The universal-screening recommendation

In many places, universal screening will be the policy of choice.

In practice, universal screening has often been difficult to achieve. Barriers to screening and how to overcome them are discussed in Step 6.
5.2. Write a targeted-screening recommendation.

A sample:

Using a blood lead test, screen children at ages 1 and 2, and screen children from 36-72 months of age who have not been screened previously if they meet at least one of the health-department criteria.

Usual health-department criteria:

- Residence in a geographic area (e.g., a specified zip code) where there is risk for lead exposure. (See 5.2.1.)

- Membership in a group (e.g., Medicaid recipients) at risk for lead exposure. (See 5.2.2.)

- Parent/guardian answers “yes” or “don’t know” to any question in a personal-risk questionnaire. (See 5.2.3.)
The importance of targeted-screening criteria

The criteria established by the health department and its advisors will make it possible for child health-care providers and parents to identify children who need screening. These criteria must be crafted to enable identification of as many at-risk children as possible. The criteria must be tailored to local conditions and easy to use.

Development of these criteria is discussed in detail on the following pages.
5.2.1. **Criterion:** residence in a geographic area.

This criterion makes it possible to identify children within a recommendation area who live in places where likelihood of lead exposure is increased (e.g., places with older housing).
Effectiveness of screening on the basis of place of residence

An analysis was performed on a state’s BLL surveillance data in order to test the effectiveness of screening that is based on residence in zip codes and census tracts with high proportions of older housing.

**An analysis of Rhode Island surveillance data - 1995**

Rhode Island is a state that requires universal screening and has BLL data on a relatively high proportion of its children. Analysis of 1995 Rhode Island surveillance data shows that:

If, contrary to fact, the state of Rhode Island were to comprise a recommendation area with targeted screening:

- Using the criterion “screen all in zip codes with ≥27% pre-1950 housing” would result in identifying 92% of children with BLLs ≥10 μg/dL.

- Using the criterion “screen all in census tracts with ≥27% pre-1950 housing” would result in identifying 93% of children with BLLs ≥10 μg/dL.
5.2.1. **Criterion: residence in a geographic area (continued).**

Within a larger recommendation area, smaller places where lead exposure is likely should be pinpointed. Residence in such a place constitutes a screening criterion.

The use of relatively small units of analysis (e.g., census tract, census block group) may reveal “pockets of risk” that would be invisible within a larger unit (e.g., county, zip code). However, small analytic units whose boundaries are not widely recognized will not be useful as screening criteria in a clinical setting, where providers and parents must be easily able to identify children for screening. For example, most people cannot readily identify the census tract in which they live.

Another possible criterion might be residence in a widely recognized neighborhood whose boundaries approximate those of a relatively small analytic unit, such as a census tract, in which increased risk is identified.
Geographic analysis

Computerized mapping software and U.S. census data files make it easy to search recommendation areas for smaller areas with older housing or with high-risk groups. For example, the maps of South Carolina (Map 1), and of Greenville County, S.C. (Maps 2 and 3), below show areas of older housing (shaded areas) for counties (Map 1), zip codes (Map 2), and census tracts (Map 3). The use of smaller units of analysis (zip code or census tract) reveals areas of older housing that are obscured when the larger unit (county) is used. (Note that zip code boundaries do not necessarily coincide with county boundaries.)

Figure 3.1. Housing built before 1950 in South Carolina: geographic analysis at three different levels—county, zip code, and census tract. (Shading indicates ≥ 27% of housing built before 1950.)
5.2.2. **Criterion: membership in a high-risk group.**

This criterion should make it possible to identify children who may be at risk for reasons other than place of residence.

The focus should be on children who 1) are poor; 2) are members of racial/ethnic minority groups, including black children and some groups of Hispanic and Asian-American children; 3) have occupationally exposed parents; or 4) have some other significant group characteristic that puts them at high risk.

Current (1997) Medicaid policy reflects the assumption that all child beneficiaries are at risk for lead poisoning and requires lead screening for all children who receive Medicaid benefits. Anticipated changes in this policy may give states the responsibility of deciding whether all Medicaid-recipient children should be screened. *In general, children who receive Medicaid benefits should be screened unless there are reliable, representative BLL data that demonstrate the absence of lead exposure in this population.*
Screening among children in a high-risk group

Ways to increase screening of poor children:
• Screen all children who receive Medicaid benefits or vouchers from the Supplemental Food Program for Women, Infants, and Children (WIC).
• Add questions to the personal-risk questionnaire that elicit the poverty status of respondents.
• Increase screening in geographic areas with high percentages of children in poverty.
• Screen in public clinics that serve poor children.
• Improve access to health care for uninsured children.

