



**State of Colorado
Department of
Health Care Policy and Financing**

**Blood Lead Screening Intervention
Final Report**

May 2002



**External Quality Review Organization
for Colorado**

Home Office: Health Services Advisory Group • 301 East Bethany Home Road, Suite B-157 • Phoenix, Arizona 85012-1265
Phone: (602) 264-6382 Fax: (602) 241-0757

Branch Office: 3025 S. Parker Rd., Tower 2, Suite 722 • Aurora, Colorado 80014
Phone: (303) 755-1912 Fax: (303) 755-4940

Table of Contents

1. Acknowledgements.....	iii
2. Executive Summary	1
2.1 Recommendations.....	4
3. Background	5
3.1 Incidence and Impact of Lead Exposure	5
3.1.1 Sources of Lead Exposure.....	6
3.1.2 Effects of Lead Poisoning	6
3.1.3 Colorado Screening Status	7
3.2 Sources and Strategies for Prevention	7
3.2.1 Prevention through Education.....	7
3.2.2 Follow-up Action for Elevated Blood Lead Levels.....	7
3.2.3 Federal Screening Regulations.....	8
4. Methodology	9
4.1 Introduction.....	9
4.2 Objective	10
4.3 Stakeholders.....	11
4.4 Information Sources.....	12
4.5 Intervention Materials.....	12
4.5.1 Client Education Materials.....	13
4.5.2 Provider Education Materials.....	13
4.6 Dissemination Strategy	14
4.6.1 Client Materials	15
4.6.2 Provider Materials	16
4.7 Intervention Results	17
5. References	18
6. Appendix.....	19
6.1 Chronological Timeline	20
6.2 Acronyms Used in this Report.....	21
6.3 Intervention Materials.....	22

LIST OF TABLES

Table 1-1. Contributors to Colorado Blood Lead Screening Intervention.....	iii
Table 2-1. Client Intervention Materials	2
Table 2-2. Physician Intervention Materials.....	3
Table 3-1. U.S. Blood Lead Levels By Race, Ethnicity, and Income, 1991-1994	5
Table 4-1. Client Intervention Materials	15
Table 4-2. Physician Intervention Materials.....	16
Table 6-1. Timeline for Intervention Program Actions.....	20
Table 6-2. Acronyms Used in this Report	21

1. ACKNOWLEDGEMENTS

Successful interventions usually depend on collaboration among multiple groups with a diverse range of skills and expertise. The Colorado Blood Lead Screening Intervention is an excellent example of this type of collaboration. Impetus for the intervention came from the Colorado Quality Improvement Committee (QuIC), a collaboration among Medicaid managed care organizations, the Colorado Department of Health Care Policy and Financing, and Health Services Advisory Group, Inc. The input and recommendations of the following intervention participants contributed to the quality of the result.

Table 1-1. Contributors to Colorado Blood Lead Screening Intervention

Organization	Contributing Members
Colorado Access	<ul style="list-style-type: none"> ▪ Virginia Gurley, MD, MPH, Medical Director ▪ Shannon Koleman, MBA, Preventive Health Program Coordinator ▪ Nancy Oakes, QM Coordinator ▪ Jan Sheetz, RN, PhD, Director of Quality Management
Colorado Community Health Network	<ul style="list-style-type: none"> ▪ Jessica Sanchez, RN, MSN, Clinical Activities Director
Colorado Department of Health Care Policy and Financing (CDHCPF)	<ul style="list-style-type: none"> ▪ Emad Alkhoudairy, EQRO Contract Manager ▪ Vivianne Chaumont, Deputy Director, Office of Medical Assistance ▪ Gloria Johnson, PCPP - Quality Improvement Coordinator ▪ Laurel Karabatsos, MA, Quality Improvement Manager ▪ Kelly Krajcirik, RN, HMO Site Reviewer ▪ Beth Martin, Quality and Outcomes Data Analyst ▪ Carol Rieder, PhD, EPSDT Program Administrator
Colorado Department of Public Health and Environment (CDPHE)	<ul style="list-style-type: none"> ▪ Patricia Ennis, BS, Health Worker II ▪ Mishelle Macias, MHS, Program Manager ▪ Melanie Mattson, BS, Surveillance Coordinator and Epidemiologist ▪ Lisa Miller, MD, MSPH, Acting Chief Medical Officer and Acting State Epidemiologist ▪ Susan Williamson, JD, EPSDT Program Director
Colorado Disabilities Planning Council	<ul style="list-style-type: none"> ▪ Beverly Hirsekorn, MIM, Policy Analyst
Community Health Plan of the Rockies	<ul style="list-style-type: none"> ▪ Jenae Plourde, MPH, Quality Management Manager
Denver Health Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program	<ul style="list-style-type: none"> ▪ Judy Grange, RN, MSN, Program Director

