

# Lead Poisoning in Clark County

## INFORMATION FOR PHYSICIANS

October 2005

### Introduction

The Clark County Health District (CCHD) is providing this information to health care providers in order to maintain awareness and to provide an update of ongoing efforts directed toward addressing the issue of lead poisoning in Clark County. Significant progress in assessing the issue of lead poisoning in Clark County has been accomplished since our last publication. This newsletter and related work activities regarding lead poisoning surveillance in Clark County are made possible through a grant from the Nevada Department of Health and Human Services, Health Division. General information on lead poisoning, program goals and a summary of our accomplishments to date, blood lead reporting guidelines, current assessment results, and future activities are included in this publication.

Lawrence Sands, DO, MPH  
Director, Community Health Services

### General Information

Lead poisoning is an illness resulting from the absorption of inorganic lead into body tissues. Except for the acute cases, lead poisoning has no overt symptoms, and, therefore, usually goes undiagnosed and untreated. A blood test is the only way to accurately diagnose lead poisoning.

In the United States today, lead poisoning is one of the most common and preventable diseases of environmental origin among children. Exposure to lead may have significant health effects on children, affecting the renal, neurological, gastrointestinal, and hematopoietic systems.<sup>1</sup> Even at low levels, chronic exposure to lead may result in cognitive and behavioral changes and learning disabilities.<sup>2,3,4</sup> Lead poisoning may occur slowly, resulting from the gradual accumulation of lead in bone and tissue after repeated exposure. On the other hand, high levels of lead exposure may result in acute lead poisoning.

Generally, young children are more vulnerable to the effects of lead exposure. They absorb lead far more easily and rapidly than adults. Lead can be found in breast milk if a nursing mother has a high blood lead level; in which case, fetal development can be affected adversely.<sup>5</sup>

Major potential sources of lead exposure have been reduced in recent decades. Most notably, lead-based paint and leaded gasoline have been removed from the market. Despite these efforts, many children still suffer from lead poisoning. These childhood cases of lead poisoning may be due to the residual lead remaining in homes and other structures, contaminated soils, and other sources. Other lead poisoning contributors include the following recently identified sources: imported Mexican candies, chili powder, "folk" remedies, and cosmetics; small toys; jewelry; pottery glazes; lead solder; lead foil caps on wine bottles; and natural plant fertilizers such as dolomite and bone meal.<sup>6</sup> The foregoing is not meant to suggest that all of the indicated products of the types contain lead contamination. Although a number of the products containing lead originate in Mexico (e.g., Mexican candies), other products such as cookware and dishes originate in other countries. At present, we have not identified the primary place of origin of all sources of lead poisoning overall.

### Program Goals and Objectives

The primary goals of the Lead Poisoning Surveillance Program are to heighten awareness in Clark County regarding lead poisoning, to improve screening and reporting, and to standardize

investigation of cases. To accomplish program goals we implemented the following:

1. Conducted community awareness campaigns to educate healthcare providers and the community on lead poisoning;
2. Developed a database for the tracking and reporting of blood lead exposures;
3. Developed a joint protocol for the investigation and management of cases of elevated blood lead levels (BLL);
4. Developed and administered a standardized lead poisoning investigation questionnaire;
5. Conducted environmental investigations of lead poisoning cases;
6. Developed and distributed:
  - a. A healthcare provider newsletter on lead poisoning in Clark County, including medical management chart;
  - b. Public educational brochures (English and Spanish versions);
  - c. "Toxic Treats" posters (English and Spanish versions) illustrating Mexican candies known to have had high lead concentrations;
  - d. Fact Sheets on lead poisoning (English and Spanish versions); and

- e. Bookmarks on lead poisoning (English and Spanish versions).

Many of the above items may be found on our website at the following links:

