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Lead Poisoning Associated with Ayurvedic Medications — Five States, 2000–2003

Although approximately 95% of lead poisoning among U.S. adults results from occupational exposure (*1*), lead poisoning also can occur from use of traditional or folk remedies (*2–5*). Ayurveda is a traditional form of medicine practiced in India and other South Asian countries. Ayurvedic medications can contain herbs, minerals, metals, or animal products and are made in standardized and nonstandardized formulations (*2*). During 2000–2003, a total of 12 cases of lead poisoning among adults in five states associated with ayurvedic medications or remedies were reported to CDC (Table). This report summarizes these 12 cases. Culturally appropriate educational efforts are needed to inform persons in populations using traditional or folk medications of the potential health risks posed by these remedies.

The first three cases described in this report were reported to CDC by staff at Dartmouth Hitchcock Medical Center at Dartmouth Medical School, New Hampshire; the California Childhood Lead Poisoning Prevention Program; and the California Department of Health Services. To ascertain whether other lead poisoning cases associated with ayurvedic medicines had occurred, an alert was posted on the *Epidemic Information Exchange* (*Epi-X*), and findings from the cases in California were posted on the Adult Blood Lead Epidemiology and Surveillance (ABLES) listserv. Nine additional cases were reported by state health departments in Massachusetts, New York, and Texas (Table).

Case Reports

New Hampshire. A woman aged 37 years with rheumatoid arthritis visited an emergency department (ED) with diffuse abdominal pain, nausea, and vomiting of 6 days' duration. Tests revealed microcytic anemia, moderate basophilic stippling, and no identifiable source of blood loss. Her blood lead level (BLL) was 81 μg/dL (geometric mean BLL = 1.75 μg/dL for U.S. population aged ≥20 years [*6*]), and her zinc protoporphyrin (ZPP) concentration was 286 μg/dL (normal: <35 μg/dL [*7*]). She reported ingesting five different traditional medications (two powders and three tablets) obtained from an ayurvedic physician in India for her rheumatoid arthritis. Analysis of the two powders revealed 17,000 and 12,000 parts per million (ppm) lead, respectively, and 60–100 ppm lead in the three tablets. She began oral chelation therapy; 1 week after completion, her BLL was 35 μg/dL. Her

TABLE. Reported cases of adult lead poisoning related to ayurvedic medications, by state and selected characteristics — United States, 2000–2003

State	Year	Age (yrs)	Sex	Patient's country of origin	BLL* at presentation (μg/dL)	Type of ayurvedic medications ingested	Lead concentration of medications (ppm)	Received chelation therapy
New Hampshire	2001	37	Female	India	81	Two powders, three tablets	Powders: 12,000–17,000 Tablets: 60–100	Yes
California	2003	31	Female	India	112	Nine medications, including pill taken four times daily	Pill taken four times daily: 73,900; Three others: 21, 65, and 285	Yes
California	2003	34	Male	India	80	10 powders, tablets, syrups	Tablet: 78,000; Pill: 36	Yes
Massachusetts	2002	62	Male	India	89	Guglu tablets	14,000	Yes
Massachusetts	2002	56	Female	India	60	Guglu tablets	14,000	Yes
Massachusetts	2003	19	Female	Nepal	46	Sundari Kalp (pill and liquid)	Pill: 96,000; Liquid: 0	Yes
New York	2000	25	Female	India	91	Pill	79,000	Yes
New York	2001	52	Male	India	49	Unknown form	Not known	Not known
New York	2000	57	Female	India	27	Unknown form	Not known	No
New York	2000	40	Female	India	92	Jambrulin	44,000	Yes
New York	2001	56	Male	India	100	Powder	Not known	Yes
Texas	2003	50	Male	Not stated	92	Jambrulin	22,700–26,700	Yes

* Blood lead level.

two children, aged 6 and 7 years, had BLLs of 5 and 3 μg/dL, respectively. Two years later, the woman reported to her physician with joint symptoms from rheumatoid arthritis and was found to have microcytic anemia and a BLL of 64 μg/dL. She reported restarting ayurvedic medications 2 weeks previously. She agreed to stop taking the medications, and her physician decided against chelation therapy.