1. ACKNOWLEDGEMENTS

Organization	Contributing Members
Harrington Elementary School in Denver, Colorado	<ul style="list-style-type: none">▪ Allison Cox, student▪ Kendra Homer, student
Health Services Advisory Group, Inc. (HSAG)	<ul style="list-style-type: none">▪ Mary Ellen Dalton, RN, MBA, Vice President, Private Division▪ Margaret deHesse, RN, BSN, Director of Administrative Services▪ David De La O, ASB, Information Systems Technician▪ Tamara Fox, Administrative Assistant▪ Dana Jordan, MA, Technical Writer/Administrative Assistant▪ Rose Krebs, RN, MBA, Chief Operating Officer, State & Corporate Services▪ Janet Lucchesi, RN, MHS, Colorado EQRO Project Manager▪ Cecily Markland, Technical Writer▪ Anna Scott, MBA, PAHM, Project Manager
Kaiser Permanente	<ul style="list-style-type: none">▪ Corey Flohr, MHS, HEDIS Coordinator▪ Dorothy Jackson, Quality Assurance Manager▪ Erin Lilly, MPH, Medicaid Coordinator
Rocky Mountain HMO	<ul style="list-style-type: none">▪ Kathy Reimers, RN, JD, Quality Improvement Manager▪ Lori Stephenson, RN, Quality Improvement Director
United HealthCare of Colorado	<ul style="list-style-type: none">▪ Nancy Howerter, RN, BSN, Quality Improvement Coordinator▪ Kathleen Root, RN, BSN, Quality Improvement Manager

2. EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) views lead poisoning as a critical concern and the number one environmental health threat to American children. The primary sources of childhood lead exposure are now from air, water, paint, soil and dust. Nationwide research from the Centers for Disease Control and Prevention (CDC) Division of Environmental Hazards and Health Effects indicates that young children in the Medicaid program are at increased risk for having elevated blood lead levels; however, most of these children are not identified (CDC, 12/8/00). As a result, they do not receive appropriate treatment or environmental intervention.

Blood lead level (BLL) is measured as micrograms of lead per deciliter of blood. The CDC defines an elevated BLL as ≥ 10 $\mu\text{g/dL}$ for children under six years of age (CDC, 12/22/00). The American Academy of Pediatrics (AAP) policy statement notes that BLLs higher than 20 $\mu\text{g/dL}$ call for clinical management of the condition (AAP, 1998). Estimates from the National Health and Nutrition Examination Survey (NHANES 1991-1994) showed that Medicaid enrollees accounted for 83 percent of U.S. children aged one to five years who had BLLs ≥ 20 $\mu\text{g/dL}$; yet an estimated 81 percent of young children enrolled in Medicaid had not been screened with a blood lead test (CDC, 12/8/00).

This report describes an educational intervention to increase compliance with current Federal blood lead screening requirements for the Medicaid population in the state of Colorado. Planning began in March 2001 and the intervention was completed in October 2001. Objectives and methods for implementing the intervention are detailed in this report, as are HSAG's recommendations for monitoring the impact of the intervention.

The Colorado Medicaid Program is managed by the Department of Health Care Policy and Financing (CDHCPF). To improve the care of its Medicaid participants (clients), CDHCPF coordinates quality initiatives through the Colorado Quality Improvement Committee (QuIC). This committee comprises a collaboration among these organizations:

- Colorado Department of Health Care Policy and Financing (CDHCPF)
- Medicaid managed care organizations for Colorado
- Colorado community health care organizations
- Health Services Advisory Group, Inc. (HSAG), in its role as the External Quality Review Organization (EQRO) for Colorado Medicaid

In March 2001, QuIC (the Committee) reviewed data showing that fewer than five percent of one- and two-year-old Medicaid-eligible children in Colorado had received a blood lead test. The Committee found this situation not in keeping with current Federal lead screening requirements. Previous regulations had called for testing children who were assessed as being at risk. Updated Federal regulations now require testing children at 12 and 24 months as well as those aged 36 to 72 months never previously tested.

The Committee agreed upon an educational intervention program to address these low screening rates by raising parental (client) and physician (provider) awareness of the importance of testing children at the revised Federally mandated age milestones. HSAG collaborated with CDHCPF to

2. EXECUTIVE SUMMARY

implement the intervention program. This project brought together expertise and resources from QuIC, CDHCPF, and the Colorado Department of Public Health and Environment (CDPHE).

The primary focus of the intervention program was client and physician education. The aim was to create resources providing continual reminders (rather than just a one-time communication) of the importance of lead screening.

Intervention tools included a refrigerator magnet with a reminder message for parents and a wall poster for the physician office or waiting room. These materials would be distributed together with informational fact sheets to reinforce the key messages of the intervention. Client materials would be disseminated by Outreach Coordinators (case managers) for the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program, while physician intervention materials would be distributed by HSAG using a statewide mailing to provider offices. Besides educating physicians about the incidence of elevated BLLs, the physician materials also included information on lead-testing billing codes and step-by-step testing procedures for blood lead screening.

These resources were designed to complement other public health initiatives on lead screening. For example, a four-color poster to educate clients about lead poisoning and the importance of lead testing was created and distributed by CDHCPF to 68 county agencies (public health nursing services and health departments) across the state; 150 offices for the Women, Infants and Children (WIC) program; and 396 elementary schools, preschools and day care facilities in ZIP codes (at-risk ZIP codes) where children were believed to be at high risk.

Table 2-1 below gives details about the intervention educational resources and how they were distributed to Colorado Medicaid clients. Table 2-2 on page 3 shows the distribution of the physician provider intervention materials.

