measurements were recorded at different elevations in the public seating area; most recordings were obtained at the midpoint elevation (area of the maximal seating occupancy by the audience).

In January 1992, during a monster-truck jump and tractor pull, CO levels averaged 13 parts per million (ppm) before the event (monitored from 6 p.m. to 8 p.m.) and 79 ppm (peak level: 140 ppm) during the event (8 p.m.–10 p.m.). In March 1992, during a monster-truck jump and mud race, CO levels averaged 23 ppm before the event

* A "tractor" is a vehicle modified to look like a farm tractor (e.g., large rear wheels and smaller front wheels) and powered by a variety of units (e.g., aircraft turbines and supercharged car engines). During a typical pull, approximately 12 tractors compete in dragging a 40- to 50-ton sled across a dirt surface in the fastest time. In a monster-truck jump, trucks with oversized wheels, high horsepower engines, and four-wheel drive accelerate up slight inclines and jump over a series of cars with the goal of achieving height, distance, and dynamic show when crushing the cars. Mud races use a smaller vehicle that pulls a weighted sled through a mudded area to achieve the fastest time while flinging mud.

Carbon Monoxide — Continued

(monitored from 6 p.m. to 8 p.m.) and 106 ppm (peak level: 250 ppm) during the event (8 p.m.–10:10 p.m.). In January 1993, during a monster-truck jump and tractor pull, CO levels averaged 14 ppm before the event (monitored from 6:30 p.m. to 8 p.m.) and 140 ppm (peak level: 283 ppm) during the event (8 p.m.–9:08 p.m.). Measured levels of CO varied inversely with seating level within the arena.

Because the existing ventilation system could not supply a quantity of fresh air sufficient to eliminate excess levels of CO produced by the internal combustion engines operated during events, at the midpoint of each event the time interval was increased between each run to lower CO levels. However, this measure did not lower concentrations of CO.

Additional engineering and administrative controls to reduce CO levels during future events are being considered by the arena management, event promoter, local health department, municipal fire division, and municipal legal division. A public assembly permit application has been written requiring that indoor CO levels not exceed a 15-minute time-weighted average of 35 ppm and that levels not exceed 200 ppm of CO for any two consecutive samples (*1*).

Reported by: DR Boudreau, Cincinnati Health Dept; MP Spadafora, MD, Univ of Cincinnati School of Medicine; LR Wolf, MD, Wright State Univ School of Medicine, Dayton; E Siegel, PharmD, Cincinnati Drug and Poison Information Center. Air Pollution and Respiratory Health Br, Div of Environmental Hazards and Health Effects, National Center for Environmental Health, CDC.

Editorial Note: Because CO is colorless, tasteless, odorless, and nonirritating, it is difficult to detect with the senses. Exposure to CO concentrations of 80–140 ppm during 1–2 hours can result in blood carboxyhemoglobin (COHb) concentrations of 3%–6% in healthy, resting adults (normal concentration: <2% for nonsmokers, 5%–9% for smokers) (*2*). COHb levels of 3%–6% may decrease exercise tolerance and precipitate angina attacks and cardiac arrhythmias in susceptible persons (*2*); at levels of 10%–20%, headache, nausea, and mental impairment generally appear, and at COHb levels of 30%–60%, more profound central nervous system effects, coma, and death can occur (*3*). The risks of CO poisoning are greater for fetuses, infants, pregnant women, and persons with underlying cardiovascular or pulmonary disease. Although more than 500 persons die each year in the United States from unintentional CO poisoning, the epidemiology of nonfatal CO poisoning is not well defined (*4*).

Any combustion process occurring indoors may result in the accumulation of CO, particularly when ventilation is inadequate, as demonstrated in Cincinnati. Indoor exposures to even small gasoline-powered engines have been fatal (*5*). Common sources of indoor CO include automobile exhaust in garages, ice resurfacing machines, blocked chimneys, faulty home heaters, other home cooking and heating appliances, and tobacco smoke. Elevated CO levels have been documented previously in Canada at sporting events similar to those monitored in Cincinnati (*6*). Although ambient air quality standards for outdoor air have been established by the U.S. Environmental Protection Agency for CO (9 ppm over 8 hours and 35 ppm over 1 hour [*2*]), there are no such national standards for the indoor environment.

Treatment of CO poisoning requires removing the patient from the source of exposure and initiating therapy with 100% oxygen; hyperbaric oxygen therapy has been recommended for severe poisonings (COHb level >40%) and for pregnant women with symptoms or COHb levels >10% (*7,8*). Adverse health effects from exposure to

Carbon Monoxide — Continued

CO can be prevented by ensuring adequate maintenance and cleaning of gas-fired stoves, furnaces, and appliances and by using appropriate ventilation and emissions-control devices at indoor sporting events such as those described in this report. In addition, CO levels at such events should be monitored routinely to enable detection of hazardous levels and prompt intervention.

References

1. City of Cincinnati. Public assembly permit: conditions for the use of internal combustion engines. Cincinnati: Cincinnati Department of Safety, 1993.
2. US Environmental Protection Agency. Air quality criteria for carbon monoxide. Washington, DC: US Environmental Protection Agency, Office of Research and Development, 1991; publication no. EPA-600/8-90/045F.
3. Llano A, Raffin T. Management of carbon monoxide poisoning. Chest1990;97:165–9.
4. Cobb N, Etzel R. Unintentional carbon monoxide-related deaths in the United States, 1979–1988. JAMA 1991;266:659–63.
5. CDC. Unintentional carbon monoxide poisoning from indoor use of pressure washers—Iowa, January 1992–January 1993. MMWR 1993;42:777–9,785.
6. CDC. Carbon monoxide levels in indoor tractor-pull events—Manitoba, Canada. MMWR 1990;39:743–5.
7. Thom SR, Keim LW. Carbon monoxide poisoning: a review. Clin Toxicol1989;27:141–56.
8. Viccellio P, ed. Handbook of medical toxicology. Boston: Little Brown and Company, 1993.

