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Current Trends

Risky Driving Behaviors Among Teenagers — Gwinnett County, Georgia, 1993

In the United States in 1991, approximately 6000 persons aged 16–20 years died from motor-vehicle crashes (MVCs)—twice as many as from any other cause of death among persons in this age group (*1*). During 1991, approximately 3000 crashes in Gwinnett County, Georgia (1990 population: 352,910) (26% of all crashes in Gwinnett County), involved at least one teenage driver (Gwinnett County Department of Transportation, unpublished data, 1992). Risky driving behaviors are among the risk factors for teenage MVC death and injury (*2*). To better characterize these risk factors, the Georgia Department of Human Resources, the Gwinnett County Board of Health, the community-based Gwinnett County Teen Traffic Tragedies Task Force, and CDC conducted a case-control study of MVCs among teenage drivers in Gwinnett County during 1993. This report summarizes the results of that study.

To be eligible for the study, a person must have been aged 16–19 years, a licensed driver, and enrolled in a Gwinnett County public high school. Case-students (n=64) had been involved as drivers in injury-producing MVCs during January–March 1993 according to Police Accident Reports filed with the Gwinnett County Department of Transportation. Control-students (n=227) were randomly selected from enrollment files of Gwinnett County public high schools; these students had never been involved in a police-reported crash, were aged 16–19 years, and were licensed drivers. Participants completed a written questionnaire in which they specified how often they had engaged in 11 potentially risky driving behaviors during the 3 months preceding the survey (Table 1). Questions were adapted from a survey on risky driving behavior (*3*). Possible responses were "never," "one to two times," "three to five times," and "six or more times." The chi-square test was used to assist in assessing associations between behaviors and risk for MVCs. Three behaviors that appeared to be associated with MVCs and two additional behaviors thought to be potentially life-threatening were analyzed further by stratifying by sex.

For seven of the 11 risky behaviors, at least 50% of both cases and controls reported engaging in the behaviors at least once during the 3 months preceding the survey. For example, at least once during the 3 months preceding the survey, 63% of

TABLE 1. Frequency* of self-reported risky driving behaviors among persons aged 16–19 years, by case-student† and control-student§ status and behavior — Gwinnett County, Georgia, 1993

	Never				1–2 Times				3–5 Times				≥6 Times			
	Case		Control		Case		Control		Case		Control		Case		Control	
Behavior	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Drive 10 miles per hour over the speed limit	4	(6)	3	(1)	5	(8)	26	(12)	11	(17)	40	(18)	44	(69)	155	(69)
Drive 20 miles per hour over the speed limit¶	11	(17)	44	(20)	19	(30)	67	(30)	6	(9)	48	(21)	28	(44)	65	(29)
Enter an intersection when the light was about to turn red	7	(11)	18	(8)	16	(25)	76	(34)	12	(19)	57	(26)	29	(45)	73	(33)
Tailgate another car to get it to go faster or pull over in a slower lane	22	(34)	86	(38)	19	(30)	59	(26)	9	(14)	31	(14)	14	(22)	48	(21)
Pass a car in a no-passing zone¶	44	(69)	170	(76)	9	(14)	39	(17)	6	(9)	6	(3)	5	(8)	9	(4)
Pass two or three cars at a time on a two-lane road	49	(77)	182	(81)	7	(11)	28	(13)	6	(9)	9	(4)	2	(3)	5	(2)
Drive through a stop sign without coming to a full stop	24	(38)	69	(31)	17	(27)	67	(30)	8	(13)	26	(12)	15	(23)	62	(28)
Drive through a residential neighborhood or school zone at a speed higher than the posted speed limit	11	(17)	21	(9)	21	(33)	79	(35)	5	(8)	36	(16)	27	(42)	88	(39)
Take some risks while driving in traffic because it makes driving more fun¶	38	(59)	153	(68)	10	(16)	44	(20)	4	(6)	9	(4)	12	(19)	18	(8)
Speed through slower traffic by switching quickly back and forth between lanes	29	(45)	104	(46)	14	(22)	60	(27)	9	(14)	27	(12)	12	(19)	33	(15)
Race or drag race for the fun of it	44	(69)	167	(75)	11	(17)	36	(16)	5	(8)	8	(4)	4	(6)	13	(6)

*During the 3 months preceding the survey.
†Persons aged 16–19 years who were licensed drivers, enrolled in a Gwinnett County public school, and had been involved in an injury-producing, police-reported motor-vehicle crash during January–March 1993.
§Persons aged 16–19 years who were licensed drivers, enrolled in a Gwinnett County public school, and had never been involved in a police-reported crash.
¶$p<0.1$ (chi-square test for association).

Driving Behaviors — Continued

all respondents reported tailgating, 80% reported driving 20 miles per hour (mph) over the speed limit, and 91% reported entering an intersection when the light was about to turn red. Twenty-six percent of all students surveyed reported passing in a no-passing zone, and 21% reported passing two to three cars at once on a two-lane road.

When cases and controls were compared, three behaviors appeared to be associated with risk for MVCs: driving 20 mph over the speed limit (p=0.06), passing a car in a no-passing zone (p=0.06), and taking risks while driving in traffic because it makes driving more fun (p=0.07). For these behaviors, differences were greatest for those who reported engaging in the behaviors six or more times during the 3 months preceding the survey (Table 1). At this level, 28 (44%) cases and 65 (29%) controls reported driving 20 mph over the speed limit; five (8%) cases and nine (4%) controls reported passing a car in a no-passing zone; and 12 (19%) cases and 18 (8%) controls reported taking some risks while driving in traffic because it makes driving more fun.

Compared with male controls and all females, male cases were more likely to drive 20 mph over the speed limit (p=0.02), pass a car in a no-passing zone (p=0.05), take driving risks for fun (p=0.04), and pass two to three cars at once on a two-lane road (p=0.09) (Table 2).

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Editorial Note: Young drivers account disproportionately for MVCs worldwide (*4*), reflecting, in part, the combination of immaturity and lack of driving experience (*5*). Adolescent drivers are more likely than adult drivers to report speeding, running red lights, making illegal turns, not wearing safety belts, riding with an intoxicated driver, and driving after using drugs or alcohol (*6*).

In the Gwinnett County study, most students—regardless of whether they were cases or controls—reported engaging in risky driving behaviors. Parents should recognize that driving is a complex task that can take several years to master and can assist in reducing the risk for MVCs among adolescent drivers by 1) providing young drivers a longer period of supervised driving in low-risk settings (e.g., with supervision, during daylight, and in safe environments) in addition to traditional driver's education courses, 2) serving as role models by practicing good driving behaviors and always obeying traffic laws, and 3) requiring all family members to be properly restrained each time they ride in a motor vehicle.