Table 2-1. Client Intervention Materials

Materials	Distribution
Fact Sheet A fact sheet (English on one side and Spanish on the other) for clients on the impact of lead poisoning and importance of blood lead screening	<ul style="list-style-type: none">15,000 for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators
Magnet English and Spanish versions of a refrigerator magnet reminding parents to call the doctor about lead screening	<ul style="list-style-type: none">15,000 for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators

Table 2-2. Physician Intervention Materials

Materials	Distribution
<ul style="list-style-type: none"> ▪ Governor Owens proclamation ▪ Cover letter to physicians ▪ Fact sheet for physicians ▪ Four-color wall poster ▪ Magnet 	<ul style="list-style-type: none"> ▪ 820 practice locations with approximately 2,000 physicians in family practice, general practice, pediatrics and approximately 25 pediatric sub-specialties ▪ Fact sheet will be used in EPSDT Health Maintenance Organization (HMO) Provider Training in 2002

CDHCPF and HSAG also worked together to update the *Colorado Medicaid Specialty Provider Manual EPSDT* and the *EPSDT Benefits Manual* for clients. These updated manuals now reflect the latest blood lead screening protocols and requirements.

Provider intervention materials were distributed in October 2001. Anecdotal feedback received to date indicates that posters are being used in physician offices and clinics.

Similarly, feedback indicates the magnets have been well received and are being used by practitioners. The Nurse-Family Partnership Program, a nurse home visitation program for low income women addresses lead in home visits when the child is 24 weeks, 30 weeks and 13 months of age. The Nurse-Family Partnership noted that feedback regarding the magnets was extremely positive from all 14 of its sites around the state.

The EPSDT case managers are also actively using the intervention materials for one-on-one client education. In addition, the provider fact sheet is planned for use in EPSDT HMO Provider Training in 2002. The program reportedly has also enhanced the positive collaboration between staff at CDHCPF and CDPHE.

Since the intervention described in this report addresses blood lead screening *rates*, a future project could be considered to track the number of Medicaid children with elevated BLLs identified as a result of the screenings. As noted above, the percentage of Medicaid children with elevated BLLs is higher than in the general population. Children from low-income families have been shown to be eight times as likely to have inflated levels of lead as those from high-income groups (CDC, 1997). However, national reports have indicated that many public health departments are unable to track Medicaid status and are therefore also unable to report the rates of Medicaid children with elevated BLLs. Data-sharing partnerships may help to resolve this situation. A recent report to the Centers for Medicare & Medicaid Services (CMS) by the Alliance to End Childhood Lead Poisoning (AECLP) discusses data-sharing partnerships between public health departments and state Medicaid agencies (AECLP, 2001). The report recommends combining data elements from the state Medicaid enrollment system and the blood lead surveillance system.

2.1 Recommendations

HSAG recognizes that data-sharing agreements have already been initiated between the CDHCPF and CDPHE. The groundwork is thus in place to use the results from this intervention to track screening rates and identify the actual percentage of Medicaid children with elevated blood lead levels. This approach would enable CDHCPF to ensure that high-risk Medicaid children with elevated BLLs are identified for case management and referred for appropriate follow-up.

HSAG recommends that CDHCPF use its *Annual EPSDT Participation Report (CMS-416)* to track actual improvement in screening rates, since this report includes counts of lead screening in the Colorado Medicaid population. Results for the period October through September are published in the first quarter of the next calendar year. Since intervention materials were distributed beginning in October 2001, results will not be available until the first quarter of 2003. Comparison can then be made with 1999-2000 results, which include data showing that 4.4 percent of Colorado Medicaid children (1,694 of 38,218 eligible) were screened before the intervention was initiated.

3. BACKGROUND

3.1 Incidence and Impact of Lead Exposure

Exposure to lead is known for its adverse effects on the cognitive and behavioral development of young children (Agency for Toxic Substances, 1999). Blood lead level (BLL) is measured as micrograms of lead per deciliter of blood. For children under six years of age, the CDC defines an elevated blood lead level as $\geq 10 \mu\text{g/dL}$ (CDC, 12/22/00).

Dramatic declines were seen in BLLs from 1970 to 1990 as a direct result of the phasing out of leaded gasoline. However, lead pollution remains a serious environmental hazard, with more than four percent of U.S. children under age six shown to have BLLs above the CDC threshold (CDC, 1997, 2/21/97).

As illustrated in Table 3-1 below, BLLs vary considerably among different demographic groups. Children from low-income families are eight times as likely to have inflated levels of lead as those from high-income groups. Overall, 11 percent of black non-Hispanic children have elevated BLLs—more than twice the national rate of 4.4 percent for all children (CDC, 1997).

Table 3-1. U.S. Blood Lead Levels By Race, Ethnicity, and Income, 1991-1994¹

Characteristic	Percent of Children Ages 1-5 with BLLs $\geq 10 \mu\text{g/dL}$
Race Ethnicity	
Black non-Hispanic	11.2 %
Mexican-American	4.0 %
White non-Hispanic	2.3 %
Income	
Low	8.0 %
Middle	1.9 %
High	1.0 %
All children	4.4 %

Information presented in the table above is from the CDC's National Health and Nutrition Examination Survey (NHANES). NHANES is a continuous survey of the health and nutritional status of the U.S. civilian, noninstitutionalized population designed so that each year of data

¹ From: CDC 1997a. "Update: Blood Lead Levels—United States 1991-1994." *Morbidity and Mortality Weekly Report*. U.S. Department of Health and Human Services/Public Health Service, Vol. 46, No. 7, Feb 21, 1997, pp. 141-6.

3. BACKGROUND

constitutes a nationally representative sample. A household interview and physical examination were conducted for each survey participant. The sample size of 2,392 included racial ethnic groups in addition to those listed.

3.1.1 Sources of Lead Exposure

The U.S. Environmental Protection Agency (EPA) views lead poisoning as a critical concern and the number one environmental health threat to American children. The primary sources of childhood lead exposure are now from air, water, paint, soil and dust.

