



Recommendations and Reports

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Recommendations for Blood Lead Screening of Young Children Enrolled in Medicaid: Targeting a Group at High Risk

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Summary

Children aged 1--5 years enrolled in Medicaid are at increased risk for having elevated blood lead levels (BLLs). According to estimates from the National Health and Nutrition Examination Survey (NHANES) (1991--1994), Medicaid enrollees accounted for 83% of U.S. children aged 1--5 years who had BLLs >20 µg/dL. Despite longstanding requirements for blood lead screening in the Medicaid program, an estimated 81% of young children enrolled in Medicaid had not been screened with a blood lead test. As a result, most children with elevated BLLs are not identified and, therefore, do not receive appropriate treatment or environmental intervention.

To ensure delivery of blood lead screening and follow-up services for young children enrolled in Medicaid, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) recommends specific steps for health-care providers and states. Health-care providers and health plans should provide blood lead screening and diagnostic and treatment services for children enrolled in Medicaid, consistent with federal law, and refer children with elevated BLLs for environmental and public health follow-up services.

States should change policies and programs to ensure that young children enrolled in Medicaid receive the screening and follow-up services to which they are legally entitled. Toward this end, states should a) ensure that their own Medicaid policies comply with federal requirements, b) support health-care providers and health plans in delivering screening and follow-up services, and c) ensure that children identified with elevated BLLs receive essential, yet often overlooked, environmental follow-up care. States should also monitor screening performance and BLLs among young children enrolled in Medicaid. Finally, states should implement innovative blood lead screening strategies in areas where conventional screening services have been insufficient. This report provides recommendations for improved screening strategies and relevant background information for health-care providers, state health officials, and other persons interested in improving the delivery of lead-related services to young children served by Medicaid.

BACKGROUND

High blood lead levels (i.e., >70 µg/dL) can cause serious health effects, including seizures, coma, and death (1). Blood lead levels (BLLs) as low as 10 µg/dL have been associated with adverse effects on cognitive development, growth, and behavior among children aged 1--5 years (1). Since the virtual elimination of lead from gasoline and other consumer products in the United States, lead-based paint in homes remains the major source of lead exposure among U.S. children (1). Most commonly, children are exposed through chronic ingestion of lead-contaminated dust (2).

Because children with elevated BLLs in the 10--25 µg/dL range do not develop clinical symptoms, screening is necessary to identify children who need environmental or medical intervention to reduce their BLLs. CDC has recommended specific interventions to reduce elevated BLLs (2,3). To ensure delivery of blood lead screening and follow-up services for young children enrolled in Medicaid, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) has recommended specific steps for health-care providers and states (Box).

ACCLPP also is developing updated recommendations of specific guidelines for environmental, medical, developmental, nutritional, and educational interventions for children with elevated BLLs. ACCLPP regularly advises CDC regarding new scientific knowledge and technological developments and their practical implications for childhood lead poisoning prevention efforts.

INTRODUCTION

Change in the Epidemiology of Lead Poisoning

Despite the decline in average BLLs among the U.S. population, childhood lead exposure remains a major environmental health problem in the United States (4). During 1991--1994, CDC estimated that 890,000 (4.4%) children aged 1--5 years had elevated BLLs (>10 $\mu\text{g/dL}$), based on data from Phase 2 of the National Health and Nutrition Examination Survey (NHANES) III (4). The prevalence of elevated BLLs was 5.9% among children aged 1--2 years and 3.5% among children aged 3--5 years (4). Children aged 1--5 years were more likely to have elevated BLLs if they were poor, of non-Hispanic black race, or lived in older housing (4). The prevalence of elevated BLLs was higher among non-Hispanic black children (21.9%) and Mexican-American children (13.0%) living in housing built before 1946 than among non-Hispanic white children (5.6%) living in such older housing. Risk for an elevated BLL was higher among low-income children living in housing built before 1946 (16.4%) than among high-income children living in older housing (0.9%) (4).