Emerging Infectious Diseases

Drug-Resistant *Streptococcus pneumoniae* — Kentucky and Tennessee, 1993

Streptococcus pneumoniae is the most common bacterial cause of pneumonia worldwide in children and adults and a leading cause of sepsis and meningitis (*1*). In addition, it is the etiology of 30%–50% of episodes of acute otitis media (*2*), the most frequent reason for pediatric office visits in the United States (approximately 24.5 million per year) (*3*). Because sensitive and rapid diagnostic tests are not available, most pneumococcal infections are treated empirically; until recently, penicillin (PCN) and related drugs have been the treatment of choice. However, because of the emergence of infections with drug-resistant *S. pneumoniae* (DRSP), decisions regarding the management of infections caused by this pathogen have become increasingly complicated (*4*). This report summarizes results of recent investigations by CDC and state public health officials of DRSP in communities in Kentucky and Tennessee.

Kentucky

In January 1993, pediatricians in a community in central Kentucky reported to the Kentucky Department for Health Services the detection of PCN resistance (minimum inhibitory concentration [MIC] ≥0.1 μg/mL) in 24 (28%) of 85 *S. pneumoniae* isolates cultured from middle-ear fluid of children with acute otitis media during 1992–1993; of the PCN-resistant isolates, 11 (13%) were characterized by high-level (MIC ≥2 μg/mL) PCN resistance. A subsequent investigation determined that child day care center attendance and antibiotic use were risk factors for infection with DRSP. To assess the prevalence of DRSP among children in the community, during February 11–19, naso-

Streptococcus pneumoniae — *Continued*

pharyngeal swab cultures were obtained from 158 children (aged 3–96 months) attending the largest child day care center in the community and 82 nonacutely ill children (aged 2–66 months) visiting the county public health department. PCN resistance was detected in 49 (61%) of the 80 pneumococcal isolates obtained from children attending the child day care center and in 14 (33%) of the 43 isolates from children visiting the county health department.

Of the 63 PCN-resistant isolates, 41 (65%) were highly resistant to PCN, and 17 (27%) were highly resistant to cefotaxime (MIC ≥2 μg/mL) (*5*), an extended spectrum cephalosporin. In addition, 53 (43%) of all 123 isolates were resistant to three commonly used oral antimicrobial drugs (PCN, erythromycin [ERY] [MIC ≥1 μg/mL], and trimethoprim/sulfamethoxazole [TMP/SMZ] [MIC ≥1/19 μg/mL]), and 30 (24%) isolates were resistant to chloramphenicol (MIC ≥8 μg/mL). Eight serotypes of DRSP were identified; serotypes 6A, 6B, 19F, and 23F accounted for 87% of all drug-resistant isolates.

Tennessee

During October 1989–September 1993, a pediatric hospital in Memphis identified 10 children (nine of whom were aged <2 years) with community-acquired invasive pneumococcal infections resistant to both PCN and extended spectrum cephalosporins; six had meningitis, and four had other invasive pneumococcal infections. Onset in six cases occurred since January 1992.

As a result of the detection of DRSP, from May 1993 through September 1993, nasopharyngeal swab cultures were obtained from 361 children (aged ≤6 years) with otitis media enrolled at 17 sites in Memphis, including public health clinics, emergency departments, and private practice settings. PCN resistance was detected in 32 (29%) of 110 pneumococcal isolates; of the 32 PCN-resistant isolates, six (19%) were highly resistant to PCN, eight (25%) were highly resistant to cefotaxime, and eight (25%) were resistant to ERY and TMP/SMZ. Six serotypes of PCN-resistant *S. pneumoniae* were identified; serotypes 6B, 19A, 19F, and 23F accounted for 79% of all PCN-resistant isolates.

Reported by: S Block, MD, J Hedrick, MD, Kentucky Pediatric Research; P Wright, R Finger, MD, State Epidemiologist, Kentucky Dept for Health Svcs. R Leggiadro, MD, LeBonheur Children's Medical Center, Dept of Pediatrics, M Appleton, MD, Dept of Internal Medicine, Univ of Tennessee, Memphis; S Kahn, MD, Memphis-Shelby County Health Dept; R Hutcheson, MD, State Epidemiologist, Tennessee Dept of Health. Child and Adult Immunization Br, National Immunization Program; Nosocomial Pathogens Laboratory Br and Special Studies Activity, Hospital Infections Program; Childhood and Respiratory Diseases Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: The emergence of community-acquired DRSP underscores that antimicrobial resistance is a potentially widespread problem affecting persons of different age groups within the community. While DRSP was reported with increasing frequency in Europe during the 1980s (*4*), it was uncommon in the United States through 1987 (*6*). From 1987 to 1992, however, the proportion of *S. pneumoniae* strains highly resistant to PCN increased from 0.02% to 1.3% (*7*).

Although infection with DRSP most commonly occurs in young children, sporadic cases of disease and clusters of DRSP infection have been reported in adults (*4,8*). In addition, transmission of DRSP may be facilitated in institutional settings (e.g., child day care centers and hospitals) in which antimicrobial drug usage and persons in

Streptococcus pneumoniae — *Continued*

close and prolonged contact frequently coexist (*4*). The impact of DRSP with intermediate-level PCN resistance on clinical course and outcome is unclear. High-dose PCN therapy may be adequate to treat bacteremia and pneumonia caused by DRSP with intermediate-level PCN resistance (*4,9*) but not for meningitis.

