North Carolina Child Advocacy Institute (NCCAI)

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NCCAI Child Health Brief
Lead Poisoning Prevention

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TAKE HOME POINTS

Childhood lead poisoning is a serious, yet preventable condition.

North Carolina has made exemplary progress in addressing the problem. In 2004, just 1.3% of screened 1- and 2-year-olds had elevated blood lead levels.

Since the 1.3% means that more than 1,100 infants and toddlers had unacceptable blood lead levels, there is still a lot of work to be done to eliminate childhood lead poisoning in the state.

The Department of Environment and Natural Resources (DENR) has adopted a "Childhood Lead Poisoning Elimination Plan" to achieve by 2010. The Plan includes sub-goals and arrays of activities in the areas of health and housing.

NCCAI recommends that the Department of Health and Human Services (DHHS) give highest priority to all strategies that assure that providers screen all Medicaid children at ages 1 and 2. The current 56% screening rate is unacceptable.

NCCAI recommends that DENR give highest priority to the statewide implementation of GIS mapping techniques to identify houses at high risk for lead hazards.

Childhood Lead Poisoning Prevention
A Decade of Progress, Yet A Ways To Go

Why Does It Matter?

Lead is an element that occurs naturally. While it has many significant industrial uses, it has no known useful function within the human body. An argument can and has been made that any level of lead in the body is "toxic."

The toddler years are the most dangerous time for exposure to lead because toddlers spend a lot of time on the floor and ground, and because they exhibit significant hand-to-mouth activity.

Lead has been shown to alter very basic nervous system functions, and often results in anemia. Though prolonged and very high blood level concentrations have been shown to compromise overall health dramatically, the primary concern is that concentrations greater than 10 micrograms per deciliter (µg/dL) are associated with compromises in learning. Many studies confirm decreases in intelligence quotient, as well as increases in inattentiveness, hyperactivity and learning disabilities. There is also evidence that once these compromises have occurred, they cannot be reversed; they have lifetime effects.

Though the debate continues, it is generally agreed that exposure to lead is considered "elevated" when blood lead concentrations are equal to or exceed 10 µg/dL. When this level is 20 µg/dL or greater (or persists at greater than 15 µg/dL on retesting), medical evaluation is necessary, and interventions ranging from dietary restrictions/ supplements to extraction of lead from the blood may be prescribed.

At the same time, of course, there must be environmental studies to determine the source of the lead exposure and to eliminate this exposure as soon as possible.

In most areas, blood level concentrations peak at approximately 2 years of age. This is because, historically, the two primary sources of lead have been airborne emissions from the combustion of gasoline, and dust and chips from lead paint. Both contribute to soil lead and dust lead on house floors. The toddler years are the most dangerous time for exposure to lead because toddlers spend a lot of time on the floor and ground, and because they exhibit significant hand-to-mouth activity.

Fortunately, federal legislation re-

(Continued on Page 2)

(Continued from Page 1)

moved lead from gasoline and decreased smokestack emissions, thus eliminating this source of the problem. Similar legislation in 1977 eliminated the use of lead-based paint on interior surfaces. However, a significant percentage of children live in homes painted before that time, and these homes remain a potential source of exposure, though professional cleaning, paint stabilization and removal and replacement of identified building components can prevent exposure.

Since the adverse effects of lead on both individuals and society as a whole are preventable, it is critical that childhood lead poisoning prevention efforts be given a high priority.

"North Carolina's efforts are a true public health success story."

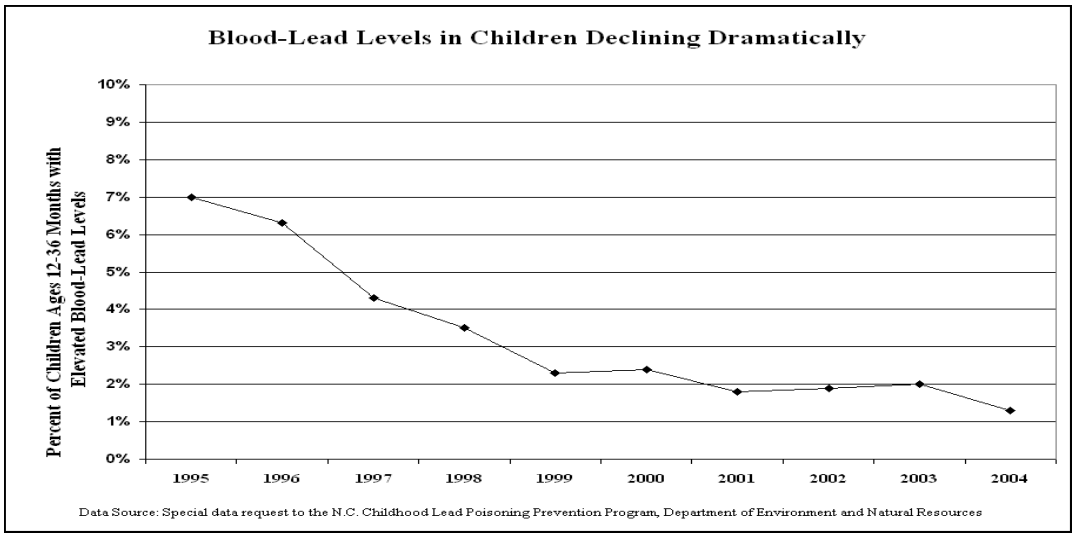
How Is North Carolina Doing?