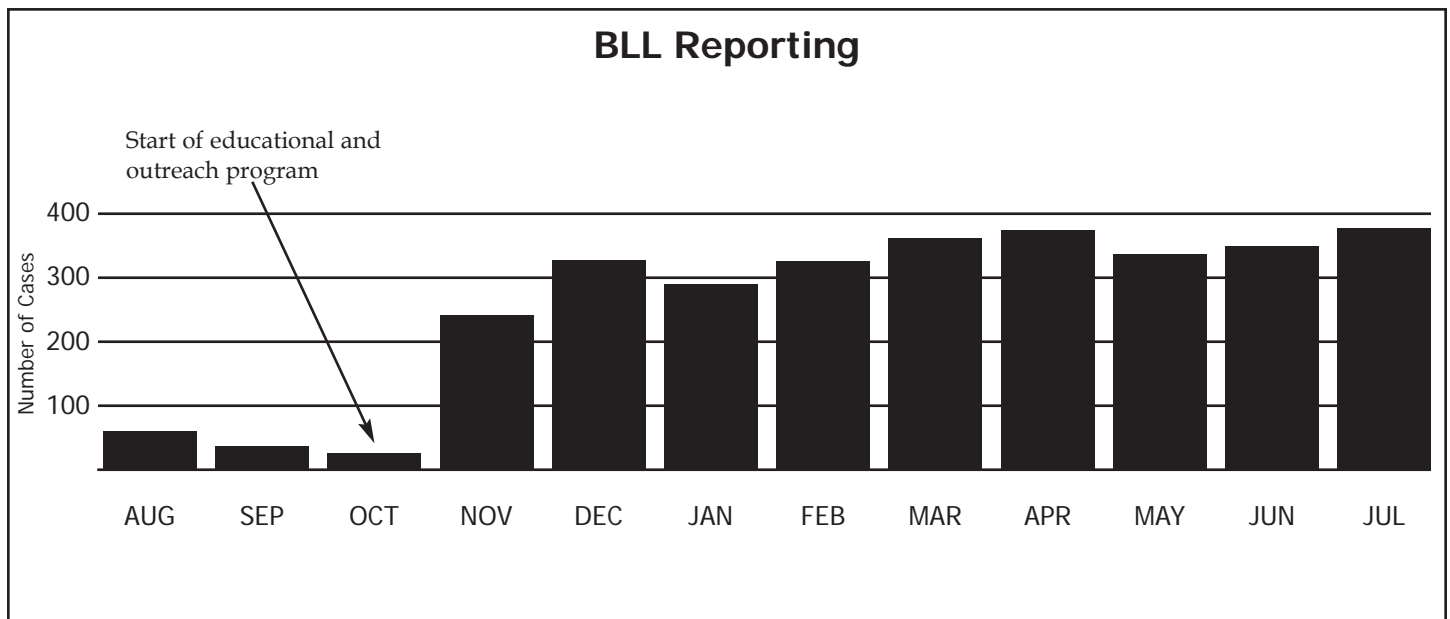
1. Lead Poisoning in Clark County Newsletter – [http://www.cchd.org/physician/epi\\_newsletter.htm](http://www.cchd.org/physician/epi_newsletter.htm).
2. Lead Poisoning Fact Sheets – [http://www.cchd.org/disease\\_factsheets.htm](http://www.cchd.org/disease_factsheets.htm)
3. Toxic Treats Posters – [http://www.cchd.org/disease\\_factsheets/lead\\_poisoning.htm](http://www.cchd.org/disease_factsheets/lead_poisoning.htm).

### BLL Reporting

Although lead poisoning is not required to be reported pursuant to Nevada statutes, federal statutes mandate the reporting of BLLs of pediatric Medicaid recipients. In compliance with federal statutes, healthcare providers and two major commercial laboratories have been outstanding regarding their efforts in reporting BLLs to either the Nevada State Health Division (NSHD) or CCHD. The two reporting laboratories are Quest Diagnostics Incorporated and LabCorp Phoenix.

Figure 1 displays the monthly reporting of BLLs from August 2004 to August 2005. The level of reporting has remained high, particularly, since the education and outreach campaign of October 2004.

Figure 1: BLL Reporting by Month



## Assessment Results

Implementation of the lead poisoning surveillance program has enhanced the CCHD's ability to identify higher risk subpopulations within the county. It is estimated that 102,130 (20%) of the homes in Clark County were built prior to 1979, and most of these homes serve as permanent places of residence for Hispanic, African-American, and lower socio-economic status subgroups within Clark County.<sup>7</sup> In addition, the county's Hispanic population has undergone a dramatic increase since 1995. The 2005 Nevada State Demographer population projections estimate the current Hispanic community at approximately 446,907 (25.5%).<sup>8,9,10</sup> Approximately, 40,000 or more Hispanic, African-American, and lower socioeconomic status subgroups within Clark County live in homes built prior to 1979 and are potentially at risk of lead poisoning.

