

More Than Half of Kids Who Tested Positive for Lead Exposure at Two Years of Age Tested Negative One Year Prior

Team A: Kersten Bartelt, RN; Joe Deckert, PhD

Team B: Blaine Franklin, PT, DPT; Tim Keogh

Last updated 14 November 2024 • Check for updates at EpicResearch.org

Key Findings:

- More than half of the children who tested positive for lead exposure at 24 months old were negative for lead exposure at 12 months old.
- Most children who tested positive for lead exposure at 12 months old went on to have a negative test at 24 months old.

Medicaid recommends children have their blood lead levels tested at 12 and 24 months old.¹ Those not on Medicaid are advised to get tested if they are considered high-risk, which includes factors such as housing built prior to 1978, known exposure to lead, and low income, though some health departments are encouraging this practice for all children.^{1,2}

To assess the potential benefit of a second lead level test, we studied 42,709 children who had their blood lead levels tested at both 12 and 24 months of age. Of the patients who tested positive, only 228 (0.53%) tested positive at both 12 and 24 months of age. We found that 735 kids (1.72%) tested negative at 12 months but had a positive blood lead level at 24 months. This indicates that further testing among those whose initial test was negative is beneficial in identifying future exposure to lead. For those whose initial test was positive, 629 kids (1.47%) went on to test negative at 24 months, indicating improvement to a non-toxic level of lead one year later. Of note, overall positivity rates remain low, as seen in Figure 1.

Lead Testing Positivity Status at 12 and 24 Months of Age

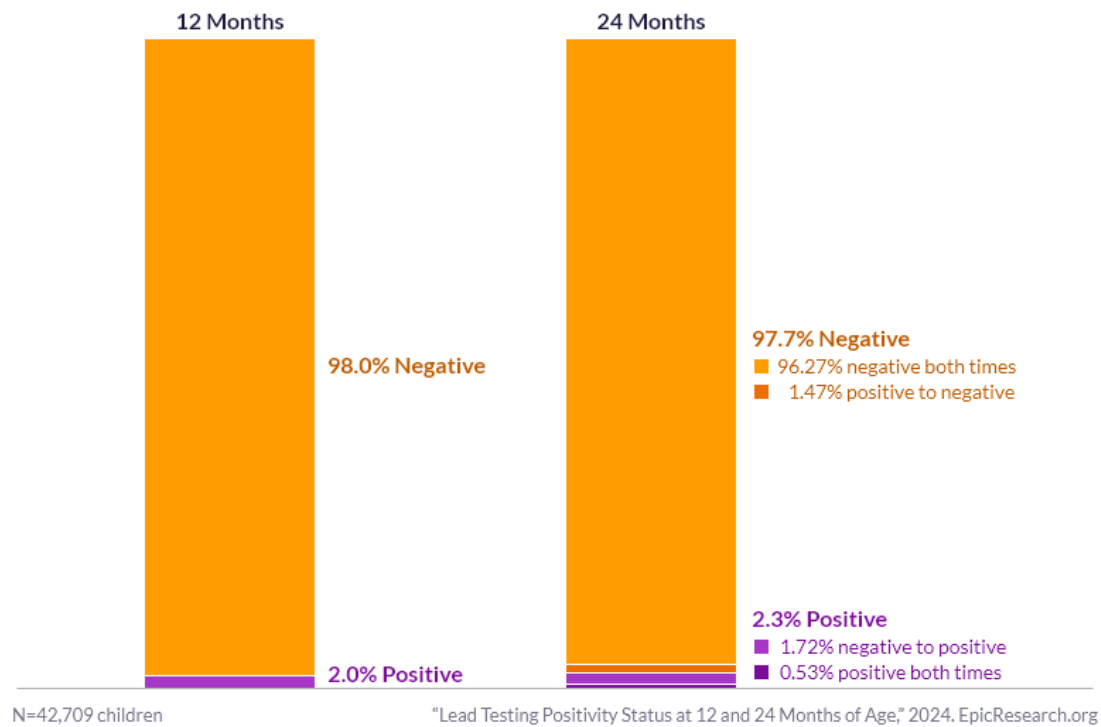


Figure 1a. Lead test results among patients tested at 12 and 24 months of age. A positive lead level is a test result greater than 5 $\mu\text{g}/\text{dL}$.