The findings of the investigations described in this report indicated that a high proportion of pneumococci isolated from children in a rural community and an urban area were resistant to PCN and to other drugs usually reserved for intravenous treatment of meningitis and other serious invasive diseases. Although carriage of DRSP does not result in disease in most persons, increasing carriage rates of DRSP in a community most likely correlates with an increasing proportion of pneumococcal disease resulting from resistant strains. The detection of multiple serotypes of DRSP in both communities in this report suggests that the problem is endemic in these areas.

At least four strategies may play a role in preventing morbidity and mortality associated with infection with DRSP. First, CDC is working with the Association of State and Territorial Public Health Laboratory Directors and the Council of State and Territorial Epidemiologists to develop strategies for more comprehensive surveillance for DRSP. This includes the screening of invasive pneumococcal isolates for resistance to PCN and other drugs that are likely to be used in treating cases (*5*).* Second, the optimal management strategies must be determined for infections with DRSP. In areas with high rates of pneumococcal resistance to extended spectrum cephalosporins, empiric therapy with vancomycin in addition to an extended spectrum cephalosporin should be considered for cases of meningitis potentially caused by *S. pneumoniae* until the results of culture and susceptibility testing are available. Third, because infection with DRSP is probably facilitated by increasing exposure to antimicrobial agents (*4*), strategies for rational antimicrobial use should be promoted. The emergence of DRSP indicates the need to reassess the efficacy of prophylactic antimicrobial drug regimens for otitis media and to develop new antimicrobial drugs for treatment of drug-resistant infection. Fourth, the Advisory Committee on Immunization Practices recommends that persons aged ≥2 years who are at increased risk for serious pneumococcal infection and all persons aged ≥65 years should receive 23-valent pneumococcal capsular polysaccharide vaccine (*1*). Although children aged <2 years are at increased risk for serious drug-resistant pneumococcal disease, pneumococcal vaccines are not immunogenic in this population; pneumococcal protein-conjugate vaccines are being evaluated for use in this age group.

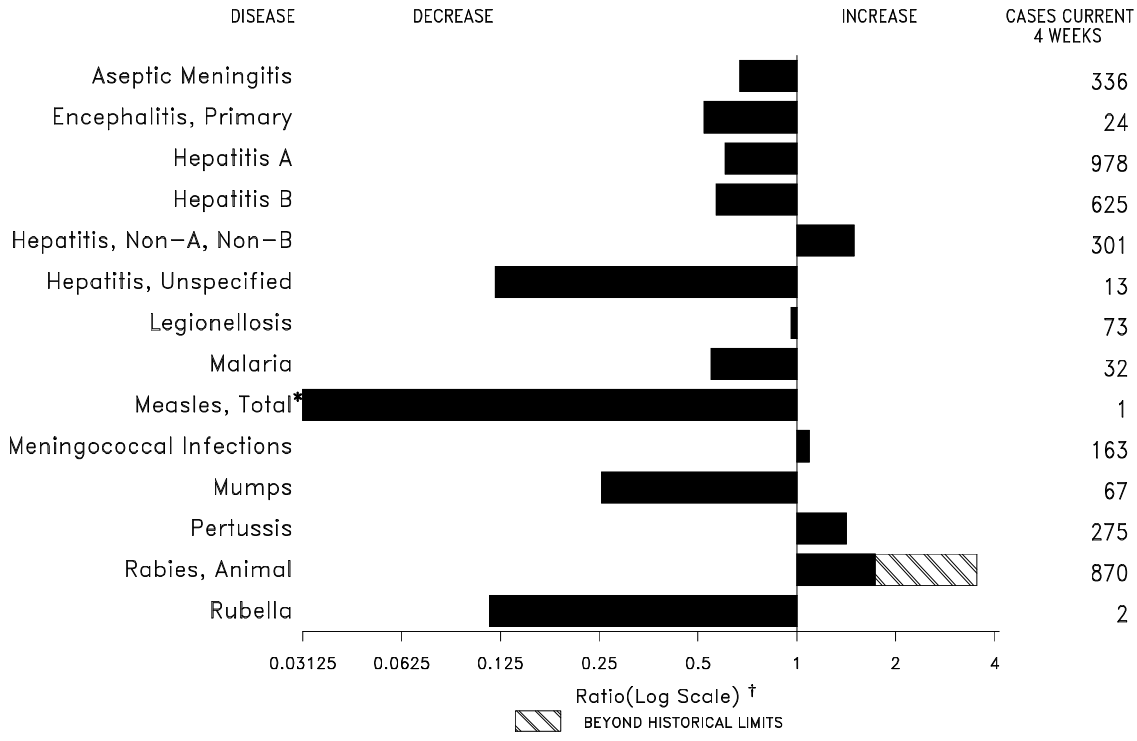
References

1. ACIP. Update on adult immunization: recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 1991;40(no. RR-12):42–4.
2. Bluestone CD, ed. Pediatric otolaryngology. 2nd ed. Philadelphia: WB Saunders, 1990.
3. Schappert SM. Office visits for otitis media: United States, 1975–90. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1992. (Advance data no. 214).
4. Klugman KP. Pneumococcal resistance to antibiotics. Clin Micro Rev 1990;3:171–96.
5. National Committee for Clinical Laboratory Standards. Methods for dilution antimicrobial susceptibility tests for bacteria that grow aerobically—third edition; approved standard. Villanova, Pennsylvania: National Committee for Clinical Laboratory Standards, 1993. (NCCLS document M7-A3; vol 12, no. 25).

(Continued on page 31)

*Invasive pneumococcal isolates should be screened for PCN resistance using a 1 μg oxacillin disk (*10*) and MICs determined by dilution methods for isolates with oxacillin zone sizes ≤19 mm (*5*).

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending January 15, 1994, with historical data — United States



*The large apparent decrease in reported cases of measles(total) reflects dramatic fluctuations in the historical baseline. (Ratio (log scale) for week two is 0.00365).