According to the EPA, about 64 million U.S. homes are contaminated with paint containing high lead levels. At highest risk are older homes, especially those built before 1940. Research shows that 99 percent of homes built before this date contain some lead paint. The National Safety Council reports that lead-based paint produced before 1960 contains higher concentrations of lead than paint manufactured in later years.

CDPHE staff from the Colorado Lead Poisoning Prevention Program identified several sources of lead exposure during environmental assessments at the homes of Colorado lead-poisoned children. These sources included small items containing high concentrations of lead—such as keys and key chains, necklaces, and small imported toys with lead in the paint or plastic—which children played with, sucked or licked¹.

3.1.2 Effects of Lead Poisoning

Lead exposure affects every system of the body and impacts speech, language, and behavior. Harmful to all ages, it is especially damaging to children, fetuses, and women of child-bearing age.

Children are at greatest risk because their growing bodies absorb more lead than adults. Those under age six are considered most vulnerable because their nervous systems are still developing (EPA, 12/12/00). In addition, very young children engage in behavior (such as crawling and placing hands and toys in the mouth) that heightens exposure.

Symptoms of lead poisoning may include:

- short attention span
- loss of appetite
- difficulty sleeping
- difficulty learning
- difficulty hearing
- poor muscle coordination

¹ From: “Childhood Lead Poisoning in Colorado, January 1996-December 2000,” A publication of the Lead Poisoning Prevention Program. Colorado Department of Public Health and Environment, Publication #DCEED LP3 3642, June 2001.

3. BACKGROUND

Documented health problems range from decreased growth, learning disabilities, and behavioral difficulties to permanent damage of the nervous system, impaired hearing, brain damage, and even death.

3.1.3 Colorado Screening Status

Colorado's *1999-2000 Annual EPSDT Participation Report*, prepared by CDHCPF for the Centers for Medicare & Medicaid Services (CMS), showed the following:

- 38,218 of Colorado's Medicaid children aged one to two years old were eligible for screening.
- Of this number, 1,694 children (4.4 percent) were tested for elevated blood lead levels.

3.2 Sources and Strategies for Prevention

Pediatricians play a key role in primary as well as secondary prevention of lead ingestion. They provide anticipatory guidance as well as blood lead screening and follow up with caregiver (client) education and case management for children with elevated BLLs (AAP, 1998).

3.2.1 Prevention through Education

Prevention strategies focus on teaching methods to ensure that young children avoid prolonged contact with sources of lead. Such methods include:

- Washing hands regularly
- Cleaning painted surfaces that may contain lead
- Identifying and avoiding products (including some imported ceramics and toys) with surface finishes high in lead content
- Encouraging children to play in grassy areas instead of on dirt where they may fall and come into contact with soil-based lead
- Increasing dietary intake of foods rich in vitamin C, calcium, and iron, which can act as a barrier to lead absorption

3.2.2 Follow-up Action for Elevated Blood Lead Levels

For children with elevated blood lead levels, follow-up steps increase in intensity according to the diagnostic BLL (AAP, 1998, Table 3):

1. Children with elevated lead levels should have routine follow-up tests until they have:
 - Two consecutive test results less than 10 µg/dL, or
 - Three consecutive test results less than 15 µg/dL.

3. BACKGROUND

2. Where BLLs remain higher than these levels, clinical intervention is essential.
3. At levels higher than 20 µg/dL, clinical management of the condition is required.
Typically, an environmental investigation is then instigated to identify sources and provide lead-hazard control for the community.
4. Children with BLLs higher than 70 µg/dL should be hospitalized immediately.

3.2.3 Federal Screening Regulations

Federal Medicaid regulations were updated in 1998 with these stipulations (CMS, 9/98):

- All children must receive a blood lead test at ages 12 and 24 months.
- All children aged 36 to 72 months who have not been previously tested should also receive a blood lead test.
- A risk questionnaire is no longer required.

4. METHODOLOGY

4.1 Introduction

This section of the report outlines the methodology used to design and implement the intervention.

Health Services Advisory Group, Inc. (HSAG) used a collaborative approach to developing the intervention. HSAG partnered with local experts and structured the approach to planning, designing and implementing the intervention program.

This project brought together expertise and resources from QuIC, CDHCPF, and the Colorado Department of Public Health and Environment (CDPHE), including the already existing CDPHE-operated Lead Poisoning Prevention Program. Frequent meetings and follow-up communication with QuIC, CDHCPF, and CDPHE staff were used to coordinate input and manage the development and dissemination of the intervention materials. This process ensured that all parties agreed to key decisions. HSAG orchestrated production and used existing channels where possible for distribution of the intervention materials.

HSAG facilitated discussions on content, worked directly with vendors and subcontractors for production, and managed the timeline to ensure timely and appropriate dissemination.

The following sections of this report describe the key elements of this process:

- Objective
- Stakeholders
- Information Sources
- Intervention Materials
- Dissemination Strategy
- Intervention Results

The Appendix includes a Chronological Timeline showing key steps in the development and dissemination of the intervention between March 2001 and October 2001. This timeline illustrates the scope of the cross-agency and interdepartmental collaboration and coordination required to implement the intervention effectively.