Table 1 below shows the number of BLL reports stratified by BLL, ethnicity, and age. A child, as defined here, is a person age 0 to 20 years, although over 90% of these reports are represented by children aged 0 to 14 years. An adult is a person age 21 years and above. A lead-poisoning (LP) case is defined as a child having a BLL that is greater than or equal to 10 micrograms per deciliter of whole blood (10 µg/dL), or an adult having a BLL that equals or exceeds 25 µg/dL. An elevated blood lead level (EBLL), for the sake of this newsletter, is a BLL between 1 and 9 µg/dL; none detect (ND) is a blood level between 0 and the limit of detection (LOD) of the instrument utilized for the test.

As is seen in Table 1, of the 3,684 reports of blood lead testing received during the past year, 51 (1.4%) were lead-poisoned cases and 981 (27%) had elevated BLLs. Children are disproportionately affected by lead exposure, comprising 17 (33%) of the LP cases and 621 (63%) of the EBLL cases. Among this group of blood lead level reports, Hispanic children appear particularly at risk, accounting for 15 (88%) of all childhood LP cases and 312 (50%) of all childhood EBLL cases. However, since we do not know if this population was identified by lead exposure status or clinical symptoms, we cannot provide an accurate risk estimate of Hispanic children compared to non-Hispanic children in this population.

Table 1: Blood Lead Level Reports (August 2004 through August 2005)

Ethnicity	BLL (µg/dL)			Total Reports
	0-LOD* (ND)	1-9 (EBLL)	10+ (LP)	
Hispanic	1,150	374	21	1,545
Child	1,094	312	15	1,421
Adult	56	62	6	124
Non-Hispanic	1,502	607	30	2,139
Child	1,059	309	2	1,370
Adult	443	298	28	769
Total	2,652	981	51	3,684
Child	2,153	621	17	2,791
Adult	499	360	34	893

The LODs for the two testing laboratories were <1 and <3 µg/dL.

Figure 2 shows the number of EBLL cases by ethnicity and age. Interestingly, the number of EBLL cases seen in Hispanic children as compared to non-Hispanic children is about the same. This trend is quite different when viewing LP cases (see Figure 3).

Figure 2: Elevated Blood Lead Level Cases

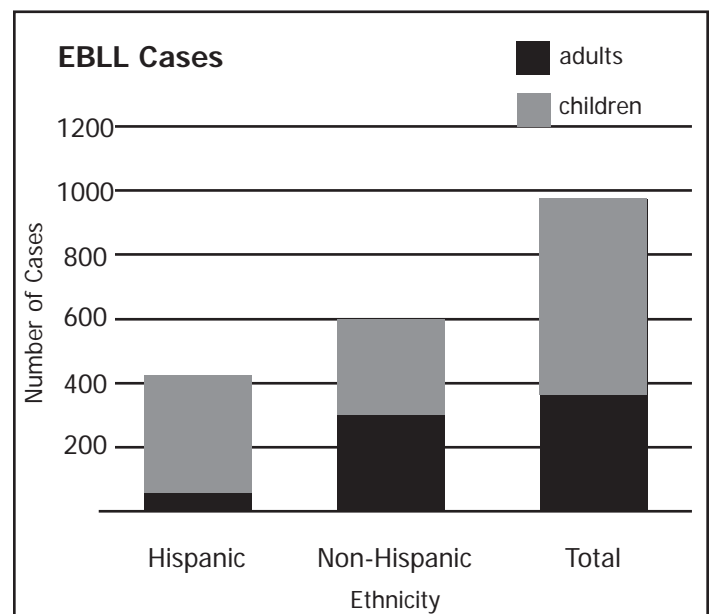
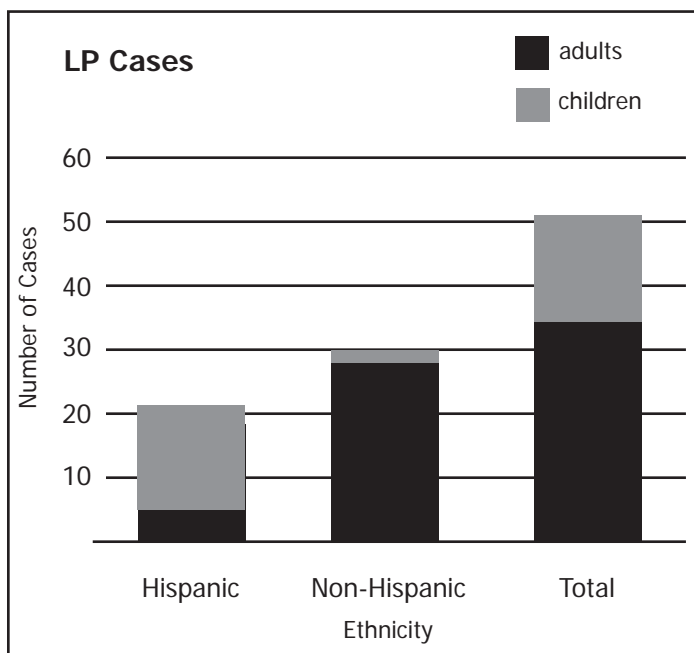