The findings in this report are subject to at least five limitations. First, because respondents were students who were licensed drivers enrolled in public schools, the study did not include students in private schools, youth not enrolled in school, and drivers with learners' permits. Second, because the study assessed only MVCs that occurred during January–March 1993, the effects of seasonal trends could not be analyzed. Third, the study did not include MVCs that resulted only in property damage or were not reported to the police. Fourth, other potential risk factors (e.g., alcohol use) were not analyzed in this report, although they were included in the study. Finally, the analysis of findings in this case-control study was influenced by the high prevalences of risky behaviors among members of both the case and control groups.

TABLE 2. Frequency* of self-reported risky driving behaviors among persons aged 16–19 years, by case-student† and control-student§ status, sex, and behavior — Gwinnett County, Georgia, 1993

	Never				1–2 Times				3–5 Times				≥6 Times			
	Case		Control		Case		Control		Case		Control		Case		Control	
Sex/Behavior	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Male																
Drive 20 miles per hour over the speed limit¶	3	(9)	21	(16)	9	(27)	35	(27)	2	(6)	32	(25)	19	(58)	40	(31)
Pass a car in a no-passing zone¶	19	(58)	90	(70)	5	(15)	26	(20)	5	(15)	5	(4)	4	(12)	7	(6)
Pass two to three cars at a time on a two-lane road**	21	(64)	96	(75)	4	(12)	21	(16)	6	(18)	7	(6)	2	(6)	4	(3)
Take some risks while driving because it makes driving more fun¶	15	(46)	85	(66)	6	(18)	24	(19)	3	(9)	6	(5)	9	(27)	13	(10)
Race or drag race for the fun of it	19	(58)	83	(65)	6	(18)	28	(22)	4	(12)	5	(4)	4	(12)	12	(9)
Female																
Drive 20 miles per hour over the speed limit	8	(26)	23	(24)	10	(32)	31	(32)	4	(13)	17	(18)	9	(29)	25	(26)
Pass a car in a no-passing zone	25	(81)	80	(83)	4	(13)	13	(14)	1	(3)	1	(1)	1	(3)	2	(2)
Pass two to three cars at a time on a two-lane road	28	(90)	86	(90)	3	(10)	7	(7)	0	—	2	(2)	0	—	1	(1)
Take some risks while driving because it makes driving more fun	23	(74)	69	(72)	4	(13)	19	(20)	1	(3)	3	(3)	3	(10)	5	(5)

* During the 3 months preceding the survey.
† Persons aged 16–19 years who were licensed drivers, enrolled in a Gwinnett County public school, and had been involved in an injury-producing, police-reported motor-vehicle crash during January–March 1993.
§ Persons aged 16–19 years who were licensed drivers, enrolled in a Gwinnett County public school, and had never been involved in a police-reported crash.
¶ $p \leq 0.05$ (chi-square test for association).
** $p < 0.1$ (chi-square test for association).

Driving Behaviors — Continued

Graduated driver licensing is one strategy for promoting safe driving behaviors and reducing the incidence and severity of MVCs among young drivers. This method allows new drivers to accumulate driving experience in low-risk settings and gradually lifts restrictions until an unrestricted license is earned (*7*). In addition, because up to 24 months may be required to obtain an unrestricted license, drivers are older and more mature when they become fully licensed. Driving restrictions may include prohibiting unsupervised nighttime driving, requiring zero or near-zero blood alcohol concentration, requiring all occupants to be properly restrained, and limiting the number of passengers and the distances and types of roads traveled. The threshold for corrective action (e.g., a lengthened restriction period) may be lower for restricted drivers than for unrestricted drivers. Graduated licensing systems have been instituted in Australia, New Zealand, and Ontario, Canada. Although this system has not been implemented in the United States, the National Highway Traffic Safety Administration is providing funds to states to evaluate the impact of various elements of the graduated licensing system.

The Gwinnett County Teen Traffic Tragedies Task Force is planning to use findings from this study to assist in developing and targeting specific intervention strategies for reducing MVC injuries and deaths among young drivers.

References

1. National Highway Traffic Safety Administration. Fatal Accident Reporting System, 1991: a review of information on fatal traffic crashes in the United States. Washington, DC: US Department of Transportation, National Highway Traffic Safety Administration, 1992.
2. Insurance Institute for Highway Safety. Teenage drivers: questions and answers. Arlington, Virginia: Insurance Institute for Highway Safety, 1993.
3. Donovan JE, Jessor R. Young adult driving questionnaire. Boulder, Colorado: University of Colorado Institute of Behavioral Science, 1992.
4. Evans L. Traffic safety and the driver. New York: Van Nostrand Reinhold, 1991.
5. Mayhew DR, Simpson HM. New to the road: young drivers and novice drivers: similar problems and solutions? Ottawa: Traffic Injury Research Foundation of Canada, 1991.
6. Hingson R, Howland J. Promoting safety in adolescents. In: Millstein SG, Petersen AC, Nightingale EO, eds. Promoting the health of adolescents: new directions for the twenty-first century. New York: Oxford University Press, 1993.
7. Insurance Institute for Highway Safety. Slower graduation to full licensing means fewer teenage deaths. In: Status report. Arlington, Virginia: Insurance Institute for Highway Safety 1994;29(4):1–3.