The importance of membership in a high-risk group: Data from NHANES (CDC, 1997) and other studies (e.g., Rothenberg et al., 1996) demonstrate that children who are poor, are members of racial-ethnic minority groups, or who have occupationally exposed parents are at higher risk of lead exposure than are other children. Membership in a minority group does not predict risk in every community, and children in minority groups who are not exposed to lead do not have elevated BLLs. Traditional remedies and lead-glazed cooking pots and ceramicware used by some Mexican-American and other (e.g., Southeast Asian) families may cause BLL elevations. Children may also be exposed to lead brought home on clothes or persons, or in the car from adults’ worksites. Occupations likely to be associated with “take-home” exposures include primary or secondary lead and copper smelting, battery manufacturing, battery recycling, painting and repair of older housing, construction and demolition, pottery work, stained-glass making, radiator repair, electronic components manufacturing, work in gold-assay labs, and gold and silver recovery.
5.2.3. **Criterion: response to a personal-risk questionnaire.**

This criterion makes it possible to identify children who may be at risk but who do not meet other criteria. CDC recommends a basic three-question questionnaire as a starting point.

A basic personal-risk questionnaire:

1. **Does your child live in or regularly visit a house that was built before 1950?** This question could apply to a facility such as a home day-care center or the home of a babysitter or relative.

2. **Does your child live in or regularly visit a house built before 1978 with recent or ongoing renovations or remodeling (within the last 6 months)?**

3. **Does your child have a sibling or playmate who has or did have lead poisoning?**

Screen all children whose parent/guardian responds “yes” or “don’t know” to any question.
The personal-risk questionnaire

Educational value of questionnaires.
A personal-risk questionnaire stimulates dialogue between the health-care provider and parent about whether or not an individual child should be screened and gives health-care providers the opportunity to educate families about lead hazards.

Predictive value of recommended questions.
Many, but not all, studies have associated increased risk for elevated BLLs with positive answers to the first two questions. The third question is unlikely to cause a large amount of unnecessary screening, and it may be important in individual situations.

Sensitivity in predicting markedly elevated BLLs.
Results of some studies have suggested that the questionnaire is more sensitive for identifying children with more severe BLL elevations, e.g., ≥15 µg/dL or ≥20 µg/dL, than for identifying children with BLLs in the range of 10–14 µg/dL.

The cut-off date, 1978, is recommended in question 2 because there was some lead in residential paint until this time. Renovations have been shown in many studies to be associated with children’s increased risk for elevated BLLs. Lead hazards from unsafe renovations could occur in housing before 1978.

* For a list of studies of personal-risk questionnaires, see Chapter 5, List of Additional Information Available from CDC.
5.2.3. Criterion: response to a personal-risk questionnaire (continued).

Other questions. State health officials and their advisors should tailor the questionnaire to include questions about local sources of exposure in addition to housing, which is covered by the recommended basic three-question questionnaire.

In recommendation areas where exposure to lead from older housing is unlikely, the personal-risk questionnaire could contain questions about other risk factors such as parental occupation or the use of lead-containing ceramicware or traditional remedies.
Examples of additional questions

Personal or family history.
• Have you ever been told that your child has lead poisoning?

Occupational, industrial, or hobby-related exposure.
• Does your child live with an adult whose job or hobby involves exposure to lead?
• Does your child live near an active lead smelter, battery recycling plant, or other industry likely to release lead into the environment?

Other sources.
• Does your child live within one block of a major highway or busy street?
• Do you use hot tap water for cooking or drinking?

Cultural exposures.
• Has your child ever been given home remedies (e.g., azarcon, greta, pay looah)?
• Has your child been to Latin America?
• Has your child ever lived outside the U.S.?
• Does your family use pottery or ceramicware for cooking, eating, or drinking?

Poverty.
• Does your family receive medical assistance?
• Do you rent your home?
• Do you or the child’s parents perform migrant farm work?
• Have you recently moved?

Behavior.
• Have you seen your child eating paint chips?
• Have you seen your child eat soil or dirt?

Associated medical problems.
• Have you been told that your child has low iron?
6. Implement the statewide plan.