4.2 Objective

The specific objective of the blood lead screening intervention was to encourage parents and physicians to have children tested for elevated BLLs at 12 and 24 months and, for those not previously tested, at 36 to 72 months. This objective was set by the Colorado Quality Improvement Committee (QuIC), which is responsible for quality initiatives for Colorado Medicaid members. QuIC includes these organizations:

1. Colorado Department of Health Care Policy and Financing (CDHCPF)
2. Colorado Medicaid managed care organizations:
 - Colorado Access
 - Community Health Plan of the Rockies
 - Kaiser Permanente
 - Rocky Mountain HMO
 - United HealthCare of Colorado
3. Community organizations:
 - Colorado Community Health Network
 - Colorado Disabilities Planning Council
4. Health Services Advisory Group, Inc. (HSAG), in its role as the External Quality Review Organization (EQRO) for Colorado

Impetus for the intervention came from data supporting the need to identify young children enrolled in the Colorado Medicaid Program who may be at risk for lead poisoning.

Nationwide research from the Centers for Disease Control and Prevention (CDC) Division of Environmental Hazards and Health Effects indicates that young children in the Medicaid program are at increased risk for having elevated blood lead levels; however, most of these children are not identified (CDC, 12/8/00). As a result, they do not receive appropriate treatment or environmental intervention. A 1997 CDC report showed that children from low-income families were eight times as likely to have inflated levels of lead as those from high-income groups (CDC, 1997).

Blood lead level (BLL) is measured as micrograms of lead per deciliter of blood. The CDC defines an elevated BLL as ≥ 10 $\mu\text{g}/\text{dL}$ for children under six years of age (CDC, 12/22/00). The American Academy of Pediatrics policy statement notes that BLLs higher than 20 $\mu\text{g}/\text{dL}$ call for clinical management of the condition (AAP, 1998). Estimates from the National Health and Nutrition Examination Survey (NHANES 1991-1994) showed that Medicaid enrollees accounted for 83 percent of U.S. children aged one to five years who had BLLs ≥ 20 $\mu\text{g}/\text{dL}$; yet an estimated 81 percent of young children enrolled in Medicaid had not been screened with a blood lead test (CDC, 12/8/00).

4. METHODOLOGY

CDPHE had reported in 2000 that more than three percent of children tested in Denver, Colorado had elevated BLLs, with children in some neighborhoods showing rates up to 16 percent. “Most children who have lead poisoning do not have symptoms. That is why we urge all parents to have their children tested for lead,” commented Theresa Donahue, Manager of Denver Environmental Health, in an October 26, 2000 press release issued by the Denver Department of Environmental Health.

In March 2001, QuIC (the Committee) reviewed data showing that fewer than five percent of one- and two-year-old Medicaid-eligible children in Colorado had received a blood lead test. The Committee found this situation not in keeping with current Federal lead screening requirements. Previous regulations had called for testing children who were assessed as being at risk. Updated Federal regulations now require testing children at 12 and 24 months as well as those aged 36 to 72 months never previously tested.

The Committee agreed upon an educational intervention program to address these low screening rates by raising parental (client) and physician (provider) awareness of the importance of testing children for elevated blood lead levels at the updated Federally mandated age milestones. HSAG collaborated with CDHCPF to implement the intervention program.

4.3 Stakeholders

In the course of developing the intervention, CDHCPF met with the following stakeholders:

- Medicaid Advisory Committee for Persons with Disabilities
- Providers Medicaid Advisory Committee
- State Medical Assistance and Services Advisory Council

In addition to meetings between CDHCPF and various stakeholders, HSAG researched the issues related to lead poisoning in the Medicaid population through meetings with local experts, including:

- CDPHE Program Manager/Surveillance Coordinator from the Lead Poisoning Prevention Program, who was instrumental in developing and implementing the intervention by applying knowledge of the Colorado community and expertise in blood lead poisoning issues.
- CDHCPF Program Administrator of EPSDT/Child Health.
- CDPHE Program Administrator of Child Health/EPSDT.

4.4 Information Sources

HSAG worked with CDHCPF to determine appropriate sample sizes for the intervention using enrollment information by age group. Based on CDHCPF recommendations, HSAG planned to produce a total of 15,000 magnets. Using estimated provider volumes and WindRose¹ software, HSAG identified office and clinic locations for mailing to 820 practice locations with approximately 2,000 physicians in family practice, general practice, pediatrics and approximately 25 pediatric sub-specialties.

CDPHE provided extensive lead-poisoning-prevention materials designed for consumers, including materials appropriate for Medicaid patients. The CDHCPF and other participants agreed that the intervention should build on this existing resource base. The CDPHE Lead Poisoning Prevention Program monitors screening rates and elevated blood lead levels across Colorado. This program also conducts case management and follow-up services for lead-poisoned children.

Students at Harrington Elementary School in Denver participated in a CDPHE contest to design a poster on the topic, “What is Lead Poisoning?” Two illustrations by fourth-grade students were chosen for use as artwork on four-color posters. QuIC decided to use these resources for the intervention. One poster was used for outreach to physicians and the other poster for outreach to elementary schools; the Women, Infants and Children (WIC) program; and preschools.

4.5 Intervention Materials

The primary focus of the intervention was client and physician education. As far as possible, HSAG worked with CDHCPF, CDPHE and others to capitalize on outreach efforts already in place. A key goal was to create resources that would provide continual reminders and not just a one-time communication of the importance of lead screening. It was determined that a refrigerator magnet for parents and a wall poster for the physician office or waiting room would help meet this goal.

Besides educating physicians about the incidence of elevated BLLs, the physician materials also included information on lead-testing billing codes and step-by-step testing procedures for blood lead screening.