In response to NHANES III information regarding the distribution and prevalence of lead poisoning among U.S. children, CDC changed its national blood lead screening recommendations to a state-based approach. In *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*, issued in 1997, CDC called on state health departments to develop plans to ensure screening of all children at high risk for having elevated BLLs (2). To develop such plans, CDC recommended that state health departments assess local data on BLLs and risk factors. If no statewide plan exists, states should screen virtually all young children, as recommended in the 1991 edition of *Preventing Lead Poisoning in Young Children* (2,3). Because young children living in poverty are at high risk for elevated BLLs, CDC recommended various strategies for increasing blood lead screening for all such children, including young children enrolled in Medicaid (2). Specifically, CDC recommended that children who receive Medicaid benefits should be screened unless there are reliable, representative blood lead data that demonstrate the absence of lead exposure among this population.

Medicaid Children at High Risk for Having Elevated Blood Lead Levels

After publication of CDC's 1997 guidelines (2), CDC and the U.S. General Accounting Office (GAO) further analyzed data from Phase 2 of NHANES III, confirming that children enrolled in Medicaid are at high risk for having elevated BLLs (>10 $\mu\text{g/dL}$) (5). An estimated 535,000 children enrolled in Medicaid had elevated BLLs (Table 1), with a prevalence among children aged 1--5 years (9%) three times greater than that among young children not enrolled in Medicaid (3%) (5). Medicaid enrollees accounted for 60% of children aged 1--5 years who had BLLs >10 $\mu\text{g/dL}$ and 83% of young children with levels >20 $\mu\text{g/dL}$ (5,6).

This analysis also documented low screening rates among young children enrolled in Medicaid (5), with 81% of those aged 1--5 years and 79% of those aged 1--2 years not receiving a blood lead test (5,7). Of an estimated 535,000 children aged 1--5 years who were enrolled in Medicaid and had elevated BLLs, 352,000 (65%) had not been screened with a blood lead test and, therefore, did not receive appropriate medical and public health case management, follow-up care, and environmental services to reduce their BLLs (Table 2) (5). Several states have also reported low screening rates for children enrolled in Medicaid (8).

Health Care Financing Administration (HCFA) Policies for Blood Lead Screening of Children Enrolled in Medicaid

Current HCFA policies require that all young children enrolled in Medicaid be screened with a blood lead test (i.e., federal Medicaid requirements). In December 1999, the American Academy of Pediatrics (AAP) supported this policy, emphasizing the higher risk for elevated BLLs among children enrolled in Medicaid (9).

Since 1989, federal law has required states to screen children enrolled in Medicaid for elevated BLLs as part of prevention services provided through the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program. The EPSDT program provides screening and entitles children to any federally allowable diagnostic and treatment service necessary to correct the condition found by the screening (10). Details of blood lead screening requirements are periodically revised by HCFA, which administers the Medicaid program at the federal level.

Federal Medicaid regulations were updated in 1998 to require that all children must receive a blood lead screening test at ages 12 and 24 months. All children aged 36--72 months who have not previously been screened must also receive a blood lead test (11). A blood lead test is the only required screening element. There is no waiver to this Medicaid requirement for blood lead screening at this time.

RECOMMENDATIONS TO ENSURE SCREENING AND FOLLOW-UP CARE FOR CHILDREN ENROLLED IN MEDICAID

To ensure blood lead screening and appropriate follow-up care for young children at risk for lead poisoning and enrolled in Medicaid, ACCLPP makes the following recommendations for health-care providers and states, as well as other agencies that administer Medicaid programs (e.g., those serving Medicaid-eligible Native Americans). According to CDC recommendations, if there are no reliable blood lead data demonstrating the absence of lead exposure among this population, health-care providers should a) screen all young children enrolled in Medicaid with a blood lead test in accordance with HCFA policy, b) provide medical management and care, and c) refer children with elevated BLLs for environmental and public health case management.

ACCLPP Recommendations for Health-Care Providers

- All children enrolled in Medicaid should be screened with a blood lead test at ages 12 and 24 months or at ages 36--72 months if they have not previously been screened.

ACCLPP recommends administration of a blood lead screening test for all children enrolled in Medicaid at ages 12 and 24 months; children who have not previously been screened should be tested at ages 36--72 months (11). Administering a risk-assessment questionnaire instead of a blood lead test does not meet Medicaid requirements.