Because of the deleterious and largely irreversible effects of elevated blood lead concentrations, and because exposure to lead is greatest in the first years of life, most lead poisoning prevention efforts are focused on infants and toddlers. In this regard, North Carolina's efforts are a true public health success story.

As noted above, national initiatives that led to the elimination of lead in gasoline and in interior paints resulted in declines in lead exposure for young children. Even so, of children ages 1 and 2 tested for blood lead levels in North Carolina in 1995, 7 percent still had blood lead levels of 10 µg/dL or greater.

This worrisome news led to a renewed emphasis on prevention efforts in the state. The N.C. Early Childhood Lead Poisoning Prevention Program, (initiated in the Department of Health and Human Services and now operated by the Department of Environment and Natural Resources) received additional appropriations for a statewide awareness campaign to encourage the screening of young children, for the State Laboratory to offer free testing of blood samples for clinical follow-up on children with elevated blood lead levels and for environmental follow-up to determine the source of exposure.

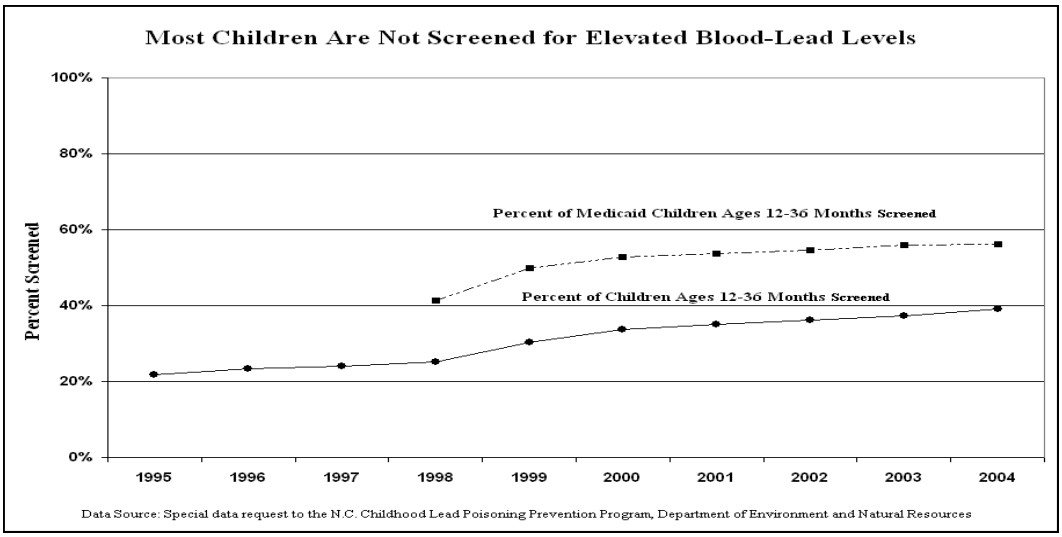
All of these efforts, plus regulations that help assure that child-serving agencies, such as child care facilities, are lead-free, have led to a decade of remarkable progress, which is reflected in the accompanying chart. The chart vividly shows the decline in the percentage of screened 1- and 2-year-olds with blood lead levels of 10 µg/dL or greater. The 1.3 percent in 2004 is the lowest percentage ever recorded in North Carolina!



The Remaining Challenges

While 1.3 percent is laudable, this still means that more than 1,100 infants and toddlers in North Carolina had unacceptably high blood lead levels in 2004. So, the overall goal—to eliminate elevated blood lead levels—has not yet been accomplished. However, the goal is within reach, and the Department of Environment and Natural Resources has adopted an ambitious plan "to eliminate childhood lead poisoning by 2010." The Elimination Plan includes an array of objectives and activities with two areas of focus: infants and toddlers (with emphasis on those at higher risk); and housing, i.e., the "places where children live, play, and visit." (The plan can be found at www.deh.enr.state.nc.us/ehs/Children_Health/Plan_including_History_and_Background-Dec.pdf).