† 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 thehatched 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 January 15, 1994 (2nd Week)

	Cum. 1994		Cum. 1994
AIDS*	-	Measles: imported	-
Anthrax	-	indigenous	-
Botulism: Foodborne	-	Plague	-
Infant	-	Poliomyelitis, Paralytic§	-
Other	1	Psittacosis	2
Brucellosis	2	Rabies, human	-
Cholera	-	Syphilis, primary & secondary	515
Congenital rubella syndrome	-	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	-
Encephalitis, post-infectious	1	Toxic shock syndrome	6
Gonorrhea	10,368	Trichinosis	-
Haemophilus influenzae (invasive disease)†	14	Tuberculosis	514
Hansen Disease	7	Tularemia	-
Leptospirosis	2	Typhoid fever	7
Lyme Disease	32	Typhus fever, tickborne (RMSF)	3

*Updated monthly; last update December 31, 1993.
†Of 12 cases of known age, 4 (33%) were reported among children less than 5 years of age.
§Two (2) cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending January 15, 1994, and January 16, 1993 (2nd Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	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	-	112	5	1	10,368	13,642	421	232	135	9	33	32
NEW ENGLAND	-	13	2	-	307	234	13	12	7	1	5	17
Maine	-	1	-	-	-	3	-	-	-	-	-	-
N.H.	-	-	-	-	-	2	-	-	-	-	-	-
Vt.	-	1	-	-	-	4	-	-	-	-	-	-
Mass.	-	3	1	-	127	210	7	10	2	1	4	14
R.I.	-	8	1	-	19	15	6	2	5	-	1	3
Conn.	-	-	-	-	161	-	-	-	-	-	-	-
MID. ATLANTIC	-	4	-	-	-	1,570	7	6	2	-	-	3
Upstate N.Y.	-	2	-	-	-	-	3	1	1	-	-	3
N.Y. City	-	-	-	-	-	925	-	-	-	-	-	-
N.J.	-	-	-	-	-	282	-	-	-	-	-	-
Pa.	-	2	-	-	-	363	4	5	1	-	-	-
E.N. CENTRAL	-	25	2	1	2,888	2,226	30	34	8	-	10	-
Ohio	-	8	-	-	1,330	976	12	7	-	-	7	-
Ind.	-	8	-	-	319	213	14	15	-	-	1	-
Ill.	-	-	-	-	806	417	-	-	-	-	-	-
Mich.	-	9	2	1	397	343	4	12	8	-	2	-
Wis.	-	-	-	-	36	277	-	-	-	-	-	-
W.N. CENTRAL	-	7	-	-	441	648	10	4	-	-	9	-
Minn.	-	-	-	-	112	79	-	-	-	-	-	-
Iowa	-	6	-	-	34	116	1	2	-	-	3	-
Mo.	-	-	-	-	137	245	1	2	-	-	-	-
N. Dak.	-	-	-	-	-	5	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	12	-	-	-	-	-	-
Nebr.	-	-	-	-	-	45	8	-	-	-	6	-
Kans.	-	1	-	-	158	146	-	-	-	-	-	-
S. ATLANTIC	-	15	-	-	3,495	4,078	26	71	27	-	2	10
Del.	-	-	-	-	51	61	-	-	2	-	-	9
Md.	-	-	-	-	225	456	4	1	-	-	-	1
D.C.	-	2	-	-	179	76	3	1	-	-	-	-
Va.	-	-	-	-	698	323	-	-	-	-	-	-
W. Va.	-	-	-	-	9	26	-	-	-	-	-	-
N.C.	-	5	-	-	1,165	1,040	1	20	6	-	1	-
S.C.	-	-	-	-	500	507	3	-	-	-	1	-
Ga.	-	-	-	-	-	539	13	46	18	-	-	-
Fla.	-	8	-	-	668	1,050	2	3	1	-	-	-
E.S. CENTRAL	-	7	-	-	1,310	1,518	10	33	61	-	2	-
Ky.	-	1	-	-	96	167	2	1	1	-	-	-
Tenn.	-	1	-	-	421	299	3	26	60	-	2	-
Ala.	-	4	-	-	384	710	5	6	-	-	-	-
Miss.	-	1	-	-	409	342	-	-	-	-	-	-
W.S. CENTRAL	-	2	-	-	931	1,077	4	14	5	-	1	-
Ark.	-	2	-	-	220	264	-	-	-	-	-	-
La.	-	-	-	-	711	358	-	-	-	-	-	-
Okla.	-	-	-	-	-	137	4	14	5	-	1	-
Tex.	-	-	-	-	-	318	-	-	-	-	-	-
MOUNTAIN	-	1	-	-	220	455	62	10	12	2	3	-
Mont.	-	-	-	-	10	10	-	-	-	-	1	-
Idaho	-	-	-	-	1	5	1	-	5	-	-	-
Wyo.	-	-	-	-	1	2	-	-	2	-	-	-
Colo.	-	1	-	-	79	200	4	-	-	1	-	-
N. Mex.	-	-	-	-	38	35	40	7	1	1	1	-
Ariz.	-	-	-	-	17	75	14	1	-	-	-	-
Utah	-	-	-	-	8	-	3	1	2	-	-	-
Nev.	-	-	-	-	66	128	-	1	2	-	1	-
PACIFIC	-	38	1	-	776	1,836	259	48	13	6	1	2
Wash.	-	-	-	-	139	200	19	3	1	-	-	-
Oreg.	-	-	-	-	22	58	-	-	-	-	-	-
Calif.	-	31	1	-	562	1,548	230	40	9	6	1	2
Alaska	-	-	-	-	20	20	5	-	-	-	-	-
Hawaii	-	7	-	-	33	10	5	5	3	-	-	-
Guam	-	-	-	-	-	3	-	-	-	-	-	-
P.R.	-	-	-	-	23	11	-	-	-	-	-	-
V.I.	-	-	-	-	2	6	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	1	1	1	-	-	-	-	-
C.N.M.I.	-	-	-	-	4	4	-	-	-	-	-	-