If children are exposed to lead, their BLLs tend to increase during ages 0--2 years and peak at ages 18--24 months (12). Therefore, screening is recommended at both ages 1 and 2 years to identify children who need medical management and environmental and public health case management (2). Identifying a child with an elevated BLL at age 1 year might prevent additional increases during ages 1--2 years. In addition, a child with a BLL <10 $\mu\text{g}/\text{dL}$ at age 1 year might have an elevated level by age 2 years, underscoring the importance of rescreening at age 2 years. For example, among children at selected clinics in high-risk areas of Chicago in 1997, the prevalence of elevated BLLs (>10 $\mu\text{g}/\text{dL}$) was 17% among children approximately aged 1 year and 29% among children approximately aged 2 years (Helen Binns, M.D., M.P.H., Children's Memorial Hospital, Northwestern University Medical School, personal communication, January 2000). Thirty-nine percent of children whose BLLs were <10 $\mu\text{g}/\text{dL}$ at age 1 year

(during 1995--1996) were retested at age >2 years (during 1996--1997), and 21% had developed elevated BLLs since their initial screening. Screening is recommended for previously untested children aged <6 years to rule out subclinically elevated BLLs during critical stages of development.

Children identified with elevated BLLs require evaluation and referral for appropriate follow-up services.

Children identified with elevated BLLs should be evaluated and treated in accordance with CDC guidelines for follow-up care, including care coordination and public health, medical, and environmental management (2,3,13). Few children will have BLLs high enough to warrant intensive medical treatment (e.g., chelation therapy) (13). However, many children with elevated BLLs will need follow-up services, including more frequent blood lead testing, environmental investigation, case management, and lead hazard control (2,3). In many jurisdictions, public health or environmental agencies are available to provide or coordinate follow-up care for children with elevated BLLs who are referred by health-care providers. ACCLPP is developing updated recommendations for environmental, medical, developmental, nutritional, and educational interventions for children with elevated BLLs.

ACCLPP Recommendations for States and Other Agencies That Administer Medicaid Programs

The actions recommended by ACCLPP for states (and other agencies administering Medicaid programs) establish the framework necessary to support and, in some cases, help health-care providers and administrators of managed-care plans provide the required blood lead screening and follow-up services to children enrolled in Medicaid. (The considerable variation in the state-by-state design and administration of Medicaid programs precludes assignment of specific agency responsibility.) Implementing some of the following strategies will require establishing new roles and partnerships for Medicaid agencies and health departments.

- Ensure that state Medicaid policies and program materials on blood lead screening are in compliance with federal Medicaid requirements.

According to an audit by GAO, 24 of 51 state Medicaid program policies were less rigorous than HCFA requirements (6). States should review their EPSDT policies and program documentation, particularly health-care provider manuals and EPSDT screening schedules, to ensure they comply with HCFA policy.

- Ensure that state Medicaid managed-care contracts explicitly include federal blood lead screening requirements and provide for follow-up services for children identified with elevated BLLs.

In 1997, of 42 state contracts with Medicaid managed care organizations (MCOs) evaluated by George Washington University, 20 (48%) discussed lead-related services, and 15 (36%) discussed blood lead screening (14). Few contracts specified a recommended frequency for screening services or addressed the obligation to provide medical and environmental services for children with elevated BLLs. Contracts that explicitly describe mandated health-care services create legally enforceable duties of the contractor more effectively than contracts that refer readers to the underlying statutory provision (14).

In states where young Medicaid beneficiaries are receiving care from MCOs, state Medicaid agencies should review existing contracts to ensure explicit inclusion of blood lead screening and follow-up services for children with elevated BLLs. These contracts also present an opportunity to require reporting of blood lead screening test results and to establish quality assurance measures. Particularly important are provisions for state oversight and feedback to the health-care provider regarding performance. To help states develop Medicaid managed-care contracts that promote blood lead screening and lead poisoning prevention, sample purchasing specifications are available for childhood lead poisoning prevention services (15). In developing their managed-care contracts, states should decide whether to

permit health-care providers to refer Medicaid-enrolled children to off-site laboratories to have their blood drawn, a practice that imposes an additional burden on families and could cause lower screening rates.

- Provide information to health-care providers regarding Medicaid blood lead screening policies and the data that justify them.

