PERFORMANCE AUDIT

Office of the Washington State Auditor
Pat McCarthy

Lead Testing for Children Enrolled in Medicaid

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Executive Summary

State Auditor's Conclusions (page 38)

Here in the beautiful Evergreen State, we may think lead exposure is only an issue on the East Coast or in the Midwest – places with a history of industrial pollution and older homes. However, this performance audit shows we can never be complacent about the risks our children face. In fact, when compared to six other Western states, Washington had the highest percentage of children with elevated blood lead levels, yet tested children for lead exposure at the second-to-lowest rate in the group.

There is no safe level of lead in the body. This audit found most children enrolled in Medicaid and at the highest risk for exposure were not tested. Overall, only 26 percent of these children received at least one of the federally required tests between 1 year and 6 years old, increasing the risk that some will not get the follow-up care they need.

Despite those low statewide testing rates, there are positive findings in this report. We identified two counties that test more than half the enrolled children in their area. And community outreach by health care workers seems to improve testing rates – children who did not speak English were tested at nearly twice the rate of native English speakers.

Importantly, state agencies have the tools and data they need to increase the number of children screened for lead exposure. This report makes recommendations to the state Department of Health (DOH) and the Health Care Authority (HCA) to better communicate testing requirements to health care providers. We also recommend they regularly analyze testing rates and identify communities at higher risk for lead exposure.

By acting with urgency, the state can soon improve the number of children tested for lead exposure. With more than 240,000 Medicaid enrollees under the age of 6, the benefits of increased community awareness of this issue will in turn benefit generations of Washingtonians.

Background (page 7)

Lead exposure remains a public health issue, particularly for its harmful effects on children's health. Exposure to even small amounts of lead can cause serious and lifelong harm, especially for very young children because their developing bodies

are more likely to incorporate toxic substances into tissue, teeth and bones. The primary sources of lead exposure continue to be from household hazards related to chipping, peeling and cracking paint and contaminated soil. Lead exposure remains a risk to Washington children despite state and federal efforts to reduce it. The state tested a lower percentage of children overall than other western states, yet it had a higher percentage of children with elevated blood lead levels.

Medicaid (in Washington called Apple Health) imposes specific requirements on all states that all enrolled children should be tested for lead exposure. More than 240,000 of Washington's 2.3 million Medicaid enrollees are under the age of 6. All Medicaid-enrolled children are required to receive blood lead screening tests at the ages of 12 months and 24 months. In addition, any child between 24 and 72 months old with no record of a previous blood lead screening test must receive one.

Two state agencies –HCA and DOH – play key roles in mitigating lead exposure risks. As the state Medicaid agency, HCA is responsible for ensuring the state meets all federal program requirements. DOH is responsible for administering the Centers for Disease Control and Prevention's Childhood Lead Poisoning Prevention Program. DOH also publishes information about the risks of lead exposure and helps promote lead testing statewide. Its publicly available maps identify areas in the state with an increased risk of lead exposure due to some key risk characteristics, such as the age of local housing stock, historical agricultural use and other environmental factors. Both HCA and DOH have advocated for focusing blood lead testing only on children who have been identified as having one or more risk factors, but the agencies have not received federal approval to use this approach.

This audit examined the extent to which children enrolled in Medicaid received required blood lead tests, as well as the state's efforts to promote greater awareness of blood lead testing in the health care community.

The state has not ensured that Medicaid enrollees receive required childhood lead testing (page 13)

Based on lead test results reported to DOH, we found only 26 percent of children enrolled in Medicaid received a test between their first and sixth birthdays. For these children, this met the minimum standard set by Medicaid, which is at least one test by the child's sixth birthday. Medicaid actually requires two tests, one at 12 months and one at 24 months. Of Medicaid-enrolled children, only 3 percent had blood lead level tests at both these ages. The most recent data shows testing rates increased slightly during a five-year period that coincided with the coronavirus pandemic (2018-2022).