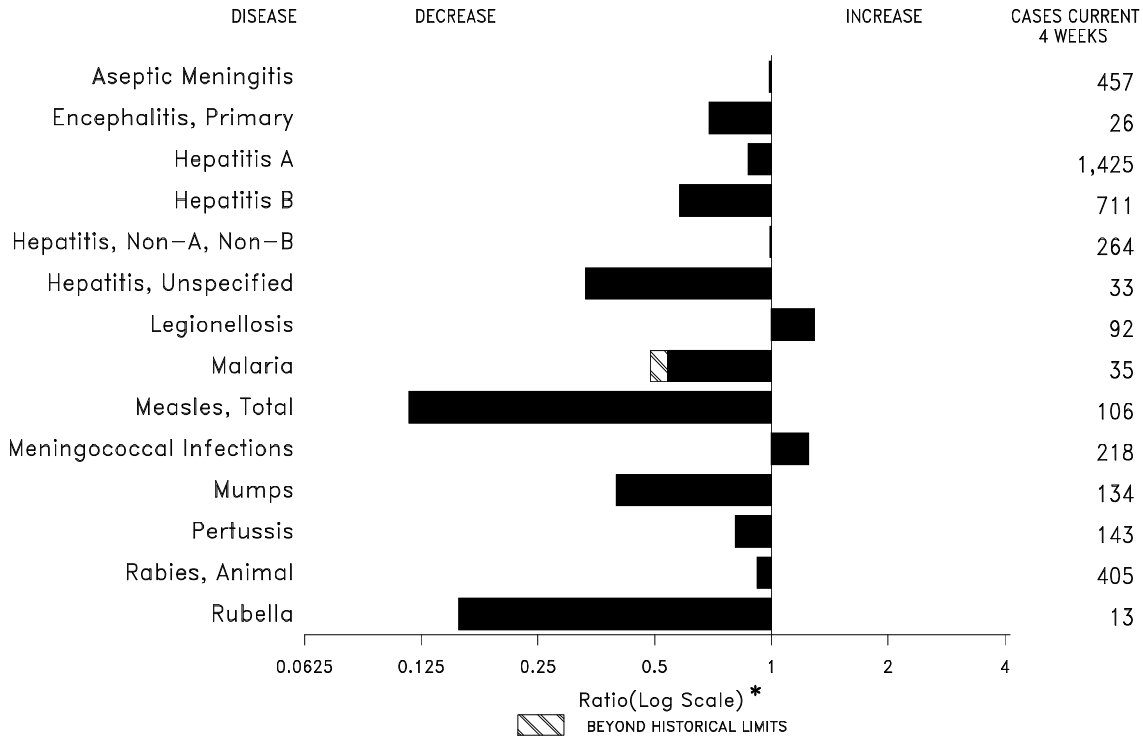
Epidemiologic Notes and Reports

Birth Outcomes Following Zidovudine Therapy in Pregnant Women

Approximately 100,000 childbearing-aged women in the United States are infected with human immunodeficiency virus (HIV), and an estimated 7000 infants are born to HIV-positive mothers each year (*1*). In the United States, the rate of perinatal transmission of HIV among mothers who do not receive antiretroviral therapy is 15%–30% (*2*). Results from a recent multicenter randomized double-blind clinical trial suggest that treatment of HIV-positive mothers and their infants with zidovudine (ZDV) may substantially reduce the risk for perinatal HIV transmission (*3*). However, any

(Continued on page 415)

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



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

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending June 4, 1994 (22nd Week)

	Cum. 1994		Cum. 1994
AIDS*	32,466	Measles: imported	133
Anthrax	-	indigenous	451
Botulism: Foodborne	24	Plague	2
Infant	28	Poliomyelitis, Paralytic[§]	-
Other	7	Psittacosis	13
Brucellosis	30	Rabies, human	-
Cholera	9	Syphilis, primary & secondary	8,952
Congenital rubella syndrome	3	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	16
Encephalitis, post-infectious	42	Toxic shock syndrome	95
Gonorrhea	150,417	Trichinosis	24
Haemophilus influenzae (invasive disease)[†]	541	Tuberculosis	8,374
Hansen Disease	47	Tularemia	12
Leptospirosis	12	Typhoid fever	146
Lyme Disease	1,449	Typhus fever, tickborne (RMSF)	68

*Updated monthly; last update May 24, 1994.
[†]Of 498 cases of known age, 145 (29%) were reported among children less than 5 years of age.
[§]No cases of suspected poliomyelitis have been reported in 1994; 3 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 June 4, 1994, and June 5, 1993 (22nd 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	32,466	2,123	218	42	150,417	163,587	8,280	4,650	1,778	167	608	1,449
NEW ENGLAND	1,245	74	7	3	3,309	3,065	130	178	60	14	19	196
Maine	46	7	1	-	42	35	12	7	-	-	-	-
N.H.	28	5	-	2	-	22	4	12	8	-	-	7
Vt.	19	5	-	-	8	13	1	-	-	-	-	1
Mass.	638	26	4	-	1,219	1,203	60	135	41	13	14	80
R.I.	104	31	2	1	195	159	12	3	11	1	5	24
Conn.	410	-	-	-	1,845	1,633	41	21	-	-	-	84
MID. ATLANTIC	9,386	162	20	6	16,044	18,683	467	445	216	2	72	915
Upstate N.Y.	856	85	11	1	3,743	3,676	217	161	104	-	21	646
N.Y. City	5,924	9	1	-	5,850	5,722	56	39	-	-	-	2
N.J.	1,728	-	-	-	2,187	2,368	135	157	93	-	11	115
Pa.	878	68	8	5	4,264	6,917	59	88	19	2	40	152
E.N. CENTRAL	2,663	348	62	10	29,675	32,646	759	471	137	2	180	21
Ohio	479	90	18	1	9,761	8,727	278	85	9	-	81	17
Ind.	333	65	2	-	3,389	3,312	141	85	4	-	53	3
Ill.	1,310	56	22	3	7,174	11,601	175	81	25	1	5	-
Mich.	409	132	19	6	6,854	6,358	108	149	99	1	33	1
Wis.	132	5	1	-	2,497	2,648	57	71	-	-	8	-
W.N. CENTRAL	736	140	8	1	8,079	8,754	417	253	83	4	62	19
Minn.	198	13	1	-	1,402	1,051	83	28	6	-	-	7
Iowa	30	43	-	-	582	677	22	15	7	3	21	1
Mo.	315	44	-	-	4,388	4,850	176	182	57	1	29	8
N. Dak.	18	1	2	-	14	22	1	-	-	-	2	-
S. Dak.	9	-	1	-	80	90	15	-	-	-	-	-
Nebr.	41	5	3	1	-	476	61	12	4	-	8	-
Kans.	125	34	1	-	1,613	1,588	59	16	9	-	2	3
S. ATLANTIC	7,007	493	35	15	42,881	44,340	532	1,125	348	15	163	216
Del.	97	5	-	-	762	552	8	12	19	-	1	40
Md.	541	69	8	2	7,961	6,978	73	150	13	5	41	61
D.C.	595	15	-	-	3,187	2,222	10	16	-	-	4	1
Va.	517	72	11	5	5,466	4,847	59	54	17	2	3	22
W. Va.	10	8	-	-	300	246	4	10	15	-	1	5
N.C.	556	62	15	-	10,313	10,536	47	125	27	-	10	27
S.C.	554	12	-	-	5,156	4,114	12	17	3	-	8	2
Ga.	872	22	1	-	-	4,660	22	431	152	-	69	53
Fla.	3,265	228	-	8	9,736	10,185	297	310	102	8	26	5
E.S. CENTRAL	834	147	20	1	18,183	17,001	194	485	339	1	28	12
Ky.	147	46	8	1	1,870	1,892	84	41	12	-	4	6
Tenn.	235	24	8	-	5,480	4,418	64	409	319	1	14	5
Ala.	245	59	4	-	6,581	6,451	28	35	8	-	7	1
Miss.	207	18	-	-	4,252	4,240	18	-	-	-	3	-
W.S. CENTRAL	3,242	184	13	1	16,564	18,100	1,218	526	164	44	14	36
Ark.	97	9	-	-	2,814	2,371	22	9	3	-	4	1
La.	474	10	2	-	5,069	4,884	66	77	47	1	-	-
Okla.	111	-	-	-	496	1,504	105	131	87	1	8	19
Tex.	2,560	165	11	1	8,185	9,341	1,025	309	27	42	2	16
MOUNTAIN	1,052	66	4	-	3,584	4,812	1,678	228	175	16	36	4
Mont.	13	-	-	-	38	20	11	11	2	-	13	-
Idaho	24	3	-	-	28	74	138	39	41	1	-	1
Wyo.	11	-	-	-	33	39	9	7	54	-	2	-
Colo.	420	14	1	-	1,103	1,551	137	13	15	4	4	-
N. Mex.	69	6	-	-	435	399	501	95	33	6	1	3
Ariz.	284	27	-	-	1,199	1,763	591	20	7	3	1	-
Utah	60	4	-	-	136	145	181	18	15	-	3	-
Nev.	171	12	3	-	612	821	110	25	8	2	12	-
PACIFIC	6,301	509	49	5	12,098	16,186	2,885	939	256	69	34	30
Wash.	401	-	-	-	1,245	1,641	164	33	30	1	5	-
Oreg.	269	-	-	-	354	589	156	20	3	1	-	-
Calif.	5,519	433	48	4	9,847	13,520	2,448	860	218	65	26	30
Alaska	19	12	1	-	350	201	90	6	-	-	-	-
Hawaii	93	64	-	1	302	235	27	20	5	2	3	-
Guam	1	6	-	-	52	48	9	-	-	4	2	-
P.R.	903	15	-	-	205	235	30	121	43	3	-	-
V.I.	12	-	-	-	10	48	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	14	11	4	-	-	-	-	-
C.N.M.I.	-	-	-	-	22	40	2	-	-	-	-	-