Health-care providers are more likely to implement clinical practice guidelines if they perceive the guidelines are based on scientific evidence on how to improve care (16). Physicians' perceptions regarding the importance of lead poisoning also influence implementation of screening guidelines (6,17). In addition, because CDC, AAP, and HCFA policies have been revised multiple times in the recent past, some health-care providers might be unaware of blood lead screening recommendations. State Medicaid and public health agencies should collaborate with medical professional associations and other stakeholders to develop health-care provider education initiatives. Such educational programs should include information regarding a) the content of and scientific basis for blood lead screening recommendations, including differences between federal regulations, policies, and requirements; b) state Medicaid policy and contracts; c) state laws; and d) state screening plans. Educational initiatives also could promote reporting of blood lead test results by health-care providers and build community support for childhood lead poisoning prevention.

- Ensure that health-care providers receive adequate Medicaid EPSDT program reimbursement and capitation rates for blood lead screening and follow-up services.

Health-care providers need adequate reimbursement for their medical services, as do MCOs, which monitor their expenditures closely (18). Medicaid blood lead screening services are usually provided by physicians and MCOs as part of a larger package of prevention services for children (i.e., the EPSDT program) and are reimbursed as a package. In states where the list of required EPSDT services has been expanded without compensatory increases in reimbursement rates, there are substantial disincentives to providing the full range of EPSDT services or participating in the Medicaid program. All states should review the reimbursement rates and capitation rates for EPSDT services and blood lead screening and treatment services to ensure that reasonable compensation is provided to health-care providers and MCOs. In addition, other resources could be made available to health-care providers to promote blood lead screening. For example, health-care providers working in medically underserved areas with children at high risk for elevated BLLs could receive hand-held lead screening devices at no charge, and arrangements should be made for screening results to be reported to public health authorities.

- Ensure that children identified with elevated BLLs receive environmental follow-up in addition to other components of case management.

For blood lead screening to be a meaningful prevention service, identification of a child with an elevated BLL must trigger services that will lower the child's BLL. Any treatment regimen that does not eliminate lead exposure is inadequate (19). Services needed by a child with an elevated BLL can include environmental investigation to identify the source of the exposure and lead hazard control to eliminate its pathway, along with case management services to ensure that the child receives all necessary public health, environmental, medical, and social services (2,3).

Children enrolled in Medicaid are entitled by federal law to all necessary follow-up services allowable under the Medicaid program (10). Current HCFA policy requires that all state Medicaid programs cover a one-time environmental investigation to determine the source of lead and the necessary case-management services (Timothy M. Westmoreland, HCFA, personal communication, October 22, 1999) (11). Yet many states have failed to establish reimbursement mechanisms for these covered services

(20). As of early 1999, only 22 state Medicaid agencies reported covering environmental investigation, whereas 20 reported covering case management (6,20).

HCFA policy on coverage of a one-time environmental investigation to determine the source of lead is limited to the health professional's time, as well as activities during an on-site investigation of the child's home or primary residence. This policy effectively allows activities such as visual assessment of the home, interview of occupants, and on-site X-ray fluorescence (XRF) analysis of lead paint content, when analyzers are available (Timothy M. Westmoreland, HCFA, personal communication, October 22, 1999). HCFA policy prohibits state Medicaid programs from covering the costs of environmental laboratory analyses (e.g., testing paint, dust, or water samples for lead content). These analyses are critical components of environmental investigations for children with elevated BLLs. ACCLPP recommended Medicaid coverage for these laboratory services in a letter from ACCLPP Chair Susan K. Cummins, M.D., M.P.H., to the Secretary of the U.S. Department of Health and Human Services (DHHS) (August 1999).

Finding resources to reduce children's exposure to lead poses additional challenges. Medicaid offers no explicit coverage for lead hazard control measures (11). However, HCFA has approved, under a research and demonstration waiver (Section 1115), a Rhode Island program featuring comprehensive follow-up care for children with elevated BLLs that uses Medicaid funds to replace windows in the homes of certain children (21). U.S. Department of Housing and Urban Development (HUD) Lead Hazard Control Grant funds of \$60 million in fiscal year (FY) 2000 are available in approximately 200 jurisdictions. In addition, lead hazard control is an eligible activity for block grant funds provided to state and local governments under HUD's Community Development Block Grant and HOME Investment Partnerships programs, which received \$4.8 billion and \$1.6 billion, respectively, in FY 2000. To receive these HUD funds, jurisdictions must develop plans and submit applications; information is available on the Internet at <www.hud.gov/lea>.