Lead Testing Positivity Status at 12 and 24 Months of Age – Zoomed View

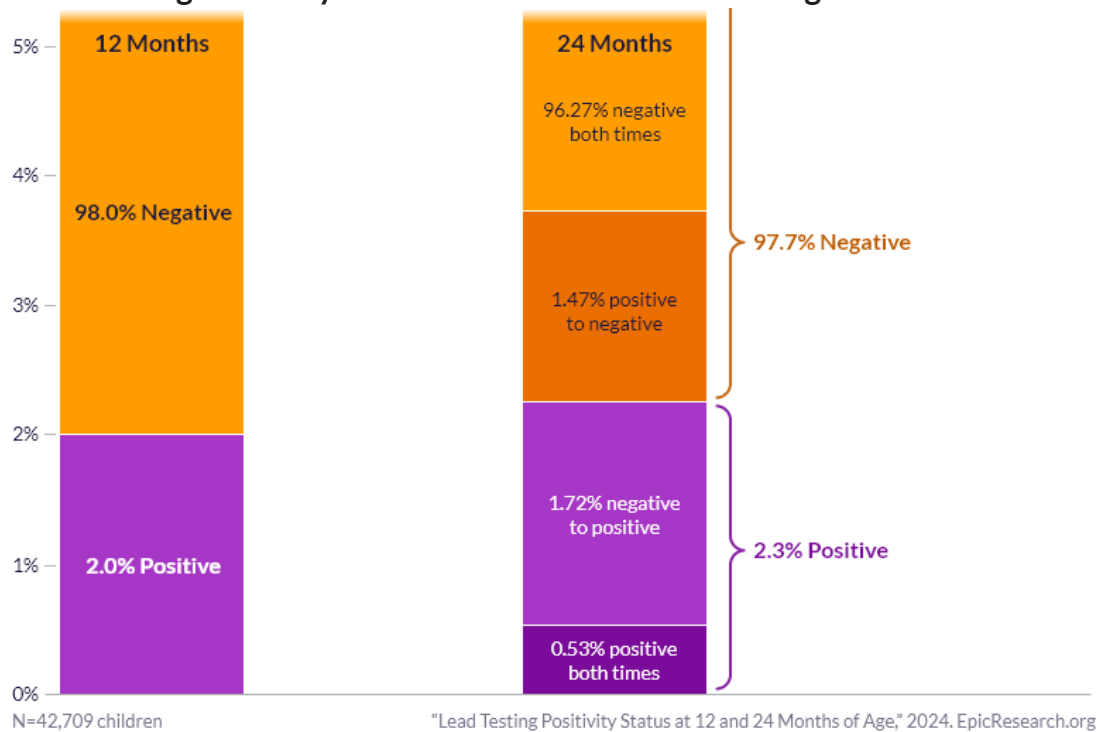


Figure 1b. Lead test results among patients tested at 12 and 24 months of age, zoomed in to focus on change in positivity at 24 months. A positive lead level is a test result greater than 5 µg/dL.

These data come from Cosmos, a dataset created in collaboration with a community of Epic health systems representing more than 277 million patient records from 1,500 hospitals and more than 36,000 clinics from all 50 states, Lebanon, and Saudi Arabia. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

References

1. Testing for lead poisoning in children. Childhood Lead Poisoning Prevention. U.S. Centers for Disease Control and Prevention. Published May 23, 2024. <https://www.cdc.gov/lead-prevention/testing/index.html>. Accessed July 25, 2024.
2. DHS asking parents to test their children for lead poisoning. (2024, August 9). WBAY. <https://www.wbay.com/2024/08/09/dhs-asking-parents-test-their-children-lead-poisoning/>

Data Definitions

Term	Definition
Study period	1/1/2022 to 6/21/2024
Study population	Patients aged six and under with a lead lab or outpatient face-to-face visit in the study period.
Lead lab	A lab result with LOINC code 10368-9, 77307-7, 5671-3, 5674-7, 14807-2, 10912-4, or 25459-9. Labs came from Cosmos participants using Beaker.

Table 1: Lead Testing Positivity Status at 12 and 24 Months of Age

12 months	24 months	Combo label	Number of patients	%	
Negative	Negative	Negative (both times)	41117	96.27%	97.7%
Positive	Negative	Negative (previously positive)	629	1.47%	
Negative	Positive	Positive (previously negative)	735	1.72%	2.3%
Positive	Positive	Positive (both times)	228	0.53%	