California. A woman aged 31 years visited an ED with nausea, vomiting, and lower abdominal pain 2 weeks after a spontaneous abortion. One week later, she was hospitalized for severe, persistent microcytic anemia with prominent basophilic stippling that was not improving with iron supplementation. A heavy metals screen revealed a BLL of 112 μg/dL; a repeat BLL 10 days later was 71 μg/dL, before initiation of oral chelation therapy. A ZPP measurement performed at that time was >400 μg/dL. Her husband's BLL was 6 μg/dL. No residential or occupational lead sources were identified, but the woman reported taking nine different ayurvedic medications prescribed by a practitioner in India for fertility during a 2-month period, including one pill four times daily. She discontinued the medications after an abnormal fetal ultrasound 1 month before her initial BLL. Analysis of her medications revealed 73,900 ppm lead in the pill taken four times daily and 21, 65, and 285 ppm lead in three other remedies. Her BLL was 22 μg/dL when she was tested 9.5 months after the initial BLL testing.

A man aged 34 years was evaluated twice in an ED for back pain and abdominal pain. A screen for heavy metals revealed a BLL of 80 μg/dL. He was hospitalized for chelation therapy and disclosed that he had been taking ayurvedic medications prescribed by a practitioner in India to increase fertility. He had discontinued use the previous day. The 10 preparations included pills, powders, and syrups, most of which were not labeled. He had taken one type of tablet once daily for 3 months; samples of one of these tablets contained 78,000 ppm lead. A second variety of pill contained 36 ppm lead. A home investigation revealed no other sources of lead. His BLL was 17 μg/dL when tested 7.5 months after the initial BLL test.

Massachusetts, New York, and Texas. Nine additional cases were reported from Massachusetts, New York, and Texas (Table). The median age of patients was 52 years; five patients were female. The five women were taking the medications for arthritis (one), menstrual health (one), and diabetes (three). The four men were taking the medications for arthritis (one) and diabetes (three).

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Editorial Note: Although the majority of cases of lead poisoning in adults result from occupational exposures, use of traditional or folk medications also can cause lead poisoning. In the United States, lead exposure in adults has decreased substantially during the preceding two decades because of removal of lead from gasoline and regulation of lead exposure in the workplace. Nevertheless, 10,658 cases of BLLs ≥25 μg/dL in adults (aged ≥16 years) were reported from the 35 states that provided data to the ABLES program in 2002 (*1*).

Certain traditional or folk medications used in East Indian, Indian, Middle Eastern, West Asian, and Hispanic cultures contain lead and other adulterants (*3*). In this report, the majority of persons affected were of Asian Indian or other East Indian descent. Several ayurvedic and other traditional medications do not contain lead; however, lead content has ranged from 0.4 to 261,200 ppm in certain common ayurvedic preparations (*8*). Certain branches of ayurvedic medicine consider heavy metals to be therapeutic and encourage their use in the treatment of certain ailments.

Symptoms of lead toxicity in adults often vary and are nonspecific; these include abdominal pain, fatigue, decreased libido, headache, irritability, arthralgias, myalgias, and neurologic dysfunction ranging from subtle neurocognitive deficits to a predominantly motor peripheral neuropathy to encephalopathy (*9*). The number and severity of symptoms typically increase as BLLs increase; however, the toxic effects of lead can occur without overt symptoms. In assessing patients with nonspecific, multisystemic symptoms, medical and public health professionals should consider lead toxicity in the differential diagnosis and request BLL testing. The finding of a high BLL without an obvious occupational or environmental source should elicit inquiries about traditional or folk medications as a potential source of exposure. Primary management of lead toxicity is source identification and exposure cessation. In adults, chelation therapy usually is reserved for patients with substantial symptoms or signs of lead toxicity or BLLs of >80 μg/dL (*9*).