Figure 3 shows the number of LP cases by ethnicity and age. Note the disparity in the number of cases seen in Hispanic children as compared to non-Hispanic children. Hispanic children represent 88% (15 cases) of all childhood cases compared to 12% (2 cases) represented by non-Hispanic children. The number of LP cases is higher in the non-Hispanic adult group as compared to the Hispanic adult group. However, when evaluating the rate of LP cases among Hispanic (6/124) as compared to non-Hispanic (28/769) adults, as may be determined from Table 1 above, the difference in the number of LP cases does not appear to be significant. The rate of LP is 5% compared to 4%, Hispanic adult versus non-Hispanic adult, respectively.

Figure 3: Lead Poisoning Cases



### Future Activities

CCHD plans to continue its surveillance program of this very important issue affecting the Clark County community. In addition, CCHD is in search of additional funding opportunities to augment current funding sources. Continued support will allow us to investigate the lead poisoning issues in greater depth and, perhaps, determine the source(s) of or reason(s) for the more than 600 childhood EBLL cases.

Newsletter Contact: For questions or comments regarding this newsletter, contact Wilbert L. (Wil') Townsend, CIH/MPH, Chronic Disease Epidemiologist, at (702) 759-1300.

### Resources for Health Care Providers

Clark County Health District, located at 625 Shadow Lane, Las Vegas:

Community Health Division  
Office of Epidemiology  
(702) 759-1300; fax (702) 383-4936

Environmental Health Division  
(702) 383-1261; fax (702) 383-1445

Nursing Division  
(702) 759-1301; fax (702) 383-1446

CCHD Lead Poisoning Fact Sheet  
[http://www.cchd.org/fact\\_sheets.htm](http://www.cchd.org/fact_sheets.htm)

Orange County Register: Toxic Treats  
<http://www.ocregister.com/investigations/2004/lead/index.shtml>

Riverside, California: Childhood Lead Poisoning Prevention Program  
<http://www.rivcoph.org/cms/lead.htm#ed>

Environmental Protection Agency: Education and Outreach  
<http://www.epa.gov/opptintr/lead/leadpbbed.htm#brochures>

California Childhood Lead Poisoning: Lead in Tableware  
<http://www.dhs.ca.gov/childlead/tableware/twtalk.html>

U.S. Army Center for Health Promotion and Preventive Medicine Fact Sheet for Health Care Professionals: Home and Traditional Remedies and Lead Poisoning  
<http://chppm-www.apgea.army.mil/documents/FACT/55-009-0404.pdf>

### Acknowledgement

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## References

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3. Baghurst P.A., Burns J.M., McMichael A.J., Sawyer M.G., Tong S. (1999) Lifetime low-level exposure to environmental lead and children's emotional and behavioral development at ages 11-13 years: the Port Pirie Cohort Study. *American Journal of Epidemiology*, 149:740-749
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6. *Orange County Register*. (2004). Special Investigation: Toxic Treats. Retrieved Aug. 2, 2004, from <http://www.ocregister.com/investigations/2004/lead/index.shtml>
7. "Housing-Needs Assessment 2005-2009 Consolidated Plan," Clark County, Nevada Department of Finance, Community Resources Management Housing 24-25, (2004) <http://www.co.clark.nv.us/finance/crm/conplandraft05to09.htm>
8. Jeff Hardcastle, AICP, and Kelly Wilkin, Age Sex Race and Hispanic Origin Estimates from 1990 to 2003 and Projections from 2004 to 2024 for Nevada and Its Counties [Nevada (NV) State Demographer's Office for the NV Department of Taxation in Conjunction with the NV Small Business Development Center, 2004]
9. State of Nevada Demographer, 2003 Census Data, <http://www.nsbdc.org/demographer/>
10. State of Nevada Demographer, 2005 Census Data Projections, <http://www.nsbdc.org/demographer/>