When distributing provider and client materials, the plan was to include fact sheets to reinforce the key messages of the intervention. Client materials would be disseminated by Outreach Coordinators (case managers) for the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program. CDHCPF and HSAG also worked together to update the *Colorado Medicaid Specialty Provider Manual EPSDT* and the *EPSDT Benefits Manual* for clients. These updated manuals now reflect the latest blood lead screening protocols and requirements.

¹ © 1998 Peregrine Management Corporation

4. METHODOLOGY

4.5.1 Client Education Materials

In the year 2000, the Colorado Medicaid program included 38,218 children aged one to two years who were eligible for lead testing, according to the Colorado *1999-2000 Annual EPSDT Participation Report* to the Centers for Medicare & Medicaid Services (CMS). Families of these children were the target audience for the client intervention.

The objective of the client intervention tools was to increase awareness about the need for lead screening in the pediatric Medicaid population. The critical information on blood lead screening provided to clients through this intervention included:

- Current Medicaid blood lead testing requirement
- Facts about the dangers of lead poisoning
- Ways to prevent lead poisoning
- Need to ask the doctor about a blood lead test
- At-risk ZIP codes
- Toll-free hotline number for CDPHE Lead Poisoning Prevention Program

EPSDT case managers emphasized the importance of having the client materials available in both English and Spanish. CDHCPF provided information on the number of Spanish speakers in the state and the Hispanic population in each county. Based on CDHCPF recommendations, HSAG planned production of a total of 15,000 magnets with 35 percent in Spanish and 65 percent in English. HSAG also identified and worked with a vendor to ensure that the magnets were available in time for planned distribution in October 2001.

HSAG developed seven initial magnet design concepts for review and asked CDHCPF to choose the theme, font, and colors for a final design. QuIC, CDHCPF and EPSDT case managers reviewed the concepts and provided feedback. CDHCPF chose a theme of children at play using the words, "Call your Doctor to get your child's blood lead level tested at 12 & 24 or 36-72 Months if not previously tested." HSAG used this concept to develop four alternative designs for the final selection process. Following the choice of design, CDHCPF and CDPHE approved the production drafts, which included Spanish translation of the wording.

CDPHE updated and revised the fact sheet originally prepared for providers, and HSAG facilitated the development of a Spanish language translation. Fifteen thousand facts sheets, with English on one side and Spanish on the other, were printed for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators.

Samples of the client intervention tools are included in the Appendix.

4.5.2 Provider Education Materials

CDHCPF, CDPHE and other participants generally viewed Colorado physicians as unaware of the problem from lead exposure primarily because buildings are relatively new in that state. It was also believed that providers were unaware of the current low rates of blood lead screening. One objective of the physician intervention was to correct these misperceptions.

4. METHODOLOGY

Besides educating physicians about the incidence of elevated BLLs, QuIC also planned to provide physicians with information on lead-testing billing codes and step-by-step testing procedures for blood lead screening. The goal of the physician intervention was to provide physicians with the information needed to increase lead screening in the pediatric Medicaid population.

The critical information provided regarding blood lead screening included:

- Current Medicaid blood lead testing requirement
- National and Colorado blood lead screening rates
- Billing codes
- Step-by-step process for obtaining blood lead test
- Elevated BLL case management guidelines
- At-risk ZIP codes
- Toll-free hotline number for CDPHE Lead Poisoning Prevention Program

Samples of the provider intervention tools are included in the Appendix.

4.6 Dissemination Strategy

Colorado Governor Bill Owens had endorsed the national lead-poisoning prevention campaign by proclaiming the week of October 21 through October 27, 2001 as “Lead Poisoning Prevention Week.” A copy of the governor’s proclamation is included in the Appendix.

To maximize the impact of the Colorado Blood Lead Screening Intervention, implementation was timed to coincide with this national campaign. Provider materials were distributed in a single mailing in October 2001. QuIC partnered with other community health networks to coordinate efforts and maximize the visibility of its initiative by coordinating dates of the Colorado campaign to coincide with dates for the national campaign.

For example, a four-color poster to educate clients about lead poisoning and the importance of lead testing was designed by an elementary school student. The poster was distributed by CDHCPF to 68 county agencies (public health nursing services and health departments) across the state; 150 offices for the Women, Infants and Children (WIC) program; and 396 elementary schools, preschools and day care facilities in at-risk ZIP codes (80203, 80204, 80205, 80216).

Client education materials are being distributed on an ongoing basis by case managers working one-on-one with Medicaid clients. Details are shown in Table 4-1 on page 15.

4. METHODOLOGY

4.6.1 Client Materials

To determine the best way to communicate with Medicaid members about lead-poisoning prevention, the Program Administrator of Child Health/EPSDT Programs for CDPHE worked with EPSDT case managers throughout Colorado. Rather than distribute client materials by mail, which has been shown to be ineffective, they decided that the magnet and client fact sheet would be given to parents as part of one-on-one counseling by case managers.

This provides an ideal opportunity for the coordinator to:

- Explain and reinforce the causes and effects of lead poisoning.
- Discuss with parents simple ways to prevent children from getting lead poisoning.
- Remind parents to ask the doctor to do a blood lead test.