We also found that lead testing rates varied significantly by county. In addition, the analysis examining the demographic characteristics of these children found that testing rates were nearly twice as high for children whose families did not speak or write English.

Even for children at the highest risk of lead exposure, the state has not met the Medicaid testing requirement (page 20)

Analyzing lead risks at the county level can mask community-level differences. Although Washington has multiple factors that can increase a child's risk of lead exposure, most children with the highest risk have never been tested. Children in areas with a heightened risk were tested at higher rates; however, three-quarters were not tested at all. Some communities with higher numbers of elevated test results also test the fewest children.

The state lacks an adequate process to ensure children enrolled in Medicaid receive required blood lead testing (page 26)

Data analyses at state agencies is insufficient to accurately assess lead testing rates of Medicaid-enrolled children. Without active data-sharing agreements, HCA and DOH cannot conduct thorough test analyses. HCA lacks adequate performance measures to monitor the state's compliance with Medicaid's lead testing requirement. Additionally, HCA has not used its existing, federally required, performance measure to actively monitor or increase testing compliance. HCA's contracts with managed care organizations (MCOs) also lack clear expectations and performance standards necessary for effective compliance with Medicaid blood lead test requirements.

To help improve test rates, the state could do more to ensure providers have a clear understanding of testing requirements (page 31)

Health care provider uncertainty about Medicaid lead test requirements has likely contributed to low testing rates. The state could do more to ensure providers receive clear, consistent messaging about Medicaid requirements. DOH's efforts

to promote testing could help the state coordinate testing and increase awareness of lead exposure risks. In addition, we found that by increasing awareness about the benefits of point-of-care testing and health records systems prompts, the state could help clinics and providers improve their processes to help reduce barriers to lead testing.

Recommendations (page 39)

We made a series of recommendations to the Department of Health and the Health Care Authority to ensure children served by Medicaid in Washington receive required tests. Our recommendations fall into two main categories: implementing a monitoring process to identify children who have not received a blood lead test, and creating clear and consistent guidance for providers.

Next steps

Our performance audits of state programs and services are reviewed by the Joint Legislative Audit and Review Committee (JLARC) and/or by other legislative committees whose members wish to consider findings and recommendations on specific topics. Representatives of the Office of the State Auditor will review this audit with JLARC's Initiative 900 Subcommittee in Olympia. The public will have the opportunity to comment at this hearing. Please check the JLARC website for the exact date, time, and location (www.leg.wa.gov/JLARC). The Office conducts periodic follow-up evaluations to assess the status of recommendations and may conduct follow-up audits at its discretion. See **Appendix A**, which addresses the I-900 areas covered in the audit. **Appendix B** contains information about our methodology. See the **Bibliography** for a list of references and resources used to develop our understanding of this topic and leading practices around blood lead testing.

Background

Lead exposure remains a public health issue, particularly for its harmful effects on children's health

Anyone can be affected by long-term exposure to lead, but young children and pregnant people are the most vulnerable. Exposure to even small amounts of lead can cause serious harm to a child's health. Lead's well-documented health effects include damage to the brain and nervous system, slowed growth and development, learning and behavior problems, hearing and speech problems, and in some extreme cases, death. Lead exposure is even more dangerous to younger children because their bodies are developing rapidly and toxic substances are more likely to be incorporated into tissue, teeth and bones, creating lifelong damage (see *Bibliography: Health effects of lead exposure*). Young children also tend to put their hands or other objects, which may be contaminated with lead dust, into their mouths more often. Since most children exposed to lead do not look or act sick, a blood test is the only way to confirm if they have elevated blood lead levels.

Lead's useful characteristics (it is durable yet malleable and relatively impervious to oxidation) mean that humans have used it for millennia – in pipes and construction materials, in ammunition and solder, in the production of paint, ceramics, batteries and fuel, and in countless consumer products around the world. A woman who was exposed to lead in childhood may transmit lead leached from her bones and teeth during pregnancy to her breastfeeding infant.