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

*Updated monthly; last update May 24, 1994.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending June 4, 1994, and June 5, 1993 (22nd 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	356	22	451	11	133	134	1,358	43	616	27	1,238	1,280	1	147	93
NEW ENGLAND	28	1	10	-	14	55	68	-	11	7	132	272	-	101	1
Maine	1	-	1	-	3	-	12	-	3	-	2	7	-	-	1
N.H.	3	-	1	-	-	-	5	-	4	-	35	66	-	-	-
Vt.	1	-	-	-	1	31	2	-	-	6	27	43	-	-	-
Mass.	11	1	1	-	8	15	26	-	-	1	54	135	-	100	-
R.I.	4	-	4	-	2	1	-	-	1	-	3	3	-	1	-
Conn.	8	-	3	-	-	8	23	-	3	-	11	18	-	-	-
MID. ATLANTIC	44	5	111	-	12	12	119	1	51	4	273	177	-	8	27
Upstate N.Y.	15	2	13	-	-	1	42	-	13	1	100	65	-	8	4
N.Y. City	6	3	6	-	1	3	8	-	-	-	54	7	-	-	15
N.J.	16	-	88	-	9	8	33	-	4	-	6	34	-	-	7
Pa.	7	-	4	-	2	-	36	1	34	3	113	71	-	-	1
E.N. CENTRAL	40	6	23	-	39	8	203	1	103	1	180	281	-	8	2
Ohio	7	-	6	-	-	3	52	-	27	-	66	89	-	-	1
Ind.	10	-	-	-	1	-	37	-	6	1	34	24	-	-	-
Ill.	11	6	11	-	38	5	71	-	41	-	40	57	-	3	-
Mich.	11	-	3	-	-	-	25	1	26	-	22	16	-	5	-
Wis.	1	-	3	-	-	-	18	-	3	-	18	95	-	-	1
W.N. CENTRAL	18	-	109	-	41	3	97	1	29	8	57	82	-	-	1
Minn.	5	-	-	-	-	-	8	-	4	7	27	39	-	-	-
Iowa	4	-	-	-	-	-	12	1	8	1	5	1	-	-	-
Mo.	7	-	108	-	40	1	44	-	14	-	14	22	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	1	-	2	3	-	-	-
S. Dak.	-	-	-	-	-	-	6	-	-	-	-	1	-	-	-
Nebr.	1	-	-	-	1	-	8	-	2	-	3	5	-	-	-
Kans.	1	-	1	-	-	2	19	-	-	-	6	11	-	-	-
S. ATLANTIC	77	-	7	-	2	21	243	3	99	1	155	112	-	5	7
Del.	3	-	-	-	-	-	-	-	-	-	-	1	-	-	2
Md.	34	-	1	-	1	4	15	3	23	-	51	34	-	-	1
D.C.	7	-	-	-	-	-	2	-	-	-	3	1	-	-	-
Va.	9	-	1	-	1	1	38	-	24	-	15	11	-	-	-
W. Va.	-	-	-	-	-	-	9	-	3	-	2	3	-	-	-
N.C.	2	-	-	-	-	-	37	-	26	-	44	19	-	-	-
S.C.	2	-	-	-	-	-	11	-	6	1	9	5	-	-	-
Ga.	8	-	2	-	-	-	55	-	7	-	11	11	-	-	-
Fla.	12	-	3	-	-	16	76	-	10	-	20	27	-	5	4
E.S. CENTRAL	9	-	28	-	-	-	90	1	13	-	81	53	-	-	-
Ky.	2	-	-	-	-	-	22	-	2	-	52	9	-	-	-
Tenn.	4	-	28	-	-	-	22	-	4	-	13	27	-	-	-
Ala.	2	-	-	-	-	-	40	1	1	-	14	13	-	-	-
Miss.	1	-	-	-	-	-	6	-	6	-	2	4	-	-	-
W.S. CENTRAL	14	-	7	-	5	1	173	9	150	-	38	31	-	7	12
Ark.	-	-	-	-	1	-	27	-	-	-	6	2	-	-	-
La.	2	-	-	-	1	1	23	2	15	-	5	5	-	-	1
Okla.	2	-	-	-	-	-	18	-	21	-	20	11	-	4	1
Tex.	10	-	7	-	3	-	105	7	114	-	7	13	-	3	10
MOUNTAIN	15	-	118	11	12	2	95	20	43	4	77	85	1	4	5
Mont.	-	-	-	-	-	-	2	-	-	-	3	-	-	-	-
Idaho	2	-	-	-	-	-	12	-	4	-	24	8	-	1	1
Wyo.	-	-	-	-	-	-	5	-	1	-	-	1	-	-	-
Colo.	5	-	12	-	1	2	12	-	1	1	18	42	-	-	-
N. Mex.	2	-	-	-	-	-	11	N	N	1	8	18	-	-	-
Ariz.	1	-	-	-	-	-	38	19	24	-	13	9	-	-	1
Utah	4	-	106	-	-	-	11	-	6	-	9	7	-	2	2
Nev.	1	-	-	11§	11	-	4	1	6	2	2	-	1	1	1
PACIFIC	111	10	38	-	8	32	270	7	117	2	245	187	-	14	38
Wash.	3	-	-	-	-	-	19	-	3	-	12	18	-	-	-
Oreg.	7	-	-	-	-	-	44	N	N	-	22	1	-	-	1
Calif.	91	10	38	-	6	17	200	7	104	1	206	158	-	12	17
Alaska	-	-	-	-	-	-	2	-	2	-	-	3	-	1	1
Hawaii	10	-	-	-	2	15	5	-	8	1	5	7	-	1	19
Guam	-	U	202	U	-	2	-	U	3	U	-	-	U	1	-
P.R.	-	-	13	-	-	236	6	-	2	-	1	2	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	1	-	-	1	-	1	2	-	-	-
C.N.M.I.	1	-	26	-	-	1	-	1	1	-	-	-	-	-	-