It is up to state health officials and their advisors to ensure that:

1) Staff members of state and local public health agencies understand their roles as established by the statewide plan.

2) Health-care providers, medical groups, managed-care organizations, and parents know what type of screening is recommended for their communities.

3) Other parties affected by the plan, including the state Medicaid agency, private insurers, and policy makers, are involved in the implementation process.

4) The plan is monitored, evaluated, and revised as appropriate.
Implementation

Health-care provider groups and parent groups should educate their members about recommended screening through their newsletters and meetings. Maps of areas of likely exposure are helpful in showing areas of risk.

Health-care provider groups should be made aware of how screening will be monitored and of the importance of their participation in evaluating recommendations.

Providers should receive supportive materials. (For a prototypic provider handbook, see list of additional resources available from CDC in Chapter 5.) These materials include information on background, screening, parent education, referrals, and local sources of lead exposure.

It is important that health departments, Medicaid, and managed-care organizations work closely together to bring about screening of Medicaid enrollees, as recommended. Contracts between the state Medicaid agency and managed-care organizations should include screening, follow-up, and reporting requirements. (For samples of contract language, see list of additional resources available from CDC in Chapter 5.)
6.1. Special considerations in the implementation of a universal-screening recommendation.

The recommendation for universal screening is straightforward, but implementation of such a recommendation has often been inadequate.

Health officials should not assume that making and communicating a universal-screening recommendation are sufficient to bring about such screening. It is critical to involve healthcare providers, medical groups, managed-care organizations, Medicaid agencies, and community members in the decision to recommend universal screening and to use the decision-making process to educate these groups about preventing lead poisoning.

In areas where universal screening is recommended, health departments should monitor the effectiveness of the recommendation to ensure that screening rates are high.
Universal screening

Since 1991, when CDC recommended virtually universal screening of U.S. children, barriers to such screening have been identified.

The two most important are:

• Many providers and parents do not believe that lead exposure is a problem in their community.

• Some children who are at high risk for lead exposure because of poverty and residence in deteriorating housing do not receive routine well-child care and thus are not screened for lead.

To address these barriers, health departments have stepped up outreach and lead education for parents and providers and have worked with other agencies and communities to increase rates of well-child care.

Monitoring of screening activity is necessary so that efforts to improve screening rates can be directed to areas where screening is inadequate. See discussion in 6.2.
6.2. Steps to take in implementing recommendations.

Screening recommendations should be based on data. Of particular interest are BLL data. These data should be used to explain and support the recommendations to those who must carry them out, especially child health-care providers, medical groups, managed-care organizations, insurers, and parents. Ongoing collection and dissemination of data are necessary. Public health officials should:

- Collect BLL information.

- Determine the number and location of children with elevated BLLs.

- Determine where screening is taking place and where it is not.

- Compare information about screening activity and BLLs. (Graphics that display both screening and case information are helpful in this comparison.)

- Target education and outreach to areas where more screening is indicated.
Importance of feedback

Research, as well as common sense, suggests that health-care providers are more compliant with clinical practice guidelines when they receive feedback about the effectiveness, importance, and relevance of what they are being asked to do (Elrodt, et al., 1995). Every effort should be made to supply providers with screening data showing BLLs among children in the areas where they practice.

Sources of BLL information

Childhood blood lead surveillance systems that collect results of all BLL tests from all laboratories that serve residents of the area are preferred. Such systems make possible the analysis of screening and case data so that rates of elevated BLLs among screened children can be calculated, trends in BLLs and in service delivery can be detected, and appropriate improvements made.

Alternatively, other monitoring methods can be used, such as serial BLL surveys; surveys of knowledge, attitudes, and behaviors of health-care providers and parents in targeted communities; and studies performed by providers and provider groups using chart-review or other methods to ascertain screening practices.

Public health agencies, Medicaid agencies, and managed-care organizations have a mutual interest in monitoring screening delivered under Medicaid and can share data to achieve this goal.
6.3. **Revise screening recommendations as better data become available.**

As time passes, screening recommendations may become obsolete. Health officials should periodically evaluate the recommendations and revise them as appropriate.

Pediatric health-care providers, medical groups, managed-care organizations, Medicaid agencies, local health departments, and parents may want to vary from recommendations that have been made. Health officials should develop a review process to explore background and supporting evidence, and to consider the reasons both for retaining and for changing current recommendations.