In the United States, people may be exposed to lead through multiple sources – the air, soil, water and inside the home. The primary sources of lead exposure continue to be from household hazards related to chipping, peeling and cracking paint and contaminated soil. For example, layers of lead-based paints may be revealed by the activities of remodeling and repainting buildings built before 1978, when lead paint was outlawed by the federal government. Even ordinary household wear and tear may produce lead dust, making living in or visiting a home built in or before the 1970s a potential source of exposure anywhere in the U.S. The older the housing stock, the higher the risk.

Other sources of lead exposure include contaminated materials at a workplace such as an automotive repair shop or building demolition site, or in consumer goods produced overseas. The Food and Drug Administration's list of recalled products tainted with lead has included spices, dried fruit, ceramic tableware, even baby skin cream and children's toys.

At the national level, disparities in lead exposure persist for lower income neighborhoods and people of color

Certain populations continue to be at higher risk for lead exposure. Research shows that higher blood lead levels are associated with places with low home ownership, high poverty levels, and where the majority of residents are people of color. Black and Latino children, and those living in households with incomes below 130 percent of the federal poverty level, are at increased risk for exposure.

Lead poisoning also disproportionately affects refugee and other immigrant children. This is due to both environmental exposures, such as resettling in pre-1978 housing, and potential exposure through cultural practices, traditional medicines and consumer products. Indigenous people may also be at increased risk of lead exposure, due in part to older housing stock on many tribal reservations and contamination of plants and animals used as traditional medicines or food. (See *Bibliography: Populations at higher risk for lead exposure.*)

Lead exposure remains a risk to Washington children despite state and federal efforts to reduce it

The U.S. government banned the use of lead paint and leaded fuel in the 1970s. Federal and state regulatory standards have helped to reduce the amount of lead in the air, drinking water, soil, consumer products, food, and occupational settings over the last 40 years. In the U.S. the median concentration of lead in the blood of children aged 1 to 5 years dropped by 96 percent between 1980 and 2018.

Notwithstanding these efforts, the residue from historic and current uses of lead is still present in the environment and homes today. This is true even in Washington, although misconceptions persist that the state's residents are not at risk for lead exposure. Even though Washington's children are at risk of lead exposure, the state tests a lower percentage of children overall than other western states. **Exhibit 1** uses 2018 data from the federal Centers for Disease Control and Prevention (CDC), and shows Washington ranked second to last among six Western states (see *Bibliography: State comparisons*). Of these states, Washington also had the highest percentage of children with elevated blood lead levels.

Exhibit 1 – Testing rates in selected Western states for ***all*** children, including those enrolled in Medicaid, 2018

Test results in micrograms of lead per deciliter of blood

State	Percent of children under 6 years old:	
	Tested at least once	With confirmed blood lead levels above 5 mcg/dl
Arizona	11.6%	0.7%
New Mexico	8.9%	1.4%
Colorado	5.9%	1.9%
Oregon	5.8%	2.0%
Washington	**4.2%**	**2.3%**
Nevada	3.5%	0.9%

Note: Data was unavailable for other Western states, including California, Idaho and Montana.

Source: 2018 CDC data.

Since there is no safe level of lead in the body, identifying children with elevated blood lead levels as early as possible is key to be able to take timely action to mitigate exposure risks and provide treatment. Washington's low testing rates mean that many children with elevated levels of lead in their blood have not been identified and thus may have not received the care they need. Using CDC data, a national study published in 2017 assessed the performance of 39 states in detecting children with elevated blood lead levels between 1999 and 2010. The study estimated that these 39 states detected 64 percent of elevated blood lead cases on average. Washington, however, detected just 2 percent of children with elevated blood lead levels – the lowest performance of the 39 states. (See the sidebar for a note about how our calculations differed from the CDC. See also *Bibliography: State comparisons*.)