*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 June 4, 1994, and June 5, 1993 (22nd 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	8,952	11,604	95	8,374	8,716	12	146	68	2,516
NEW ENGLAND	91	175	1	163	171	-	12	5	788
Maine	4	2	-	-	7	-	-	-	-
N.H.	-	18	-	7	7	-	-	-	91
Vt.	-	-	-	2	3	-	-	-	62
Mass.	35	79	1	80	89	-	8	5	300
R.I.	8	6	-	16	30	-	1	-	5
Conn.	44	70	-	58	35	-	3	-	330
MID. ATLANTIC	516	1,161	17	1,436	1,818	-	39	-	292
Upstate N.Y.	75	102	8	106	257	-	6	-	79
N.Y. City	260	598	-	913	1,100	-	23	-	-
N.J.	86	167	-	291	187	-	10	-	136
Pa.	95	294	9	126	274	-	-	-	77
E.N. CENTRAL	1,160	1,952	20	828	892	1	28	9	15
Ohio	481	510	8	115	127	-	2	4	-
Ind.	104	162	2	72	90	-	2	1	2
Ill.	306	791	4	422	460	-	15	2	3
Mich.	144	288	6	195	182	1	3	2	5
Wis.	125	201	-	24	33	-	6	-	5
W.N. CENTRAL	523	750	13	214	189	6	-	3	76
Minn.	22	37	1	46	28	-	-	-	8
Iowa	21	34	6	15	17	-	-	1	31
Mo.	450	593	3	105	99	5	-	-	8
N. Dak.	-	2	-	2	4	-	-	-	2
S. Dak.	-	-	-	9	9	-	-	2	11
Nebr.	-	10	2	9	8	-	-	-	-
Kans.	30	74	1	28	24	1	-	-	16
S. ATLANTIC	2,533	3,013	6	1,695	1,901	-	23	38	785
Del.	12	60	-	-	16	-	1	-	11
Md.	96	163	-	137	158	-	4	-	240
D.C.	109	170	-	47	74	-	1	-	2
Va.	306	270	1	157	208	-	3	2	170
W. Va.	8	1	-	38	37	-	-	-	33
N.C.	763	828	1	210	192	-	-	11	84
S.C.	299	466	-	174	164	-	-	1	78
Ga.	559	532	-	380	330	-	1	22	159
Fla.	381	523	4	552	722	-	13	2	8
E.S. CENTRAL	1,602	1,456	2	545	580	-	1	4	85
Ky.	96	127	1	137	145	-	1	-	3
Tenn.	414	345	1	157	135	-	-	3	34
Ala.	308	363	-	171	196	-	-	-	48
Miss.	784	621	-	80	104	-	-	1	-
W.S. CENTRAL	2,071	2,289	-	972	706	2	7	6	330
Ark.	223	272	-	108	70	2	-	2	14
La.	804	1,032	-	14	-	-	2	-	41
Okla.	15	154	-	104	69	-	1	2	17
Tex.	1,029	831	-	746	567	-	4	2	258
MOUNTAIN	129	104	4	177	202	2	6	3	34
Mont.	1	1	-	9	5	-	-	2	-
Idaho	2	-	1	6	5	-	-	-	-
Wyo.	-	3	-	2	1	-	-	-	9
Colo.	66	31	1	1	29	-	2	1	-
N. Mex.	6	17	-	27	18	1	-	-	1
Ariz.	26	40	-	96	96	-	1	-	22
Utah	5	2	2	-	9	1	1	-	-
Nev.	23	10	-	36	39	-	2	-	2
PACIFIC	327	704	32	2,344	2,257	1	30	-	111
Wash.	22	25	-	103	112	-	2	-	-
Oreg.	16	28	-	48	40	1	-	-	-
Calif.	285	647	29	2,044	1,957	-	27	-	82
Alaska	3	2	-	27	24	-	-	-	29
Hawaii	1	2	3	122	124	-	1	-	-
Guam	2	1	-	18	25	-	1	-	-
P.R.	129	247	-	33	82	-	-	-	36
V.I.	21	24	-	-	2	-	-	-	-
Amer. Samoa	1	-	-	2	1	-	1	-	-
C.N.M.I.	1	2	-	16	13	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending June 4, 1994 (22nd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	558	406	79	43	15	15	47
Boston, Mass.	138	85	23	19	4	7	23
Bridgeport, Conn.	38	30	5	2	-	1	4
Cambridge, Mass.	21	15	4	2	-	-	3
Fall River, Mass.	24	23	-	-	1	-	-
Hartford, Conn.	45	30	8	4	1	2	1
Lowell, Mass.	30	24	3	2	-	1	3
Lynn, Mass.	11	7	2	1	-	1	1
New Bedford, Mass.	28	23	4	1	-	-	1
New Haven, Conn.	58	39	6	4	7	2	-
Providence, R.I.	33	28	4	1	-	-	5
Somerville, Mass.	1	1	-	-	-	-	-
Springfield, Mass.	45	31	8	5	1	-	-
Waterbury, Conn.	24	22	2	-	-	-	-
Worcester, Mass.	62	48	10	2	1	1	6
MID. ATLANTIC	2,459	1,565	495	298	54	47	115
Albany, N.Y.	55	35	9	10	-	1	6
Allentown, Pa.	21	16	5	-	-	-	-
Buffalo, N.Y.	100	64	28	3	4	1	1
Camden, N.J.	37	27	7	2	1	-	4
Elizabeth, N.J.	17	14	2	1	-	-	-
Erie, Pa.§	48	40	6	2	-	-	5
Jersey City, N.J.	63	38	17	6	2	-	1
New York City, N.Y.	1,310	791	258	193	33	35	44
Newark, N.J.	71	31	14	21	2	3	7
Paterson, N.J.	25	12	7	5	-	1	-
Philadelphia, Pa.	323	210	71	31	6	5	27
Pittsburgh, Pa.§	65	47	14	4	-	-	5
Reading, Pa.	13	10	3	-	-	-	3
Rochester, N.Y.	130	100	20	5	5	-	4
Schenectady, N.Y.	23	20	3	-	-	-	-
Scranton, Pa.§	32	27	4	1	-	-	3
Syracuse, N.Y.	64	44	13	6	-	1	4
Trenton, N.J.	39	25	9	5	-	-	-
Utica, N.Y.	23	14	5	3	1	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,828	1,145	331	183	98	71	78
Akron, Ohio	57	41	11	3	2	-	-
Canton, Ohio	37	27	7	1	1	1	1
Chicago, Ill.	284	116	48	57	53	10	6
Cincinnati, Ohio	117	80	18	5	7	7	10
Cleveland, Ohio	111	68	25	10	3	5	4
Columbus, Ohio	164	94	31	23	7	9	6
Dayton, Ohio	137	103	17	9	4	4	7
Detroit, Mich.	185	104	42	22	8	9	3
Evansville, Ind.	43	31	9	1	2	-	2
Fort Wayne, Ind.	48	36	8	2	1	1	2
Gary, Ind.	18	11	2	3	-	2	1
Grand Rapids, Mich.	38	27	9	2	-	-	5
Indianapolis, Ind.	177	109	39	15	5	9	9
Madison, Wis.	35	21	7	4	-	3	3
Milwaukee, Wis.	92	68	15	4	2	3	4
Peoria, Ill.	35	28	5	2	-	-	3
Rockford, Ill.	60	44	9	6	1	-	2
South Bend, Ind.	32	24	5	2	-	1	2
Toledo, Ohio	104	76	12	11	1	4	6
Youngstown, Ohio	54	37	12	1	1	3	2
W.N. CENTRAL	545	378	85	49	21	12	23
Des Moines, Iowa	57	41	10	1	3	2	6
Duluth, Minn.	22	11	2	5	3	1	-
Kansas City, Kans.	8	3	1	3	-	1	-
Kansas City, Mo.	108	70	25	8	3	2	2
Lincoln, Nebr.	20	16	3	1	-	-	2
Minneapolis, Minn.	82	59	18	5	-	-	5
Omaha, Nebr.	84	54	17	7	5	1	2
St. Louis, Mo.	100	76	6	12	4	2	3
St. Paul, Minn.	58	44	3	6	2	3	3
Wichita, Kans.	6	4	-	1	1	-	-

