disease prevention news

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El Paso Multiple Sclerosis Cluster Investigation

The primary purpose of the Environmental and Occupational Epidemiology Program (EOEP) of the Texas Department of Health is to investigate and prevent diseases and adverse health conditions related to environmental and occupational exposures. One way EOEP fulfills this purpose is to investigate possible noncommunicable disease clusters. This report summarizes an investigation the EOEP, in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR), conducted in September 2001 to respond to the concerns of some El Paso residents that environmental toxins could be responsible for a cluster of multiple sclerosis cases in their community.

In December 1994 a former El Paso resident with multiple sclerosis (MS) contacted TDH to report an apparent "cluster" of MS cases among people who spent their childhoods in the Kern Place–Mission Hills area of El Paso. Early in the investigation, concerns were raised about the possible impact of air emissions from a local metals smelter, particularly during the time prior to the installation of pollution controls in the 1970s. Established in 1887, the ASARCO smelter in El Paso has processed primarily lead, copper, cadmium, and zinc. ASARCO suspended smelter operations in 1999. Historically, ASARCO's air emissions have been documented to contain high levels of metals such as iron, lead, arsenic, zinc, and cadmium.

Through a cooperative agreement with ATSDR in 1996, TDH examined the available information about the MS cases and related environmental concerns. TDH concluded that the reported number of MS cases in the neighborhood did appear to be high and noted that previous studies in the scientific literature had investigated the role of metals exposure in the development of the disease. It was not possible from the available information for El Paso, however, to determine if metals exposure was the cause of MS in this area nor if there was a true excess of MS. The report recommended a study be conducted among persons who lived in the Kern Place–Mission Hills neighborhood and in Smeltertown during the 1940s, 1950s, and 1960s to determine the number of people who had been diagnosed with MS. Smeltertown was a community of residences owned by ASARCO and located on the company's property. Each neighborhood was served by one local public elementary school, Mesita in the Kern Place–Mission Hills area and E.B. Jones in Smeltertown.

TDH received a grant from ATSDR to examine the prevalence of MS in the group of children who lived in the two communities and attended the two public elementary schools. Because a list of children who lived in the neighborhoods was not available, attendance at the schools was used as a proxy for living in the neighborhoods. The ATSDR grant also allowed TDH to investigate what historic environmental and biologic sampling data might still be available for use if future studies in the area were to be considered.

Study Overview

Students who attended Mesita or E.B. Jones Elementary schools from 1948 through 1970 were eligible to be included in the study. The former students were identified primarily through school records. Questionnaires were mailed to all former students for whom a mailing address could be located. The questionnaire asked for demographic and medical information. People who indicated they had been diagnosed with MS were asked for copies of their medical records. These medical records were reviewed by a board-certified neurologist to confirm the MS diagnosis.

From returned questionnaires, prevalence estimates were calculated for the separate cohorts of former students from Mesita and E.B. Jones Elementary schools and for the combined student cohort of both schools. The actual number of MS cases found among the former students was also compared with the expected number based on national estimates of MS prevalence. The comparison of the actual or observed number of MS cases to the expected number was done using a statistical procedure known as a standardized morbidity ratio (SMR).

Continued ☞

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Texas Department of Health

Study Results

A total of 5,272 students were identified as having attended Mesita and E.B. Jones Elementary schools from 1948 through 1970; 3,891 from Mesita and 1,384 from E.B. Jones. Several students reported attending both schools. Current addresses were identified for 33% (n=1,248) of former Mesita students and 32% (n=432) of former E.B. Jones students. Forty-four percent of the former Mesita students and 20% of the E.B. Jones students who were contacted returned questionnaires.

Fourteen cases of definite and probable MS were identified among former Mesita students. No cases were reported for the E.B. Jones cohort. Using the 14 cases of MS and dividing by the total combined cohort of 5,272 students, the crude MS prevalence estimate for the combined school cohort is 266 cases per 100,000 population (95% Confidence Interval or CI = 145 to 445 per 100,000). Using the 14 MS cases and dividing by the total Mesita cohort of 3,891, the crude MS prevalence for the Mesita cohort is 360 per 100,000 (95% CI = 197 to 603 per 100,000). The crude prevalence estimates for both the combined cohort and the Mesita cohort are higher than previously published U.S. prevalence estimates for MS which range from 87 to 160 per 100,000.

Standardized morbidity ratios (SMRs) were also calculated for the combined Mesita and E.B. Jones cohorts and for the Mesita cohort separately. Using data from the 1989 to 1994 National Health Interview Survey (NHIS), the SMR for the combined cohort was 1.42 (95% CI = 0.78 to 2.40) indicating an elevated, but not statistically significant risk of MS among the combined cohort. For the Mesita cohort, the SMR was 1.93 (95% CI = 1.06 to 3.24) indicating a statistically significant twofold increased risk of MS.

Conclusions

This study was designed to (1) identify the number of people with MS in the school cohorts, (2) determine if the number of people with MS was more than was expected based on national prevalence estimates, and (3) review historic environmental and biologic sampling data. Fourteen cases of MS among former Mesita students were identified and confirmed. No cases were reported among former E.B. Jones students. The number of people with MS among former Mesita students is twice as high as expected, based on national estimates. Limited historic environmental and biological data were identified for the study area. These results are reported in a separate addendum to the report. This study was not designed to investigate the specific cause or causes of MS, and the results cannot explain why there is an excess of MS among the former Mesita students.