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

*Updated monthly; last update December 31, 1993.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending January 15, 1994, and January 16, 1993 (2nd 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	9	-	-	-	-	2	93	3	15	14	70	90	-	1	5
NEW ENGLAND	3	-	-	-	-	1	11	1	1	2	4	21	-	-	-
Maine	-	U	-	U	-	-	-	U	-	U	-	2	U	-	-
N.H.	-	-	-	-	-	-	1	1	1	-	2	13	-	-	-
Vt.	-	-	-	-	-	-	-	-	-	2	2	4	-	-	-
Mass.	-	-	-	-	-	-	6	-	-	-	-	1	-	-	-
R.I.	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Conn.	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-
MID. ATLANTIC	-	-	-	-	-	-	3	-	-	-	-	20	-	1	1
Upstate N.Y.	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
N.Y. City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N.J.	-	-	-	-	-	-	-	-	-	-	-	12	-	-	1
Pa.	-	-	-	-	-	-	3	-	-	-	-	7	-	-	-
E.N. CENTRAL	-	-	-	-	-	-	23	-	4	6	17	30	-	-	-
Ohio	-	-	-	-	-	-	2	-	-	6	16	7	-	-	-
Ind.	-	-	-	-	-	-	11	-	-	-	-	1	-	-	-
Ill.	-	-	-	-	-	-	6	-	2	-	-	6	-	-	-
Mich.	-	U	-	U	-	-	4	U	2	U	1	1	U	-	-
Wis.	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-
W.N. CENTRAL	1	-	-	-	-	-	4	-	-	-	-	6	-	-	1
Minn.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	-	-	-	-	-	-	3	-	-	-	-	4	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
Kans.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S. ATLANTIC	1	-	-	-	-	-	12	1	2	-	19	-	-	-	1
Del.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Md.	-	U	-	U	-	-	-	U	-	U	2	-	U	-	-
D.C.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Va.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W. Va.	-	U	-	U	-	-	-	U	-	U	1	-	U	-	-
N.C.	1	-	-	-	-	-	4	1	1	-	12	-	-	-	-
S.C.	-	-	-	-	-	-	-	-	1	-	4	-	-	-	-
Ga.	-	U	-	U	-	-	2	U	-	U	-	-	U	-	-
Fla.	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
E.S. CENTRAL	-	-	-	-	-	-	14	-	-	-	1	2	-	-	-
Ky.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
Tenn.	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-
Ala.	-	-	-	-	-	-	9	-	-	-	1	1	-	-	-
Miss.	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
W.S. CENTRAL	-	-	-	-	-	-	1	-	-	-	7	2	-	-	-
Ark.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	1	-	-	-	7	2	-	-	-
Tex.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOUNTAIN	-	-	-	-	-	-	6	-	-	1	1	2	-	-	-
Mont.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Colo.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
N. Mex.	-	-	-	-	-	-	1	N	N	1	1	-	-	-	-
Ariz.	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	4	-	-	-	-	1	19	1	8	5	21	7	-	-	2
Wash.	-	-	-	-	-	-	1	-	1	2	3	-	-	-	-
Oreg.	-	-	-	-	-	-	-	N	N	-	-	-	-	-	-
Calif.	3	-	-	-	-	1	18	-	6	2	17	5	-	-	1
Alaska	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
Hawaii	1	-	-	-	-	-	-	-	-	1	1	2	-	-	1
Guam	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
P.R.	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	1	6	9	-	-	-	-	-	-	-	-	-	-	-	-

*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 January 15, 1994, and January 16, 1993 (2nd 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	515	923	6	514	415	-	7	3	95
NEW ENGLAND	9	27	-	4	6	-	2	-	46
Maine	-	-	-	-	2	-	-	-	-
N.H.	-	1	-	-	-	-	-	-	3
Vt.	-	-	-	-	-	-	-	-	2
Mass.	3	16	-	-	1	-	2	-	24
R.I.	-	-	-	-	-	-	-	-	-
Conn.	6	10	-	4	3	-	-	-	17
MID. ATLANTIC	26	84	1	19	31	-	-	-	10
Upstate N.Y.	-	-	1	-	2	-	-	-	-
N.Y. City	26	84	-	19	20	-	-	-	-
N.J.	-	-	-	-	-	-	-	-	3
Pa.	-	-	-	-	9	-	-	-	7
E.N. CENTRAL	56	79	-	27	37	-	-	-	1
Ohio	9	40	-	1	6	-	-	-	-
Ind.	11	2	-	3	2	-	-	-	-
Ill.	30	6	-	23	29	-	-	-	-
Mich.	5	12	-	-	-	-	-	-	-
Wis.	1	19	-	-	-	-	-	-	1
W.N. CENTRAL	20	70	4	1	4	-	-	-	2
Minn.	3	1	-	-	-	-	-	-	-
Iowa	2	4	4	-	-	-	-	-	2
Mo.	15	64	-	-	4	-	-	-	-
N. Dak.	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-
Nebr.	-	1	-	-	-	-	-	-	-
Kans.	-	-	-	1	-	-	-	-	-
S. ATLANTIC	148	246	-	43	26	-	-	2	23
Del.	-	6	-	-	1	-	-	-	-
Md.	2	15	-	9	2	-	-	-	7
D.C.	3	-	-	2	3	-	-	-	-
Va.	13	21	-	-	-	-	-	-	7
W. Va.	-	-	-	-	2	-	-	-	-
N.C.	75	67	-	-	-	-	-	2	1
S.C.	20	42	-	10	18	-	-	-	2
Ga.	15	54	-	22	-	-	-	-	6
Fla.	20	41	-	-	-	-	-	-	-
E.S. CENTRAL	161	161	-	16	20	-	-	1	3
Ky.	3	20	-	-	4	-	-	-	-
Tenn.	46	31	-	-	-	-	-	-	-
Ala.	32	58	-	16	11	-	-	-	3
Miss.	80	52	-	-	5	-	-	1	-
W.S. CENTRAL	92	142	-	20	-	-	-	-	3
Ark.	18	28	-	20	-	-	-	-	1
La.	74	81	-	-	-	-	-	-	-
Okla.	-	27	-	-	-	-	-	-	2
Tex.	-	6	-	-	-	-	-	-	-
MOUNTAIN	3	3	-	20	7	-	1	-	2
Mont.	-	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	-	-	-
Wyo.	-	-	-	1	-	-	-	-	-
Colo.	-	1	-	-	-	-	-	-	-
N. Mex.	-	-	-	-	-	-	-	-	-
Ariz.	2	2	-	17	7	-	-	-	2
Utah	1	-	-	-	-	-	1	-	-
Nev.	-	-	-	2	-	-	-	-	-
PACIFIC	-	111	1	364	284	-	4	-	5
Wash.	-	3	-	4	6	-	-	-	-
Oreg.	-	1	-	2	-	-	-	-	-
Calif.	-	106	1	355	271	-	4	-	1
Alaska	-	-	-	-	-	-	-	-	4
Hawaii	-	1	-	3	7	-	-	-	-
Guam	-	-	-	-	1	-	-	-	-
P.R.	13	29	-	-	-	-	-	-	-
V.I.	1	3	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	6	-	-	-	-	-