Table 4-1. Client Intervention Materials

Materials	Distribution
Client Fact Sheet A fact sheet (English on one side and Spanish on the other) for clients on the impact of lead poisoning and importance of blood lead screening	<ul style="list-style-type: none">▪ 15,000 for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators
Magnet English and Spanish versions of a refrigerator magnet reminding parents to call the doctor about lead screening	<ul style="list-style-type: none">▪ 15,000 for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators

Feedback indicates the client intervention materials have been well received by practitioners. The Nurse-Family Partnership Program, a nurse home visitation program for low income women addresses lead in home visits when the child is 24 weeks, 30 weeks and 13 months of age. The Nurse-Family Partnership stated the magnets “received overwhelmingly positive feedback from the fourteen Nurse-family Partnership sites around the state,” and “are wonderful gifts for the NFP nurses to share with their clients at these visits when lead prevention is discussed. Above all, they serve as a reminder to each mother of the importance and timing of lead screening for their child.”

4. METHODOLOGY

4.6.2 Provider Materials

This intervention targeted all Colorado physicians working with Medicaid pediatric patients in the categories of family practice, general practice, pediatrics and approximately 25 pediatric sub-specialties. The intervention tools for physicians included a cover letter to physicians cosigned by CDHCPF and CDPHE, fact sheet, office poster, magnet, and a copy of the “Lead Poisoning Prevention Week” proclamation by Colorado Governor Bill Owens. Samples of these tools are included in the Appendix.

Physician contact data was obtained by HSAG and then reviewed to ensure that all provider addresses in this target population were identified correctly for the intervention. Table 4-2 below describes the distribution of the tools by HSAG.

Table 4-2. Physician Intervention Materials

Materials	Distribution
<ul style="list-style-type: none">▪ Governor Owens proclamation▪ Cover letter to physicians▪ Fact sheet for physicians▪ Four-color wall poster▪ Magnet	<ul style="list-style-type: none">▪ 820 practice locations with approximately 2,000 physicians in family practice, general practice, pediatrics and approximately 25 pediatric sub-specialties▪ Fact sheet will be used in EPSDT HMO Provider Training in 2002

4.7 Intervention Results

The objective of the intervention was to encourage clients and providers to have children tested for elevated BLLs at 12 and 24 months and, for those not previously tested, at 36 to 72 months. Posters and other educational materials were distributed to providers in October 2001 in the hopes that physicians and clients would use these materials and call for more screenings. Results from anecdotal feedback received to date indicate that posters are being used in physician offices and clinics. EPSDT case managers are also actively using the intervention materials for one-on-one client education. In addition, the provider fact sheet is planned for use in EPSDT HMO Provider Training in 2002. The program has also enhanced positive relationships among staff members at CDHCPF and CDPHE.

But the primary result the intervention seeks is improvement in screening rates. CDHCPF could use its *Annual EPSDT Participation Report (CMS-416)* and other data to track actual improvement in screening rates, since this report includes counts of lead screening in the Colorado Medicaid population. Results for the period October through September are published in the first quarter of the next calendar year. Since intervention materials were distributed beginning in October 2001, results will not be available until the first quarter of 2003. Comparison can then be made with 1999-2000 results, which include data showing that 4.4 percent (1,694 of 38,218 eligible) of Colorado Medicaid children were screened before the intervention was initiated. Using available data, CDHCPF will explore additional reporting opportunities to assess the impact of the statewide screening efforts.

Since this intervention addresses blood lead screening *rates*, a future project could be considered to track the number of Medicaid children with elevated BLLs identified as a result of the screenings. National reports have indicated that many Medicaid public health departments are unable to track Medicaid status and therefore unable to report the percentage of Medicaid children with elevated BLLs. Data-sharing partnerships can be used to help resolve this situation. A recent report to the Centers for Medicare & Medicaid Services (CMS) by the Alliance to End Childhood Lead Poisoning (AECLP) discusses data-sharing partnerships between state Medicaid agencies and health departments (AECLP, 2001). The report recommends combining data elements from the state Medicaid enrollment system and the blood lead surveillance system.

HSAG recognizes that such data-sharing agreements have already been initiated between the CDHCPF and CDPHE. The groundwork is thus in place to use the results from this intervention to track screening rates and identify the actual percentage of Medicaid children with elevated blood lead levels. This approach would enable CDHCPF to ensure that high-risk Medicaid children with elevated BLLs are identified for case management and appropriate follow-up.

5. REFERENCES

- AAP, 1998. American Academy of Pediatrics. "Policy Statement RE9815: Screening for Elevated Blood Lead Levels." *Pediatrics* 101(6): 1072-1078. <<http://www.aap.org/policy/re9815.html>>
- AECLP, 2001. Alliance to End Childhood Lead Poisoning. *Track, Monitor, and Respond: Three Keys to Better Lead Screening for Children in Medicaid*. Report to Centers for Medicare & Medicaid Services (CMS). <<http://www.aeclp.org/lead%20job%202.pdf>>
- Agency for Toxic Substances, 1999. Agency for Toxic Substances and Disease Registry. *Toxicological Profile for Lead*. Atlanta, GA: U.S. Department of Health and Human Services. <<http://www.atsdr.cdc.gov/toxprofiles/tp13.html>>
- CDC, 1997. Centers for Disease Control and Prevention. *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*. Atlanta, GA: CDC. <<http://www.cdc.gov/nceh/lead/guide/guide97.htm>>
- CDC, 2/21/97. Centers for Disease Control and Prevention. "Update: Blood Lead Levels -- United States, 1991-1994." *MMWR* 46(07): 141-146. <<http://www.cdc.gov/mmwr/preview/mmwrhtml/00048339.htm>>
- CDC, 12/8/00. Centers for Disease Control and Prevention. "Recommendations for Blood Lead Screening of Young Children Enrolled in Medicaid: Targeting a Group at High Risk." *MMWR* 49(RR14):1-13. <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4914a1.htm>>
- CDC, 12/22/00. Centers for Disease Control and Prevention. "Blood Lead Levels in Young Children – United States and Selected States 1996-1999." *MMWR* 49(50): 1133-1137. <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4950a3.htm>>
- CMS, 9/98. Department of Health and Human Services Health Care Financing Administration (now Centers for Medicare & Medicaid Services). "Early and Periodic Screening, Diagnosis, and Treatment (EPSDT): Lead Toxicity Screening." HCFA Pub. 45-5. <<http://www.hcfa.gov/medicaid/epsdthm.htm>>
- EPA, 12/12/00. Office of Communications and Public Involvement (80C). Region 8 News Release: *Former Colorado Springs Apartment Owner Fined For Lead Disclosure Violation*. Denver, CO: U.S. Environmental Protection Agency. <<http://yosemite.epa.gov/r8/r8media.nsf>>