Note: The CDC's figures for "confirmed" elevated blood lead levels exclude children who received only one elevated capillary blood lead test result, because these children must have a follow-up test. This differs from how we calculate elevated results later in the report. We included children with only one elevated test because many tested children do not return for a second confirmational test. See Appendix B for details about our calculations.

Medicaid rules require all enrolled children have blood lead tests at important developmental ages

Medicaid is a government health insurance program available to people with limited income and resources, administered by the federal Centers for Medicare and Medicaid Services (CMS). In Washington, the Medicaid program is called Apple Health. As of May 2023, more than 2.3 million Washington residents rely on Apple Health for medical services, which is about one in four Washingtonians. More than 240,000 are children under the age of 6. All children in foster care and receiving adoption services are insured through Medicaid.

Medicaid covers the financial costs of blood lead tests for all Medicaid enrollees and has specific requirements for testing children. All children enrolled in Medicaid are required to receive blood lead screening tests at the age of 12 months and 24 months. In addition, any child between 24 and 72 months with no record of a previous blood lead screening test must receive one – meaning every child should be tested at least once by age 6. While some providers use a risk assessment questionnaire to identify children at the highest risk of lead exposure, completing a questionnaire alone does not meet this Medicaid requirement. In addition to initial testing, Medicaid rules require states to provide medically necessary diagnostic and treatment services for children identified with elevated blood lead levels.

Testing rates for Medicaid-enrolled children may have been higher than the rate shown in Exhibit 1, which showed the CDC data for *all* children. Nevertheless, reports HCA published on its website from 2021, 2022 and 2023 show that, compared to all other states, Washington has been in the bottom 20th percentile for testing Medicaid-enrolled children for at least the last three years.

Washington's Health Care Authority (HCA) and Department of Health (DOH) play key roles in mitigating lead exposure risks

HCA is responsible for ensuring children enrolled in Medicaid receive required testing

As the state Medicaid agency, HCA is responsible for ensuring the state meets all federal program requirements. This includes ensuring that all enrolled patients receive required tests or services, no matter whether they are treated through a managed care organization (MCO) or a fee-for-service health care provider.

HCA contracts with five MCOs to deliver health care to Medicaid-enrolled adults and children through their managed care programs. HCA is responsible for ensuring each company complies with all contract requirements, which include blood lead tests and treatment services. More than 84 percent of people who receive Medicaid benefits are enrolled in one of the MCO plans, with the remainder served by fee-for-service providers.

DOH's responsibilities include monitoring lead test results and exposure risks

DOH administers the CDC's Childhood Lead Poisoning Prevention Program, which is:

> *"dedicated to eliminating childhood lead poisoning as a public health problem through strengthening blood lead testing, reporting, and surveillance, linking exposed children to recommended services, and targeted population-based interventions…".*

Since 1993, DOH has monitored lead test results in Washington. Agency rules (WAC 246-101) require all laboratories to report the results of all lead tests, whether the child is enrolled in Medicaid or not. DOH uses the Washington Disease Reporting System (WDRS) electronic disease surveillance system to receive, manage and store disease-related data, including blood lead levels. When a test confirms a child's blood has elevated levels of lead, DOH works with local health jurisdictions to coordinate care and connect the family with needed follow-up services.

DOH also publishes information about the risks of lead exposure and helps promote lead testing statewide. Its publicly available maps identify areas in the state with the highest risk of lead exposure due to some key risk characteristics, such as the age of local housing stock, historical agricultural use and other environmental factors (see *Bibliography: Populations at higher risk for lead exposure*).

Both HCA and DOH have advocated for focusing lead testing on only high-risk children, but CMS has not approved the state's request to use this approach

In 2012, CMS revised its lead screening policy to allow states to request a waiver exempting them from the universal Medicaid testing requirement. The intention of this change would allow states to focus testing efforts on enrollees deemed most at risk. This policy change aligned with recommendations from the CDC, which encourage each state to develop its own screening guidelines based on state-specific data.