U: Unavailable

NEW ENGLAND	735	559	106	54	7	9	71
Boston, Mass.	173	106	43	19	-	5	21
Bridgeport, Conn.	61	46	11	4	-	-	3
Cambridge, Mass.	30	26	3	1	-	-	2
Fall River, Mass.	25	19	2	2	1	1	1
Hartford, Conn.	61	40	11	6	3	1	2
Lowell, Mass.	34	28	4	2	-	-	5
Lynn, Mass.	28	25	2	-	1	-	2
New Bedford, Mass.	28	24	2	1	1	-	1
New Haven, Conn.	52	41	5	5	-	1	4
Providence, R.I.	57	48	4	5	-	-	5
Somerville, Mass.	7	7	-	-	-	-	-
Springfield, Mass.	57	45	9	2	-	1	8
Waterbury, Conn.	46	43	2	1	-	-	5
Worcester, Mass.	76	61	8	6	1	-	12
MID. ATLANTIC	989	690	187	63	27	22	69
Albany, N.Y.	49	37	7	3	1	1	1
Allentown, Pa.	23	18	3	2	-	-	1
Buffalo, N.Y.	119	74	35	4	3	3	6
Camden, N.J.	U	U	U	U	U	U	U
Elizabeth, N.J.	28	17	2	7	2	-	3
Erie, Pa.§	65	55	8	-	1	1	2
Jersey City, N.J.	55	35	7	7	-	6	-
New York City, N.Y.	U	U	U	U	U	U	U
Newark, N.J.	U	U	U	U	U	U	U
Paterson, N.J.	U	U	U	U	U	U	U
Philadelphia, Pa.	198	124	42	14	16	2	13
Pittsburgh, Pa.§	86	64	12	5	-	5	6
Reading, Pa.	10	7	2	-	1	-	1
Rochester, N.Y.	149	113	23	9	2	2	18
Schenectady, N.Y.	30	23	6	1	-	-	1
Scranton, Pa.§	29	23	4	2	-	-	2
Syracuse, N.Y.	112	79	26	5	1	1	15
Trenton, N.J.	36	21	10	4	-	1	-
Utica, N.Y.	U	U	U	U	U	U	U
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,381	1,639	422	175	80	65	235
Akron, Ohio	82	67	7	6	1	1	3
Canton, Ohio	72	51	17	2	-	2	8
Chicago, Ill.	192	87	35	38	24	8	27
Cincinnati, Ohio	U	U	U	U	U	U	U
Cleveland, Ohio	205	146	36	17	2	4	12
Columbus, Ohio	249	175	41	17	7	9	25
Dayton, Ohio	173	126	27	15	4	1	24
Detroit, Mich.	265	174	53	14	14	10	9
Evansville, Ind.	77	55	14	6	1	1	2
Fort Wayne, Ind.	94	60	16	8	5	5	9
Gary, Ind.	11	6	3	2	-	-	1
Grand Rapids, Mich.	53	35	13	2	-	3	11
Indianapolis, Ind.	228	146	47	20	8	7	26
Madison, Wis.	43	36	4	3	-	-	3
Milwaukee, Wis.	163	122	30	7	3	1	22
Peoria, Ill.	56	34	16	5	1	-	8
Rockford, Ill.	68	46	14	5	1	2	11
South Bend, Ind.	79	68	9	1	1	-	10
Toledo, Ohio	155	116	23	5	4	7	18
Youngstown, Ohio	116	89	17	2	4	4	6
W.N. CENTRAL	875	676	122	52	13	12	62
Des Moines, Iowa	107	83	19	3	2	-	9
Duluth, Minn.	34	25	6	2	1	-	2
Kansas City, Kans.	26	24	2	-	-	-	2
Kansas City, Mo.	123	101	14	5	2	1	8
Lincoln, Nebr.	26	18	5	2	-	1	4
Minneapolis, Minn.	257	195	34	22	3	3	27
Omaha, Nebr.	104	76	18	5	2	3	6
St. Louis, Mo.	146	114	17	9	2	4	-
St. Paul, Minn.	U	U	U	U	U	U	U
Wichita, Kans.	52	40	7	4	1	-	4

