

**TITLE**

Childhood Lead Poisoning: Linking Surveillance, Environmental, and Housing Data

**THEME**

Foster Collaborations Among Health and the Environment

**KEYWORDS**

data linkage, surveillance, environmental, housing, childhood, lead poisoning, Geographic Information Systems, Chicago

**BACKGROUND**

Childhood lead poisoning symptoms range from subtle neurodevelopmental problems to death. The most common source of lead exposure for U.S. children is deteriorated lead-based paint in pre-1950 housing. In 2001, Chicago—where 52.3% of housing was built before 1950—reported more children with confirmed elevated blood lead levels (BLLs  $\geq 10$   $\mu\text{g/dL}$ ) than any other U.S. city. Key strategies to prevent lead poisoning are identification and removal or reduction of lead sources.

**OBJECTIVE(S)**

To identify Chicago buildings associated with elevated BLLs in multiple children and lead hazards on environmental inspection.

**METHOD(S)**

We analyzed 1997–2003 Chicago childhood lead poisoning surveillance data for children aged  $<6$  years, using geographic information systems and SAS. Each child's address at first confirmed elevated BLL was geocoded and linked to the Chicago Building Footprint file to determine the number of children with elevated BLLs associated with each building. Buildings with  $\geq 10$  children with elevated BLLs were identified. Addresses of these buildings were linked to environmental inspection data to determine whether inspected buildings had lead hazards.

**RESULT(S)**

Preliminary results showed that of a total of 55,876 children with elevated BLLs, 53,826 (96.3%) were linked to 36,546 validated and geocoded addresses. We successfully matched 33,235 (90.9%) of these addresses to 30,742 buildings. Of these, 124 buildings had  $\geq 10$  children with elevated BLLs; of 123 buildings with inspection data, 69 (56.6%) had documented lead hazards. These 69 buildings were associated with 1,148 children with elevated BLLs from 1997–2003.

**DISCUSSION/RECOMMENDATION(S)**

Lessons learned from linking surveillance, environmental and housing data can help guide targeting of high-risk buildings for remediation and legal interventions to prevent more children from being poisoned at the same building. Sharing this

information with partners in health, housing, environment, and policy agencies can help achieve the Healthy People goal of eliminating elevated BLLs in children by 2010. Further investigation is ongoing.

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