In March 2015, DOH convened an expert panel to develop targeted childhood lead screening recommendations for clinicians in the state. The panel recommended that health care providers assess all children for risk of lead poisoning at 12 and 24 months of age but perform a test only if certain risk indicators were present, Medicaid enrollment being one of the indicators. The panel's report was published on DOH's Blood Lead Testing website page. As a result of the panel's conclusions, DOH recommended screening all children to identify risk, and focusing blood lead testing on children with one or more risk factors. (See *Bibliography: Leading practices for improving lead testing rates.*)

In 2015 and 2019, HCA requested the CMS universal testing waiver, but neither application was approved. In fact, only one state was approved for a waiver – Arizona in 2014 – but CMS has not approved any others since then. We attempted to contact CMS to get a better understanding of why the waiver has not been approved but did not get a response. HCA officials said they think CMS might have halted all waiver application reviews and approvals after the Flint water crisis came to light in 2015. Whatever the reason, Washington has not been approved to use a targeted approach to testing Medicaid-enrolled children, and the state is therefore still required to meet the full testing requirement.

This audit examined the extent to which children enrolled in Medicaid received required blood lead tests

Earlier studies and audits found that many states across the country, including Washington, have struggled to meet the Medicaid childhood lead testing requirement. Considering the detrimental effects lead can have on children, we designed this audit to evaluate Washington's efforts around testing as well as

its efforts to promote greater awareness of blood lead testing in the health care community. The audit answered the following questions:

1. To what extent are children enrolled in Medicaid receiving required lead testing?
2. If enrolled children are not receiving required tests, what are the causes for this?
3. What should the state do to ensure children at highest risk receive tests?

A note about our data analysis

Since Medicaid requires children to be tested beginning at 12 months, we excluded from our analysis any tests that were conducted before a child's first birthday. By excluding these children, we could more accurately assess the extent to which children enrolled in Medicaid are receiving the required lead testing in Washington. Also, our analysis only includes test results that medical facilities in Washington sent to DOH, and it is possible not all results have been sent.

Audit Results

The state has not ensured that Medicaid enrollees receive required childhood lead testing

Results in brief

Based on lead test results reported to the Department of Health (DOH), we found only 26 percent of children enrolled in Medicaid received a test between their first and sixth birthdays. For these children, this met the minimum standard set by Medicaid, which is at least one test by the child's sixth birthday. Medicaid actually requires two tests, one at 12 and one at 24 months. Of Medicaid-enrolled children, only 3 percent had blood lead level tests at both these ages. The most recent data shows testing rates increased slightly during a five-year period (2018-2022) that coincided with the coronavirus pandemic.

We also found that lead testing rates varied significantly by county. In addition, the analysis examining the demographic characteristics of these children found that testing rates were nearly twice as high for children whose families did not speak or write English.

Note: This audit did not examine lead testing activities or results in Washington generally. Unless otherwise specified, the analyses in this report concern ***only*** children enrolled in Medicaid.

Only 26 percent of children enrolled were tested at least once between 12 and 72 months

For these children, this met the minimum standard set by Medicaid, which is at least one test by the child's sixth birthday

We used data from the Health Care Authority (HCA) and the Department of Health (DOH) to evaluate two different groups of children enrolled in Medicaid to determine how many have received required blood lead tests. HCA maintains eligibility data for enrolled children. DOH stores reported results of childhood lead screening tests for all children statewide, whether or not they are enrolled in Medicaid. All laboratories and health care providers, with the exception of those operated in tribal or federal areas, are required to report all lead screening test results to DOH. (See Appendix B for additional information about test data.)

Using data from 2015 through 2022, we matched these two data sources to identify Medicaid-enrolled children who had been tested twice – at both 12 and 24 months old (the full Medicaid requirement) – and those who had been tested at least once between 12 and 72 months old (the minimum Medicaid standard). Our analysis included data on two groups of children:

1. **A group of 6-year-olds** – children born between 2014 and 2016 – to evaluate the state's compliance with the full Medicaid requirement, which goes up to a child's sixth birthday.
2. **A group of 3-year-olds** – children born between 2017 and 2019 – to determine how many children had been tested at 12 and 24 months old in recent years.