6. APPENDIX

This section contains figures and tables referenced earlier in this report. Intervention materials can be found after the last tab in the pocket of the presentation folder.

6.1 Chronological Timeline

In September 2001, Colorado Governor Bill Owens issued a state proclamation establishing a lead-poisoning-prevention week for the following month to coincide with national dates. The table below shows the timeline developed by HSAG to implement the Colorado Blood Lead Screening Intervention.

Table 6-1. Timeline for Intervention Program Actions

Month	Critical Activities
March 2001	Colorado Quality Improvement Committee (QuIC) convened. Objectives for lead screening intervention agreed upon.
May 2001	Intervention tools identified.
July 2001	<ul style="list-style-type: none"> ▪ Language on blood lead screening requirements revised for <i>Colorado Medicaid Specialty Provider Manual EPSDT</i> and <i>EPSDT Benefits Manual</i> for clients. ▪ Production volume of 15,000 identified for client materials. ▪ Intervention tools priced. ▪ Magnets and fact sheets selected as best interventions for clients.
August 2001 to September 2001	<ul style="list-style-type: none"> ▪ Cover letters, fact sheets, posters, and magnets selected as best tools for physician education. ▪ Input on intervention tools gathered from EPSDT Outreach Coordinators. ▪ Intervention tools designed and developed for review and approval. ▪ Physician population identified.
October 2001	<ul style="list-style-type: none"> ▪ Posters, magnets, and fact sheets finalized and produced. ▪ Physician letter developed jointly with CDPHE. ▪ Physician mailing completed. ▪ Client tools delivered to EPSDT Outreach Coordinators. ▪ Peregrine's WindRose software used to identify office and clinic locations for physician mailing.

6.2 Acronyms Used in this Report

Table 6-2. Acronyms Used in this Report

Acronym	Meaning
AAP	American Academy of Pediatrics
AECLP	Alliance to End Childhood Lead Poisoning
BLLs	Blood Lead Levels
CDC	Centers for Disease Control and Prevention
CDHCPF	Colorado Department of Health Care Policy and Financing
CDPHE	Colorado Department of Public Health and Environment
CMS	Centers for Medicare & Medicaid Services
CMS-416	<i>Annual EPSDT Participation Report</i>
EPA	U.S. Environmental Protection Agency
EPSDT	Early and Periodic Screening, Diagnosis, and Treatment
EQRO	External Quality Review Organization
HMO	Health Maintenance Organization
HSAG	Health Services Advisory Group, Inc.
MMWR	Morbidity and Mortality Weekly Report
QuIC	Quality Improvement Committee
WIC	Women, Infants and Children program

6.3 Intervention Materials

This section lists the educational materials found after the “Intervention Materials” tab in the pocket of the presentation folder:

- Colorado Proclamation of “Lead Poisoning Prevention Week”
Governor Bill Owens proclaimed “Lead Poisoning Prevention Week” for the state of Colorado as October 21 through 27, 2001 to coincide with the national dates.
- “Lead Hurts Kids” Magnet
The magnet design was developed by HSAG in collaboration with CDHCPF, CDPHE and QuIC. One magnet was produced with the message in English and another with the message in Spanish. Fifteen thousand magnets were produced for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators (case managers).
- “Lead is Poison” Poster
Design for the four-color poster was drawn from artwork created by Colorado elementary school student winners of a statewide contest. The poster was created and distributed by CDHCPF to 68 county agencies (public health nursing services and health departments) across the state; 150 offices for the Women, Infants and Children (WIC) program; and 396 elementary schools, preschools and day care facilities in at-risk ZIP codes (80203, 80204, 80205, 80216).
- Provider Cover Letter
This letter was sent with the other intervention materials to 820 practice locations with approximately 2,000 physicians in family practice, general practice, pediatrics, and approximately 25 pediatric sub-specialties.
- Client and Provider Fact Sheets
The client fact sheet was printed in English on one side and in Spanish on the other. Fifteen thousand client fact sheets were printed for ongoing dissemination to Medicaid beneficiaries by 100 EPSDT Outreach Coordinators.
The provider fact sheet was printed for distribution to 820 practice locations with approximately 2,000 physicians in family practice, general practice, pediatrics, and approximately 25 pediatric sub-specialties. The provider fact sheet was also planned for use in the EPSDT Health Maintenance Organization (HMO) Provider Training in 2002.