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,054	631	229	139	33	22	47
Atlanta, Ga.	146	72	36	30	6	2	2
Baltimore, Md.	155	90	40	16	5	4	8
Charlotte, N.C.	71	42	18	6	2	3	3
Jacksonville, Fla.	125	82	25	15	3	-	7
Miami, Fla.	126	84	24	13	3	2	-
Norfolk, Va.	45	30	5	4	-	6	1
Richmond, Va.	63	40	6	16	-	1	6
Savannah, Ga.	39	25	10	3	1	-	3
St. Petersburg, Fla.	41	29	10	1	1	-	3
Tampa, Fla.	121	81	19	13	6	2	10
Washington, D.C.	112	50	32	22	6	2	4
Wilmington, Del.	10	6	4	-	-	-	-
E.S. CENTRAL	699	452	137	70	27	12	45
Birmingham, Ala.	83	50	15	14	2	2	3
Chattanooga, Tenn.	24	12	6	2	2	2	1
Knoxville, Tenn.	88	54	19	9	3	3	10
Lexington, Ky.	41	24	10	3	3	1	5
Memphis, Tenn.	222	154	39	20	7	1	14
Mobile, Ala.	90	55	17	10	6	2	3
Montgomery, Ala.	43	32	8	3	-	-	1
Nashville, Tenn.	108	71	23	9	4	1	8
W.S. CENTRAL	1,208	723	230	153	58	41	48
Austin, Tex.	55	34	9	9	2	1	5
Baton Rouge, La.	10	7	2	1	-	-	-
Corpus Christi, Tex.	53	42	5	2	1	3	2
Dallas, Tex.	157	103	24	22	7	1	2
El Paso, Tex.	80	44	13	14	8	1	5
Ft. Worth, Tex.	58	37	10	6	2	3	3
Houston, Tex.	224	116	46	39	13	10	6
Little Rock, Ark.	53	35	10	3	-	5	1
New Orleans, La.	172	94	35	23	11	6	-
San Antonio, Tex.	212	128	44	24	8	8	16
Shreveport, La.	63	38	17	5	3	-	4
Tulsa, Okla.	71	45	15	5	3	3	4
MOUNTAIN	767	501	143	83	23	17	36
Albuquerque, N.M.	98	60	15	15	5	3	4
Colo. Springs, Colo.	40	27	9	2	1	1	1
Denver, Colo.	90	56	17	10	1	6	2
Las Vegas, Nev.	143	80	38	17	5	3	3
Ogden, Utah	18	12	6	-	-	-	-
Phoenix, Ariz.	168	109	28	20	7	4	14
Pueblo, Colo.	19	15	3	1	-	-	2
Salt Lake City, Utah	89	67	11	9	2	-	4
Tucson, Ariz.	102	75	16	9	2	-	6
PACIFIC	1,552	1,056	266	148	45	36	123
Berkeley, Calif.	21	15	3	2	1	-	-
Fresno, Calif.	62	39	7	8	3	5	8
Glendale, Calif.	20	15	4	1	-	-	2
Honolulu, Hawaii	65	51	6	5	2	1	3
Long Beach, Calif.	82	50	14	11	2	5	16
Los Angeles, Calif.	529	349	103	56	17	3	20
Pasadena, Calif.	39	30	6	1	2	-	8
Portland, Oreg.	109	78	19	6	4	2	9
Sacramento, Calif.	152	98	32	15	2	5	13
San Diego, Calif.	61	36	15	8	-	2	9
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	153	106	28	12	1	6	18
Santa Cruz, Calif.	29	21	2	3	2	1	2
Seattle, Wash.	101	65	18	13	3	2	4
Spokane, Wash.	50	39	4	4	1	2	4
Tacoma, Wash.	79	64	5	3	5	2	7
TOTAL	10,670¶	6,857	1,995	1,166	374	273	562

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

†Pneumonia and influenza.