- Measure health-care provider performance on blood lead screening, give feedback to providers, and consider incentives and other quality-control measures to promote lead screening and ensure follow-up care.

Measuring performance and providing feedback on the delivery of health-care services affect the patterns of both health-care provider and health plan practices, including increasing screening rates (16,18). The widely used Health Plan Employer Data and Information Set (HEDIS) is based on the premise that measurement and reporting of plan performance will increase commitment to the measured services (22). In 1997, of 42 state contracts with Medicaid MCOs evaluated by George Washington University, 11 (26%) contracts discussed quality-control or performance measures related specifically to lead, and 10 (24%) contained lead-specific reporting requirements (14). State Medicaid agencies should measure the blood lead screening performance of participating health plans and health-care providers, provide feedback on their performance, and develop collaborative approaches for improving performance. State Medicaid agencies should consider focused quality-control or incentive measures to promote federally mandated clinical practices. Independent chart audits, automated reminder systems, visible enforcement actions, and task-specific financial incentives or penalties might be appropriate in some instances to improve performance.

For example, screening rates in Iowa increased after reminders were sent to health-care providers (Rita Gergely, Iowa Department of Public Health, personal communication, December 1999). In addition, the Iowa Department of Public Health is considering a plan to identify health-care providers' claims for Medicaid reimbursement for EPSDT screening visits for which there are no associated claims for blood lead tests. Local programs and federal Title V Maternal and Child Health programs would receive this information, which would be used to inform identified health-care providers of the Medicaid policy on blood lead screening.

- Ensure that state information systems allow tracking of blood lead screening and prevalence of elevated BLLs among young children enrolled in Medicaid.

In late 1997, GAO reported that only 12 states could readily provide information regarding the number of children enrolled in Medicaid, as well as those who had been screened for and identified as having elevated BLLs (6). HCFA policy now requires states to report the annual number of blood lead screening tests provided to Medicaid-enrolled children, beginning FY 1999 (revised HCFA form 416). State information systems should be developed or enhanced to a) monitor blood lead screening rates, b) meet the HCFA policy reporting requirement, c) assess the prevalence of elevated BLLs among children enrolled in Medicaid, and d) ensure that blood lead tests are reported systematically to public health agencies. Some states are shifting from information systems for fee-for-service claims to systems for managed care; other states must work with both systems. Some states do not have public health reporting mechanisms to monitor blood lead screening results, and most states have not linked Medicaid enrollment information and blood lead test results.

Information systems are being enhanced in some states. For example, Illinois, Iowa, Connecticut, North Carolina, Wisconsin, and Utah are developing systems to link Medicaid records and blood lead screening data. Iowa has developed a method for the Title V program to import blood lead screening data from the state's childhood lead poisoning prevention program. Rhode Island has developed an integrated pediatric public health tracking and information system (i.e., KidsNet) for pediatric preventive health services (e.g., blood lead screening and vaccination) (23).

- Establish partnerships between Medicaid agencies and other programs that serve children enrolled in Medicaid to ensure these children receive appropriate services.

Some obstacles to blood lead screening for children enrolled in Medicaid are not unique to blood lead screening but reflect the challenge of delivering preventive care to hard-to-reach segments of this population. To increase screening rates, some state and local programs are developing blood lead screening initiatives with other public programs. Some states are collaborating with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Head Start, or other programs for families receiving government assistance or with programs delivering preventive health services to Medicaid-enrolled children. For example, Iowa is working to establish partnerships with its Title V program and the WIC program. The concerted efforts and copious resources dedicated by immunization programs to increase vaccination coverage among young children in recent years is showing impressive results, including for children living in poverty. In 1997, vaccination coverage rates for U.S. children aged 19--35 months living in poverty ranged from 86% for measles-containing vaccine to 93% for three doses of diphtheria and tetanus toxoids and pertussis vaccine (including 80% for the newer hepatitis B vaccine) (24). Public health agencies should review the literature in this field, as well as their own program successes, to identify models and links with other programs that could be adapted to improve blood lead screening performance for Medicaid-enrolled children.