Only 3 percent of children had blood lead level tests at both 12 and 24 months

Medicaid requires children to have blood lead tests at both 12 and 24 months. Our analysis found only 3 percent of children in the six-year-old group, who were continuously enrolled in Medicaid from their first to sixth birthday, were tested as required. This represents 2,400 children born between 2014 and 2016 who were tested at these ages and 69,000 who were not. If we include all children born in those years who were enrolled in Medicaid for at least six months, we estimate at least 128,000 children were not tested at both 12 and 24 months. (See sidebar for a note about how we defi ned "continuously enrolled.")

Furthermore, Medicaid rules state that the children who were not tested at 12 or 24 months should be tested by 72 months – meaning all children should be tested at least once between one and six years of age. By this measure, at least 18,000 of those children who were continuously enrolled in Medicaid in the 6-year-old group received at least one test, and 53,000 were not tested. If we include children enrolled in Medicaid for at least six months, we estimate at least 98,000 children were not tested between 12 and 72 months.

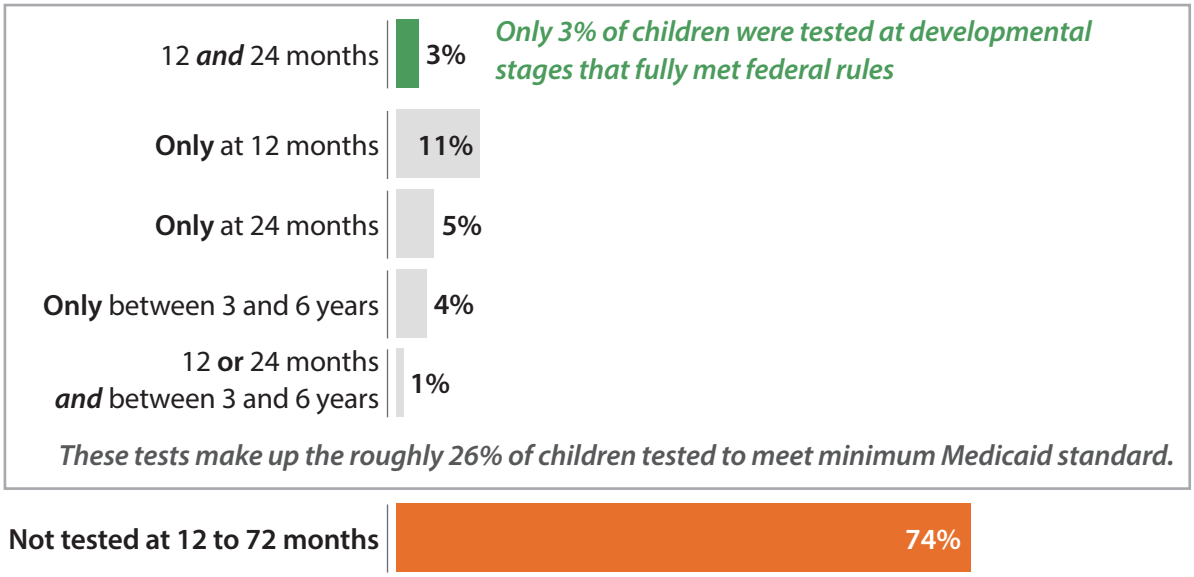
For our analysis, we considered children "continuously enrolled" in Medicaid if they had no more than one gap in enrollment each year, up to 45 days, similar to a measure used by HCA.

We did so because children sometimes have short gaps in their enrollment, and we wanted to include as many children as possible. Only around half of all children enrolled in Medicaid at these ages were continuously enrolled. See Appendix B for more information about our methodology.

Exhibit 2 sets out a breakdown of blood lead testing rates for various age groups.