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

¶Total includes unknown ages.

U: Unavailable.

Zidovudine — Continued

potential risk for adverse outcomes associated with use of antiretrovirals during pregnancy should be considered. This report summarizes data from the Antiretroviral Pregnancy Registry regarding use of ZDV and the occurrence of structural birth defects reported for pregnancies registered during January 1989–December 1993.

In January 1989, the Zidovudine in Pregnancy Registry was established by the Wellcome Foundation, in conjunction with CDC, and has been managed by the Burroughs Wellcome Co. (Research Triangle Park, North Carolina),* the manufacturer of ZDV. In January 1993, the Zidovudine in Pregnancy Registry was expanded to include zalcitabine and became the Antiretroviral Pregnancy Registry. Although ZDV is not yet approved for use during pregnancy, physicians and other health professionals have provided to the registry reports of women who received antiretroviral therapy during pregnancy. The purpose of the worldwide registry is to measure the incidence of infants with structural defects among prospectively registered cases (i.e., those registered predelivery) and to monitor potential patterns of defects by collecting data on outcomes of pregnancies registered retrospectively (i.e., cases reported postdelivery). A prenatal exposure to ZDV is defined as inadvertent or intentional use of oral or intravenous ZDV at any time during pregnancy. The registry follows CDC guidelines for definitions of major birth defects (*4*).

Physicians provide information regarding pregnancy dates, lowest CD4+ T-cell count, CDC classification of HIV disease, dosage, length of therapy, and trimester of exposure to antiretroviral drugs. At the expected delivery date, a follow-up form is sent to the physician to ascertain the pregnancy outcome and occurrence of concurrent illnesses.

From 1989 through 1993, 198 prenatal exposures to ZDV were reported prospectively. As of December 31, 1993, 30 women were still awaiting delivery. Of the other 168 women, 47 (28%) were lost to follow-up—39 (83%) because the initial reporting physician did not respond to inquiries after the date of expected delivery. Reports are considered lost to follow-up only after efforts to obtain information have been made by sending at least three monthly letters and making one telephone call after the expected delivery date or if the reporting physician can no longer locate the patient.

Of the 121 prospectively registered women, four delivered infants with structural birth defects. ZDV therapy in 54 pregnancies occurred during the first trimester: among these 54 women, one infant was born with a birth defect (agenesis of the right kidney), and 45 infants were born without defects; eight pregnancies were terminated by induced abortions. Among 47 women who received ZDV therapy during the second trimester, three infants were born with birth defects (pectus excavatum, atrial septal defect, and fetal alcohol syndrome), and 44 infants were born without defects. No birth defects occurred among infants born to the 20 women who received ZDV therapy during the third trimester.

Indications for ZDV treatment of the 121 women included asymptomatic HIV infection with low CD4+ count (97), treatment for acquired immunodeficiency syndrome (AIDS) (nine), symptomatic HIV infection (six), and prophylaxis following needlestick injury (six); indications were unknown for three women.

Of the pregnancies registered retrospectively, four infants were born with defects following third trimester ZDV therapy (extra digits; asymptomatic ventricular septal

* 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.

Zidovudine — Continued

defect; left hydronephrosis and ureteral pelvic junction obstruction; and two-vessel cord, hypoplastic left heart and mitral atresia).

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Editorial Note: Based on findings in the registry, the observed proportion of birth defects among infants of women who received ZDV therapy during the first trimester of pregnancy (when the fetus is most sensitive to teratogens [*5*]) was 2% (1 of 46). This does not differ from the expected proportion in the general population (3%) (*4*). Neither the prospective nor retrospective reports indicated a consistent pattern of defects. In addition, cases of birth defects from the AIDS Clinical Trial Group 076 clinical trial (*3*) do not suggest an increase or unusual pattern of birth defects. Public Health Service agencies are evaluating possible recommendations for use of ZDV to reduce the risk for perinatal transmission of HIV.

The findings in this report are preliminary, and the sample size was limited. Other potential limitations of this and other registries include differential reporting of pregnancy outcomes, losses to follow-up, and underreporting. In general, cases lost to follow-up are more common for observational registries than for cases obtained from registries using active ascertainment methods. Retrospective reports may include cases with more unusual or severe features and may be less representative of the population.

Because the number of HIV-positive women who use ZDV during pregnancy may increase, the registry must be sustained to monitor for possible teratogenicity among infants of women receiving ZDV or other antiretroviral therapy during pregnancy. Physicians who provide care for women treated with ZDV or zalcitabine can register patients by calling the registry, (800) 722-9292, extension 8465, in the United States or by calling (919) 315-8465 for registrations from countries outside the United States. Copies of the semiannual registry report are available to health professionals by calling these numbers or by writing to the Antiretroviral Pregnancy Registry, P.O. Box 12700, Research Triangle Park, NC 27709.

References

1. CDC. National HIV serosurveillance summary: results through 1992. Vol 3. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1994.
2. CDC. 1993 Sexually transmitted diseases treatment guidelines. MMWR 1993;42(no. RR-14).
3. CDC. Zidovudine for the prevention of HIV transmission from mother to infant. MMWR 1994;43:285–7.
4. CDC. Congenital malformations surveillance report, January 1982–December 1985. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1988.
5. Tuchmann-Duplessis H. Drug effects on the fetus. New York: Adis Press, 1977.

Epidemiologic Notes and Reports

Multidrug-Resistant Tuberculosis in a Hospital — Jersey City, New Jersey, 1990–1992

Since 1986 (the first full year following implementation of the revised tuberculosis [TB] surveillance case definition), the reported rate of TB per 100,000 persons in New Jersey increased from 9.5 cases to 12.6 cases in 1992 (*1*). Of the 984 cases reported to CDC from New Jersey in 1992, 108 (11.0%) were reported from Jersey City (1990 population: 230,300)—the city ranked second in number of TB cases reported (*1*) and fourth in rate of TB (46.9 per 100,000) in the state. In addition, in 1992, the rate of multidrug-resistant TB (MDR-TB) (i.e., *Mycobacterium tuberculosis* isolates resistant to at least isoniazid [INH] and rifampin [RIF]) among TB patients in New Jersey was 5%; the rate in Jersey City was 13% (*1,2*). To characterize the epidemiologic features of persons with drug-resistant TB, the New Jersey Department of Health and the Infectious Diseases Division of the Jersey City Medical Center conducted a study among patients treated at that hospital during 1990–1992. This report presents the findings of the study and compares the hospital's rates of drug-resistant TB with previously reported rates, rates for other cities in New Jersey, and rates for the state.