Culturally appropriate educational efforts are needed to inform persons of the potential health risks posed by these remedies, particularly in populations in which traditional or folk medication use is prevalent. For remedies known to contain lead or to be possibly adulterated with lead, educational materials should state the potential health effects. Young children and fetuses of pregnant women are at added risk for the toxic effects of lead, particularly because of the use of these products to treat infertility in women (*10*).

Identification of the additional nine cases underscores the value of electronic health communications systems, such as listservs and *Epi-X*. These systems disseminate information quickly for geographically dispersed events that could be missed by routine surveillance systems.

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Childhood Lead Poisoning from Commercially Manufactured French Ceramic Dinnerware — New York City, 2003

Lead poisoning adversely affects children worldwide. During 1999–2000, an estimated 434,000 children aged 1–5 years in the United States had elevated blood lead levels (BLLs) ≥10 μg/dL (*1*). Glazes found on ceramics, earthenware, bone china, and porcelain often contain lead and are a potential source of lead exposure. Children are especially vulnerable to

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Trends in Primary and Secondary Syphilis and HIV Infections in Men Who Have Sex with Men — San Francisco and Los Angeles, California, 1998–2002

Because syphilis infection facilitates acquisition and transmission of human immunodeficiency virus (HIV) (*1,2*), recent outbreaks of syphilis among men who have sex with men (MSM) in major U.S. cities (*3*), including San Francisco and Los Angeles (*4,5*), and reported increases in sexual risk behavior (*5*) have raised concerns about potential increases in HIV transmission. In 2002, MSM accounted for the majority of primary and secondary (P&S) syphilis cases in men reported in San Francisco (93%) and Los Angeles (81%). To investigate a potential change in HIV incidence associated with the syphilis outbreaks in the two cities, local, state, and federal health officials analyzed data from HIV counseling and testing centers and a municipal sexually transmitted disease (STD) clinic. This report describes the results of that investigation, which indicated that, as of 2002, the outbreaks of syphilis had not had a substantial impact on HIV incidence among MSM in these two cities. However, the continued increase in syphilis cases in MSM underscores the need for integrated HIV- and STD-prevention strategies to control syphilis outbreaks and prevent potential increases in HIV infections (*6,7*) and for further systematic studies of HIV incidence among MSM infected with syphilis.

For this analysis, numbers and characteristics of P&S syphilis cases among MSM in San Francisco and Los Angeles were determined from STD morbidity data. Rates of P&S syphilis per 100,000 MSM were calculated for the estimated 50,782 MSM living in San Francisco in 2001 (*8*). In 2002, approximately 47% and 18% of MSM with P&S syphilis in San Francisco and Los Angeles, respectively, had syphilis diagnosed at publicly funded sites, which included primarily STD clinics.

A sensitive/less sensitive HIV-1 enzyme immunoassay (EIA) (Vironostika HIV-1 Microelisa, bioMérieux, Durham, North Carolina) testing algorithm known as STARHS (*9,10*) was used to estimate HIV incidence by using stored blood specimens for 1) MSM receiving confidential HIV counseling and testing at the City Clinic (SFCC), San Francisco's only municipal STD clinic, and 2) MSM receiving anonymous HIV counseling and testing at University of California at San Francisco AIDS Health Project (AHP) sites. For persons tested at AHP sites (1998–2002) and persons tested at SFCC (1998–2000), demographic and risk-factor information collected on the California HIV counseling and testing form was analyzed. For persons tested at SFCC (2001–2002), analogous information obtained from medical records was analyzed. Persons who tested reactive with the sensitive EIA and nonreactive with the less sensitive assay were considered recently HIV infected (mean seroconversion period: 170 days) (*10*). Annualized HIV incidence and 95% confidence intervals (CIs) based on a normal distribution were calculated; all reported p-values were obtained by using a chi-square test for trend.

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