Exhibit 2 – Blood lead testing rates for children continuously enrolled in Medicaid

Data from 6-year-old group (born 2014-2016); excludes tests taken between birth and 12 months of age



Note: Numbers do not add to 100% due to rounding.

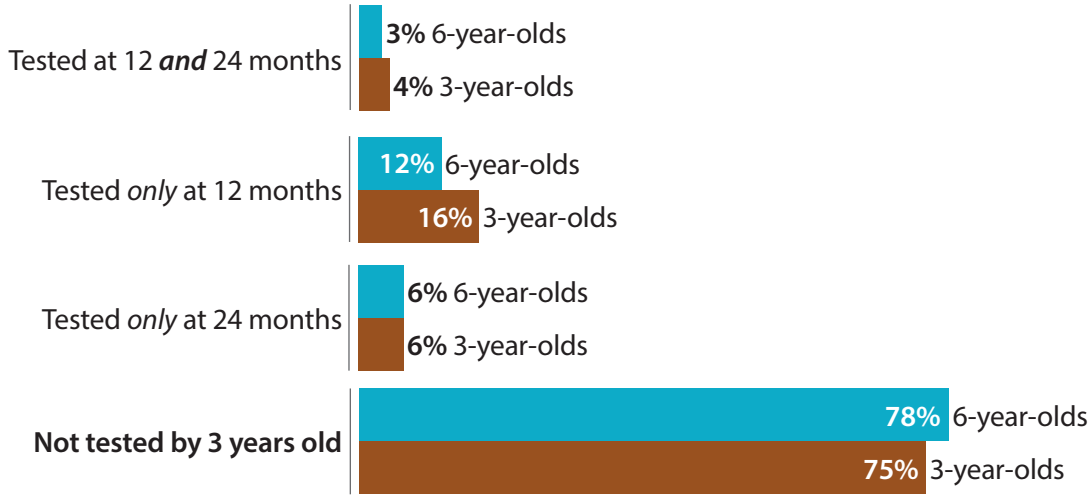
Source: DOH and HCA test result data.

The most recent data shows testing rates increased slightly during the pandemic

Examination of the second age-group, children who were born between January 1, 2017, and December 31, 2019, produced slightly better results despite two challenging circumstances. These 3-year-olds were due for their 12 and 24 month tests from 2018 through 2022, a period which coincided with the coronavirus pandemic. Analysis found 25 percent were tested at least once at these ages. This is slightly better than the older group: 22 percent of those children were tested at those ages, as shown in **Exhibit 3** on the following page.

Exhibit 3 – Comparison of ages at which children continuously enrolled in Medicaid were tested for lead

Data from 6-year-old group (born 2014-2016) and 3-year-old group (born 2017-2019); excludes tests taken between birth and 12 months of age



Source: DOH and HCA test result data.

The 3-year-old group's testing period coincided with the coronavirus pandemic as well as a recall of equipment commonly used for blood lead testing; both made it more difficult to administer the test. Testing rates might have improved even more among the younger group if not for the challenges related to the pandemic and the recall, yet the improvement would likely still be far from meeting the Medicaid requirement.