The hospital serves a predominantly inner-city population and treats more than 40% of TB patients in Jersey City. Information about hospital inpatients with TB was abstracted from mycobacteriology log books and TB reporting forms. Mycobacterial species identification and drug-susceptibility testing were performed at the New Jersey Public Health Laboratory (NJPHL) or a commercial laboratory. The DNA probe method was used for species identification (*3*). Drug susceptibility was determined by the radiometric method for NJPHL and the conventional plate method for the commercial laboratory (*4*).

Data were analyzed for all 146 patients with culture-positive *M. tuberculosis* during 1990–1992. Of the 142 patients for whom TB reporting forms were available, 131 (92%) had had drug-susceptibility tests performed for anti-TB drugs. Patients ranged in age from 11 to 79 years (mean: 40 years); 95 (73%) patients were male. A total of 36 (28%) patients had extrapulmonary TB. Although no serologic survey for human immunodeficiency virus (HIV) infection was performed, matching of state TB records with state HIV/acquired immunodeficiency syndrome records indicated that at least 58 (44%) TB patients had concurrent HIV infection.

Of the 131 patients for whom drug-susceptibility testing had been performed, 32 (24%) had *M. tuberculosis* isolates resistant to at least one drug, and 21 (16%) had MDR-TB (Table 1). Of the six patients with a prior history of TB, four (67%) had MDR-TB, compared with 17 (14%) of the 125 patients with no prior history of TB (relative risk [RR]=4.9). Of the 97 patients known to have been born in the United States, 23 (24%) had TB resistant to at least one anti-TB drug, and 12 (12%) had MDR-TB; in comparison, of the 22 known foreign-born patients, four (18%) had MDR-TB (RR=0.7). Of the 18 foreign-born patients for whom information was available, seven had resided in the United States for 5 or fewer years before diagnosis of TB. Of those seven, two (29%) had MDR-TB, compared with two (18%) of the 11 persons who had resided in the United States more than 5 years (RR=1.6). Among these 131 patients, drug resistance was not associated with sex, age, race, or known HIV infection; because these

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TABLE 1. Number of persons with reported cases of drug-resistant tuberculosis (TB), by anti-TB drug — Jersey City, New Jersey, 1990–1992*

	All cases (n=131)		New cases (n=125)	
Drug resistance	**No.**	**(%)**	**No.**	**(%)**
Isoniazid	30	(23)	26	(21)
Rifampin	22	(17)	18	(14)
Streptomycin	7	(5)	6	(5)
Ethionamide	6	(5)	5	(4)
Ethambutol	0	—	0	—
≥1 Drug	32	(24)	28	(22)
Multidrug-resistant TB†	21	(16)	17	(14)

*n=142. Excludes 11 persons with no drug-susceptibility tests.
†Resistance to at least isoniazid and rifampin.

cases were not associated with clustering in time or location in the hospital, nosocomial transmission of *M. tuberculosis* was unlikely.

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Editorial Note: The findings in this report indicate that the rate of MDR-TB in New Jersey varied widely: the rate among patients treated at the hospital described in this report during 1990–1992 was similar to that for Jersey City in 1992 but substantially higher than that reported for the state and for other New Jersey cities (*2*). For example, in Newark in 1992, the rate of MDR-TB was nearly one third (5%) of that reported for the Jersey City hospital, and although the number of isolates tested was small, no cases of MDR-TB were reported from Trenton or Camden—urban areas with demographic and socioeconomic compositions similar to Jersey City's (*2*). In addition, the rate of primary INH resistance among patients at the hospital in Jersey City was higher during 1990–1992 (21%) than during 1984–1986 (15%), while the rates of presumptive primary MDR-TB during 1990–1992 and 1984–1986 were similar (14% and 13%, respectively) (*5*).

The higher rate of MDR-TB among patients in the hospital in Jersey City than in Newark and for the state of New Jersey may reflect a greater prevalence of nonadherence to treatment and/or exposure to persons with drug-resistant TB—known risk factors for drug resistance (*6*). Jersey City is located near New York City, in which 19% of patients with TB in 1991 had MDR-TB (*7*) and outbreaks of MDR-TB have occurred recently (*8*). In addition, the five counties in New Jersey that reported more than one case of MDR-TB in 1992 are located closest to New York City (*2*). The findings in this report also are consistent with previous reports indicating an association between MDR-TB and prior history of TB (*6*).

The pattern of anti-TB drug resistance in Jersey City and other communities in New Jersey illustrates the substantial geographic variations in this problem, even within a small state. Knowledge of local resistance patterns is critical for determining optimal treatment regimens before drug-susceptibility test results are available. As a result of this study, use of directly observed therapy was instituted in hospitals throughout Jersey City. In areas with rates of INH resistance of 4% or more, anti-TB treatment should be initiated with four drugs (INH, RIF, pyrazinamide, plus either ethambutol or

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streptomycin), and directly observed therapy should be used (*9*). Institutions experiencing outbreaks or high rates of MDR-TB may need to begin five- or six-drug regimens as initial therapy. These regimens should include the four-drug regimen and at least three drugs to which the suspected MDR strain may be susceptible (*9*).

References

1. Bureau of Tuberculosis Control, New Jersey Department of Health. Annual report, 1992. Trenton, New Jersey: New Jersey Department of Health, Bureau of Tuberculosis Control, 1993.
2. Bureau of Tuberculosis Control, New Jersey Department of Health. Multiple drug-resistant tuberculosis in New Jersey. Trenton, New Jersey: New Jersey Department of Health, Bureau of Tuberculosis Control, 1992.
3. Body BA, Warren NG, Spicer A, Henderson D, Chery M. Use of Gen-Probe and Bactec for rapid isolation and identification of mycobacteria: correlation of probe results with growth index. Am J Clin Pathol 1990;93:415–20.
4. Heiferts L. Qualitative and quantitative drug susceptibility tests in mycobacteriology. Am Rev Respir Dis 1988;137:1217–21.
5. Lin-Greenberg A, Deltieure M. Primary resistance to anti-tuberculosis drugs in a New Jersey hospital. New Jersey Medicine 1987;84:427–8.
6. Barnes PF. The influence of epidemiologic factors on drug resistance rates in tuberculosis. Am Rev Respir Dis 1987;136:325–8.
7. Frieden TR, Sterling T, Pablos-Mendez A, Kilburn JO, Cauthen GM, Dooley SW. The emergence of drug-resistant tuberculosis in New York City. N Engl J Med 1993;328:521–6.
8. CDC. Nosocomial transmission of multidrug-resistant tuberculosis among HIV-infected persons —Florida and New York, 1988–1991. MMWR 1991;40:585–91.
9. CDC. Initial therapy for tuberculosis in the era of multidrug resistance: recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR 1993;42(no. RR-7).

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