Recommendations

Based on the findings of this study, TDH recommends four activities:

- Conduct an annual survey of the Mesita and E.B. Jones cohorts for a minimum of two additional years to determine if any additional people are diagnosed with MS. All former students of these schools are encouraged to participate in the surveys.
- Develop current MS prevalence estimates for Texas.
- Reanalyze the El Paso MS cluster data when Texas prevalence estimates become available.
- Conduct a national multi-site case control study to examine metals exposure as a possible etiologic risk factor for MS. Combining MS cases from multiple sites around the United States may provide the statistical power needed to study the association between metals exposure and MS. Participants in the El Paso study should be included in the multisite study.

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The full report of this investigation is available at the TDH Environmental Epidemiology and Toxicology Division Website: www.tdh.state.tx.us/epitox/ms/msmain.htm.

Bimonthly Statistical Summary of Selected Reportable Diseases: Provisional Cumulative Data

Jan-October 2001

Selected Diseases/Conditions	HHSC Region											Selected Texas Counties								Cumulative(1)	
	1	2	3	4	5	6	7	8	9	10	11	Bexar	Dallas	El Paso	Harris	Hidalgo	Nueces	Tarrant	Travis	2000	2001
Sexually Transmitted Diseases(2)																					
Syphilis, primary and secondary	6	10	131	8	10	96	34	68	1	6	13	65	94	4	83	7	1	30	16	324	383
Congenital Syphilis	0	1	14	6	2	12	1	8	0	2	9	8	7	2	12	3	0	6	0	65	55
Resistant Neisseria gonorrhoeae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Enteric Diseases																					
Salmonellosis	122	44	353	40	45	146	309	207	58	84	265	106	150	84	28	99	47	67	107	2545	1673
Shigellosis	64	12	203	21	27	85	167	247	20	42	365	169	134	42	21	155	67	28	83	2429	1253
Hepatitis A	31	38	272	17	14	55	273	75	14	12	47	46	107	12	29	22	9	84	86	1653	848
Campylobacteriosis	70	14	131	06	11	40	221	166	22	06	160	119	76	5	17	52	42	16	115	1106	847
Bacterial Infections																					
H. influenzae type b, invasive	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3	1
Meningococcal, invasive	4	0	24	7	3	66	10	14	1	1	4	8	16	1	30	0	4	6	4	116	134
Lyme disease	2	5	52	1	1	3	6	4	0	0	0	0	4	0	2	0	0	29	3	69	74
Vibrio species	0	0	2	0	0	1	2	1	0	2	1	1	0	2	0	0	0	1	2	37	9
Other Conditions																					
AIDS(4)	52	19	749	62	61	587	244	188	30	106	113	158	565	105	605	36	24	106	138	2395	2426
Hepatitis B	32	13	69	10	23	133	57	19	13	13	22	4	20	13	108	2	9	20	38	854	405
Adult elevated blood lead levels	1	2	527	11	43	58	2	3	0	11	4	2	41	11	47	1	2	1	1	1466	662
Animal rabies - total	40	57	343	30	19	164	151	40	25	5	31	22	9	5	37	3	0	85	20	715	905
Animal rabies - dogs and cats	1	6	8	1	0	0	6	0	3	0	1	0	0	0	0	0	0	1	0	31	26
Tuberculosis Disease (2) (4)																					
Children (0-14 years)	1	0	25	0	1	29	11	5	0	1	16	4	13	1	25	6	0	11	8	33	89
Adults (>14 years)	13	12	297	34	8	410	120	85	11	39	142	54	205	38	343	50	17	69	61	518	1190
Injuries(2)																					
Spinal Cord Injuries (5)	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*0	*825	*737

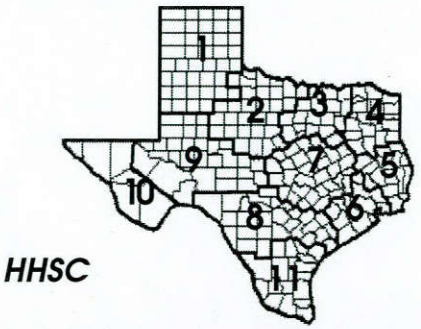
1. Cumulative to this month. 2. Data for the STD's, Tuberculosis, and spinal cord injuries are provided by date of report, rather than date of onset. 3. Voluntary reporting. 4. AIDS + TB totals include reported cases from Texas Department of Corrections, which are not included in the regional and county totals. 5. 6 reports were missing PHR identification. * Data Incomplete.

Call 1-800-705-8868 to report

1999 POPULATION ESTIMATES

HHSC REGIONS							
1	770,440	4	971,877	7	1,989,767	10	784,287
2	533,633	5	690,501	8	2,076,931	11	1,687,473
3	5,366,008	6	4,557,450	9	567,058		
STATEWIDE TOTAL			19,995,428				

SELECTED COUNTIES			
Bexar	1,360,411	Hidalgo	528,300
Dallas	2,172,486	Nueces	315,965
El Paso	755,339	Tarrant	1,506,790
Harris	3,268,099	Travis	647,366



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Vaccine-Preventable Disease Update
Reported Cases with Onset From 09/01/01 - 10/31/01

Condition	County	Number of Cases	Date of Onset	Condition	County	Date of Cases	Date of Onset
Mumps	**Denton**	**1**	**10/18**	**Pertussis**	**Dallas**	**1**	**9/15**
	Webb	**1**	**10/04**			**1**	**9/24**
Perussis	**Bell**	**1**	**9/12**			**2**	**9/27**
		1	**9/14**			**1**	**10/15**
		1	**9/15**		**Erath**	**1**	**9/04**
		1	**9/17**			**1**	**9/07**
		1	9/18		Gray	1	9/09
	Bexar	2	10/05		Potter	1	9/04
		1	10/11		Tarrant	2	9/01
	Dallas	1	9/01		Wichita	1	10/02

YTD	Measles	Mumps	Pertussis	Rubella	Tetanus
	1	**9**	**359**	**1**	**1**