S. ATLANTIC	1,504	1,010	280	152	37	23	120
Atlanta, Ga.	221	153	46	20	1	1	7
Baltimore, Md.	394	245	81	49	16	3	37
Charlotte, N.C.	97	58	17	15	3	3	9
Jacksonville, Fla.	182	125	36	13	6	2	15
Miami, Fla.	U	U	U	U	U	U	U
Norfolk, Va.	92	53	21	6	3	8	5
Richmond, Va.	109	74	20	12	2	1	7
Savannah, Ga.	45	24	14	4	2	1	2
St. Petersburg, Fla.	90	79	6	4	-	1	8
Tampa, Fla.	241	171	35	28	4	3	30
Washington, D.C.	U	U	U	U	U	U	U
Wilmington, Del.	33	28	4	1	-	-	-
E.S. CENTRAL	830	575	144	62	33	16	69
Birmingham, Ala.	203	144	26	17	9	7	8
Chattanooga, Tenn.	47	38	7	1	1	-	-
Knoxville, Tenn.	U	U	U	U	U	U	U
Lexington, Ky.	U	U	U	U	U	U	U
Memphis, Tenn.	189	127	38	13	10	1	17
Mobile, Ala.	121	81	21	10	8	1	6
Montgomery, Ala.	70	53	11	4	1	1	12
Nashville, Tenn.	200	132	41	17	4	6	26
W.S. CENTRAL	1,911	1,280	364	163	58	43	145
Austin, Tex.	98	72	11	11	3	1	6
Baton Rouge, La.	U	U	U	U	U	U	U
Corpus Christi, Tex.	80	55	14	5	2	4	7
Dallas, Tex.	276	183	54	27	6	6	10
El Paso, Tex.	90	67	13	4	4	2	8
Ft. Worth, Tex.	147	102	22	13	6	4	14
Houston, Tex.	434	267	99	39	18	11	47
Little Rock, Ark.	98	69	20	6	1	2	9
New Orleans, La.	198	113	41	22	10	9	-
San Antonio, Tex.	303	206	62	25	7	3	28
Shreveport, La.	35	28	4	2	1	-	3
Tulsa, Okla.	152	118	24	9	-	1	13
MOUNT							

Streptococcus pneumoniae — *Continued*

6. Spika JS, Facklam RR, Plikaytis BD, Oxtoby MJ. Antimicrobial resistance of *Streptococcus pneumoniae* in the United States, 1979–1987. J Infect Dis 1991;163:1273–8.
7. Butler JC, Breiman RF, Facklam RR, Pneumococcal Working Group. Emergence of drug-resistant pneumococci in the United States [Abstract no. 1182]. In: Program and abstracts of the 33rd Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington, DC: American Society for Microbiology, 1993:336.
8. Applebaum PC. Antimicrobial resistance in *Streptococcus pneumoniae*: an overview. Clin Infect Dis 1992;15:77–83.
9. Chesney PJ. The escalating problem of antimicrobial resistance in *Streptococcus pneumoniae*. Am J Dis Child 1992;146:912–6.
10. National Committee for Clinical Laboratory Standards. Performance standards for antimicrobial disk susceptibility tests—fifth edition; approved standard. Villanova, Pennsylvania: National Committee for Clinical Laboratory Standards, 1993. (NCCLS document M2-A5; vol 13, no. 24).

Current Trends

Characteristics of Women Receiving Family Planning Services at Title X Clinics — United States, 1991

In 1970, enactment of federal legislation created a national family planning program funded under Title X of the Public Health Services Act*. Since the enactment of this legislation, clinics funded entirely or partially by Title X have been the primary source of subsidized family planning services in the United States (*1*). Although information characterizing women who receive family planning services at Title X clinics can assist in program planning and operations, such information has not been compiled at the national level since 1981 (*2*). In 1992, state family planning administrators and CDC, with cooperation from Title X grantees, initiated the Family Planning Services Surveillance (FPSS) project to characterize women receiving family planning services from Title X clinics in 1991. This report presents the findings of FPSS.

Family planning data were collected from all 75 Title X grantees in the 50 states† and the District of Columbia. Each grantee was mailed a letter that requested information about selected variables for compilation at the national level. All 75 grantees responded. Because no uniform reporting system for family planning services exists nationally for Title X clinics, data collection was individualized by each grantee; however, grantees were given a set of preferred definitions for the FPSS project and asked to adhere as closely as possible to those definitions. Because not all grantees could separate male and female family planning patients for some of the characteristics reported, a small percentage (<1%) of male patients are included in this report. For all characteristics, data from grantees who contributed information in the specific categories requested were used to redistribute the data reported in categories other than those requested. Missing data were not imputed.

In 1991, 4,218,412 patients were reported as having received family planning services: more than one third (34.5%) were aged 20–24 years and more than one fourth (27.3%), aged 15–19 years (Table 1). Most (71.8%) family planning patients were white;

*Family Planning Services and Population Research Act of 1970 (Public Law no. 91-572).
†In 39 states, the state health department is at least one of the grantees.

Family Planning Services — Continued

14.9% of patients were Hispanic[§]. More than half (58.5%) of family planning patients had had no live births; 7.5% had had three or more live births. Live births are used by clinicians as a surrogate for pregnancy history in advising patients regarding choices for contraceptive method and other gynecologic services.

The method of contraception most frequently chosen by family planning patients was oral contraceptives (69.4%), followed by condoms (6.2%) and foam and condoms (5.1%). A total of 11.3% of patients were classified under the category "None," which comprised women who were pregnant, receiving infertility services, practicing absti-

[§]Fifty-nine grantees, representing 71.7% of all family planning patients reported, provided data on Hispanic ethnicity.