Remaining Challenge 1: The Focus on Enhanced Screening



Until the primary sources of childhood lead exposure are eliminated, the Health Sub-Goal of the Elimination Plan must be "to assure that at-risk infants and toddlers are screened for blood lead levels." State health policy encourages screening of all children at age 1 and again at age 2. However, because children in the families with the lowest incomes are more likely to be in housing containing lead-based paint, state health policy requires that all infants and toddlers on Medicaid be screened at ages 1 and 2.

Despite great progress in the past decade, the accompanying chart indicates that a lot more work needs to be done to assure that elevated blood lead levels are being identified as early as possible. In 2004, less than 40 percent of all infants and toddlers received the prescribed screenings. Much more worrisome, however, is the fact that only 56 percent of the infants and toddlers on Medicaid had been screened, even though such screenings are required as part of Medicaid protocols.

To achieve the Health Sub-Goal—to assure that virtually all infants and toddlers on Medicaid are screened appropriately—the Plan includes an array of activities under the following four major objectives:

1) To enhance the participation of primary health care providers (pediatricians, family physicians, community health centers, local health departments, etc.) in the provision of blood lead screening and appropriate follow-up care;
2) To raise the level of awareness regarding childhood lead poisoning among health care providers and the public;

3) To solicit the assistance of state and community organizations and programs in encouraging families to have their children screened for lead; and

4) To acquire resources for the achievement of the health objectives under the Elimination Plan.

It will take a concerted effort on the part of state and local agencies, both public and private, as well as health care providers and families to assure that all children at risk are screened, are identifies with elevated blood lead as early as possible, and receive appropriate follow-up care. This sub-goal is within reach, and efforts should be enhanced until the goal is attained.

Remaining Challenge 2: The Focus on Housing

The true elimination of childhood lead poisoning will be achieved only when the major sources of lead exposure have been identified and ameliorated. While contaminated water supplies and imported goods can present episodic challenges, the predominant source of lead exposure in North Carolina remains housing interior lead-based paint. The Housing Sub-Goal of the Elimination Plan is "to eliminate lead hazards from places where children live, play and visit." The Plan includes an array of activities under the following five major objectives:

1) To increase lead awareness among individuals and groups that can directly and indirectly affect housing conditions;

2) To target properties with the highest potential of posing lead risks to children;

3) To integrate the issues of lead hazard control and lead poisoning prevention

(Continued on Page 4)

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(Continued from Page 3)

into housing programs and policies;

4) To make training available on how to eliminate or control lead hazards to children; and

5) To seek funding to eliminate housing sources of lead exposure in children.

As described above, it will take a concerted effort among state and local housing agencies and organizations, along with public and private fiscal commitments, to eliminate housing sources of lead exposure. Only with the accomplishment of this sub-goal can the overall goal of eliminating childhood lead poisoning in North Carolina be achieved.

NCCAI Recommendations

- The Health Sub-Goal is to assure that all infants and toddlers at greatest risk for lead exposure, i.e., those on Medicaid, are screened at ages 1 and 2 to assure the earliest possible identification and follow-up of those with elevated blood lead levels. Of all the planned activities, *NCCAI recommends that the Department of Health and Human Services give highest priority to all strategies that assure that providers screen all Medicaid children at ages 1 and 2. The current 56 percent screening rate is unacceptable.*

- The Housing Sub-Goal is to eliminate sources of lead exposure in places where children "live, play and visit," since the primary source in North Carolina is interior lead-based paint. Of all the planned activities, *NCCAI recommends that the Department of Environment and Natural Resources give highest priority to the statewide implementation of GIS mapping techniques to identify houses at high risk for lead hazards. The earliest possible identification of such housing will focus lead elimination activities not only on the housing, but also on the children who reside in that housing, as efficiently and effectively as possible. At this time, GIS mapping has been completed in only half of the counties in the state.*

NCCAI Child Health Briefs

Each year for the past decade, the North Carolina Child Advocacy Institute (NCCAI) and the N.C. Institute of Medicine have jointly released the N.C. Child Health Report Card. Sixteen leading child health indicators are summarized in the publication. (The 2005 version can be accessed at www.ncchild.org). Bringing the data together in a simple, yet comprehensive format precludes the possibility of in-depth presentations on individual indicators. NCCAI Child Health Briefs, issued periodically, are intended to highlight individual indicators in a more complete fashion.

NCCAI

The North Carolina Child Advocacy Institute (NCCAI) is a statewide non-profit organization working with community leaders to improve the lives of children in North Carolina.

*The **Vision** of NCCAI is that our state will be the best place to be a child and raise a child.*

*The **Mission** of NCCAI is to advocate for child well-being by educating and engaging all citizens to ensure that our children are healthy, safe, well-educated and have every opportunity for success.*