- Use new blood lead screening technologies to improve blood lead screening services.

In 1997, the U.S. Food and Drug Administration (FDA) cleared for marketing a hand-held blood lead testing device for health-care facilities and physician laboratories certified by the Clinical Laboratory Improvement Amendments (CLIA)* (25). This device provides "real-time" blood lead screening results, and other portable devices are in development. Use of these portable lead testing devices can improve access to blood lead screening. These devices allow immediate feedback to families and eliminate the delay associated with a follow-up visit. If the test result shows an elevated BLL, the result can be confirmed by immediate retesting, and the family can be provided lead education and help to limit lead

exposure. State Medicaid and public health agencies should collaborate to develop innovative ways to use this and other new screening technologies to enhance lead poisoning prevention services.

For public health facilities, CLIA requirements for use of this device can be met through collaboration with state public health laboratories, which can oversee quality control, coordinate proficiency testing, and provide training and certification of personnel. When hand-held devices move blood lead analysis from traditional laboratories to the field, information systems should be established to ensure that blood test results are reported systematically to the appropriate public health agencies so that valuable screening data are included in state tracking systems. Ideally, new blood lead testing devices for field or office use would provide automatic collection and reporting of blood lead test results.

FUTURE CONSIDERATIONS

HCFA policy requires blood lead screening for all young children enrolled in Medicaid and does not currently permit any variation from this requirement. However, HCFA will be working with ACCLPP to develop an approach that would permit targeted screening of Medicaid-enrolled children in states where adequate data support such a policy. ACCLPP, in conjunction with CDC, has agreed to assist HCFA in considering this approach by developing scientifically based criteria for targeted screening. Targeted screening should be considered only on the basis of reliable and representative blood lead data (e.g., from screening and population surveys).

CONCLUSION

During 1991--1994, an estimated 535,000 U.S. children aged 1--5 years in the Medicaid program had elevated BLLs (>10 $\mu\text{g}/\text{dL}$). Of children aged 1--5 years with BLLs >20 $\mu\text{g}/\text{dL}$, 83% were enrolled in Medicaid. Because most young children enrolled in Medicaid have not been screened with a blood lead test as required by law, an estimated 352,000 children with elevated BLLs have never been identified or treated. Failure to comply with Medicaid blood lead screening requirements forfeits the opportunity to use this targeted risk group to efficiently identify children with elevated BLLs who could benefit from medical and public health follow-up services.

To improve performance in this area, health-care providers and health plans should provide blood lead screening and diagnostic and treatment services for children enrolled in Medicaid and refer children with elevated BLLs for environmental and public health follow-up services. At the same time, states should ensure that young children enrolled in Medicaid receive the appropriate blood lead screening and follow-up care to which they are legally entitled.

* In 1988, CLIA established minimum quality standards for all laboratories. Based on the complexity of the testing performed, laboratories must comply with various quality-control regulations. CLIA categorizes the hand-held lead screening device as "moderately complex." This designation limits the device's use to certified laboratories participating in proficiency testing programs and meeting other federal criteria. Thus, most physicians' offices cannot use this device because most are not certified to conduct this type of testing.

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26. **BOX. Summary of recommendations on lead screening and follow-up care for children enrolled in Medicaid**
27. **Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) Recommendations on Lead Screening and Follow-up Care for Children Enrolled in Medicaid**
28. **Recommendations for Health-Care Providers**
29. Administer a screening blood lead test to all children enrolled in Medicaid at ages 1 and 2 years.
30. Refer children identified with elevated blood lead levels (BLLs) for environmental and public health services and provide appropriate medical management.
31. **Recommendations for States and Other Agencies That Administer Medicaid Programs**
32. Implement federal requirements for lead screening and follow-up care in state Medicaid policies and managed-care contracts.
33. Support health-care providers and health plans in delivering screening and follow-up services by providing information, feedback, and adequate reimbursement.
34. Ensure that children who have elevated BLLs receive environmental follow-up services in addition to medical and case management.
35. Monitor screening performance and BLLs among young children enrolled in Medicaid.
36. Implement innovative screening strategies to augment conventional delivery of lead screening services.

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