TABLE 1. Characteristics of patients* who received family planning services at Title X clinics — United States, 1991

Characteristic	% Distribution	Characteristic	% Distribution
Age group (yrs)†		**No. live births¶**	
<15	1.5	0	58.5
15-19	27.3	1	21.5
(15	2.4)	2	12.5
(16	4.1)	≥3	7.5
(17	*5.8)*	**Total**	**100.0**
(18	7.1)		
(19	7.9)	**Poverty level****	
20–24	34.5	≤100%	64.6
25–29	20.1	101%–150%	18.9
30–34	10.4	>150%	13.9
≥35	6.1	Unknown	2.6
Unknown	0.1	**Total**	**100.0**
Total	**100.0**		
		Contraceptive method††	
Race§		Pill	69.4
White	71.8	Condom	6.2
Black	23.0	Foam and condom	5.1
Other	3.5	Diaphragm	1.4
Unknown	1.7	Intrauterine device	0.8
Total	**100.0**	Sterilization	2.7
		Other	2.7
		None	11.3
		Unknown	0.4
		Total	**100.0**

*Includes <1% male patients.
†n=4,207,107 (75 grantees).
§n=4,111,769 (71 grantees). The category "Other" includes all other races.
¶n=2,168,828 (45 grantees). Excludes category "Unknown"; 10 grantees reported living children rather than live birth.
**n=4,375,620 (75 grantees). The Bureau of Common Reporting Requirements (BCRR) mandates that Title X grantees report poverty status of family planning "users" (β). Because the definition of family planning user is broader than the definition of patient, poverty status is based on 4.4 million users rather than the 4.2 million total patients reported. Poverty statistics are based on a definition originated by the Social Security Administration in 1964 and subsequently modified by federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.
††n=3,875,415 (66 grantees). The category "Other" includes patients using unlisted methods of contraception (e.g., Norplant®).

Family Planning Services — Continued

nence, or receiving counseling only. The category "Other" included patients using unlisted methods of contraception (e.g., Norplant®¶).

Almost two thirds (64.6%) of family planning users resided in households classified at or below the federal poverty level**; 18.9% of users were classified from 101% to 150% of the poverty level.

Reported by: State family planning administrators. Statistics and Computer Resources Br, Div of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: The FPSS project characterizes women nationwide receiving family planning services at Title X clinics. The findings in this report indicate that patients at these clinics are predominantly young, nulliparous, and poor and use oral contraceptives more than any other method of contraception. Although funding for the Title X national family planning program decreased in constant dollars by 43% during 1981–1991 and the total number of clinics participating in the program decreased by 19% (*1*), Title X grantees continue to deliver services to millions of women.

Differences in the percentage of family planning patients served by racial/ethnic group may be influenced by social and cultural phenomena and may be important in assessing service-delivery practices. For example, black women of reproductive age (aged 15–44 years) are disproportionately represented among family planning patients at Title X clinics; although black women constitute 13.4% of all women of reproductive age in the United States, they represent 23.0% of patients at Title X clinics (*4*).

The findings in this report are particularly subject to limitations related to the quality of the data. For example, although most grantees use computerized record systems, no uniform definitions, data-collection instruments, or categorization of information exist for reporting. Despite these limitations, findings from the FPSS project and related efforts by other organizations (*1,5,6*) will assist in characterizing the role of publicly funded family planning clinics in relation to the current and future health-care delivery systems. In addition, improvements in the quality and timeliness of information about family planning services will assist in formulating and evaluating national strategies and, at the local level, program planning and operations by grantees.

References

1. Ku L. Publicly supported family planning in the United States: financing of family planning services. Washington, DC: The Urban Institute and Child Trends, Inc., 1993.
2. The Alan Guttmacher Institute. Current functioning and future priorities in family planning services delivery. New York: The Alan Guttmacher Institute, 1983.

¶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.

**The Bureau of Common Reporting Requirements (BCRR) mandates that Title X grantees report poverty status of family planning "users" (*3*). Because the definition of family planning user is broader than the definition of patient, poverty status is based on 4.4 million users rather than the 4.2 million total patients reported. Poverty statistics are based on a definition originated by the Social Security Administration in 1964 and subsequently modified by federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

Family Planning Services — Continued

3. Bureau of Community Health Services. Program guidelines for project grants for family planning services. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, Bureau of Community Health Services, 1990.
4. NCHS. Health, United States, 1992. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1993; DHHS publication no. (PHS)93–1232.
5. Burt MR. Legislative and policy history: implications for the 1990s. Washington, DC: The Urban Institute and Child Trends, Inc., 1993.
6. The Alan Guttmacher Institute. Title X family planning clinic network. New York: The Alan Guttmacher Institute, 1992.

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 783-3238.

The data in the weekly *MMWR* 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. Inquiries about the *MMWR* Series, including material to be considered for publication, should be directed to: Editor, *MMWR* Series, Mailstop C-08, Centers for Disease Control and Prevention, Atlanta, GA 30333; telephone (404) 332-4555.

All material in the *MMWR* Series is in the public domain and may be used and reprinted without special permission; citation as to source, however, is appreciated.

Director, Centers for Disease Control and Prevention
David Satcher, M.D., Ph.D.
Deputy Director, Centers for Disease Control and Prevention
Walter R. Dowdle, Ph.D.
Acting Director, Epidemiology Program Office
Barbara R. Holloway, M.P.H.

Editor, *MMWR* Series
Richard A. Goodman, M.D., M.P.H.
Managing Editor, *MMWR* (weekly)
Karen L. Foster, M.A.
Writers-Editors, *MMWR* (weekly)
David C. Johnson
Patricia A. McGee
Darlene D. Rumph-Person
Caran R. Wilbanks

☆**U.S. Government Printing Office: 1994-733-131/83053 Region IV**