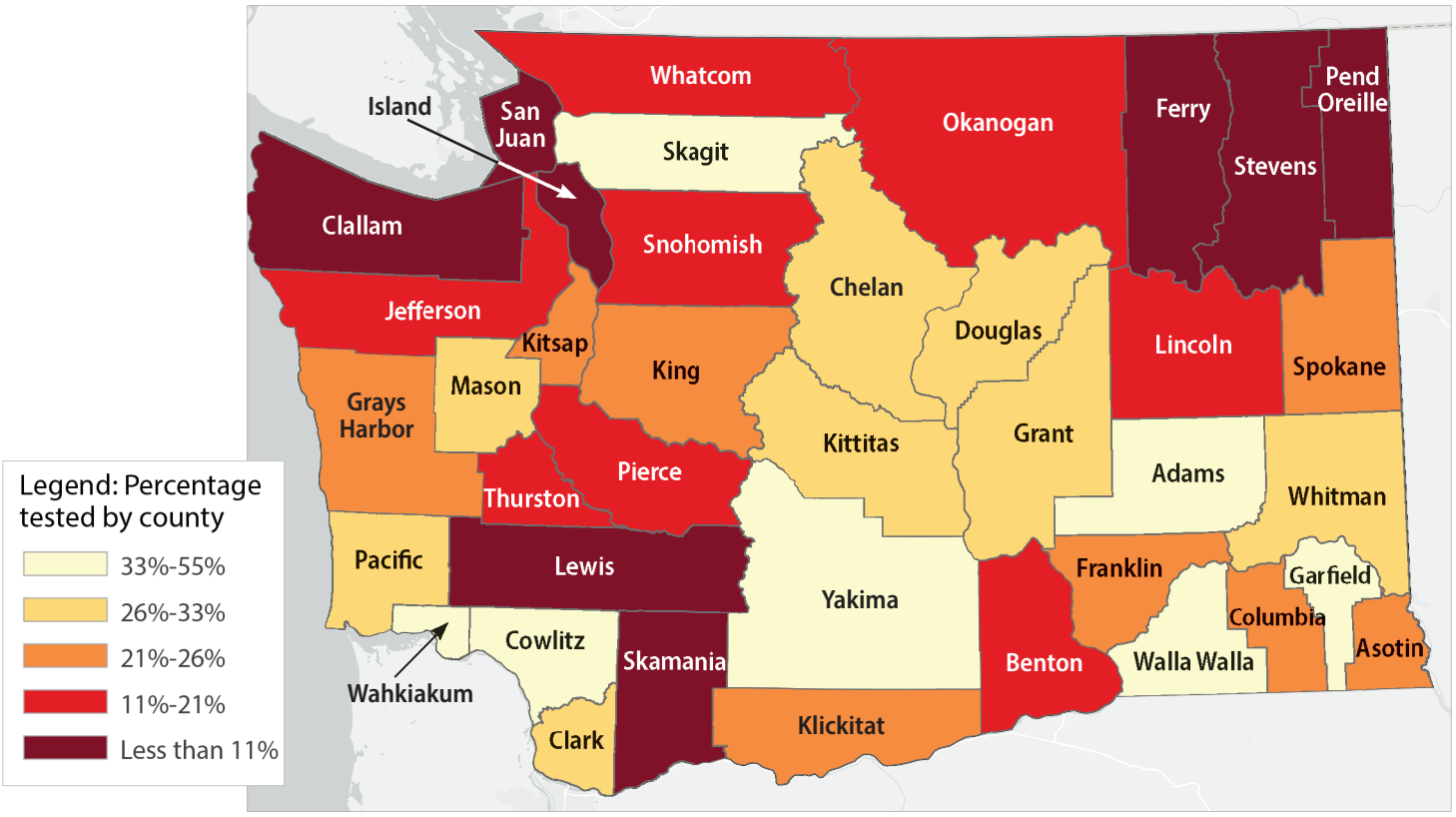
Please note that all subsequent discussion in this report of Medicaid blood lead testing focuses on the 25 percent of children in the 3-year-old group who were tested at least once at 12 or 24 months.

Lead testing rates varied significantly by county

The audit examined blood lead test results for the 3-year-old group across the state to see if different regions achieved better rates of testing. At the county level, blood lead testing rates varied widely, as shown in the map in **Exhibit 4.** The rate of continuously enrolled children tested at least once between 12 and 36 months ranged between 2 percent and 55 percent. Walla Walla and Adams counties tested more than half of these children, while eight counties tested fewer than 11 percent of enrolled children. **Appendix C** shows county-level testing rates compared to rates of elevated blood lead test results.

Exhibit 4 – Map of testing rates by county

Percent of Medicaid-enrolled children tested at least once between 12 and 36 months; 3-year-old group (born 2017-2019)



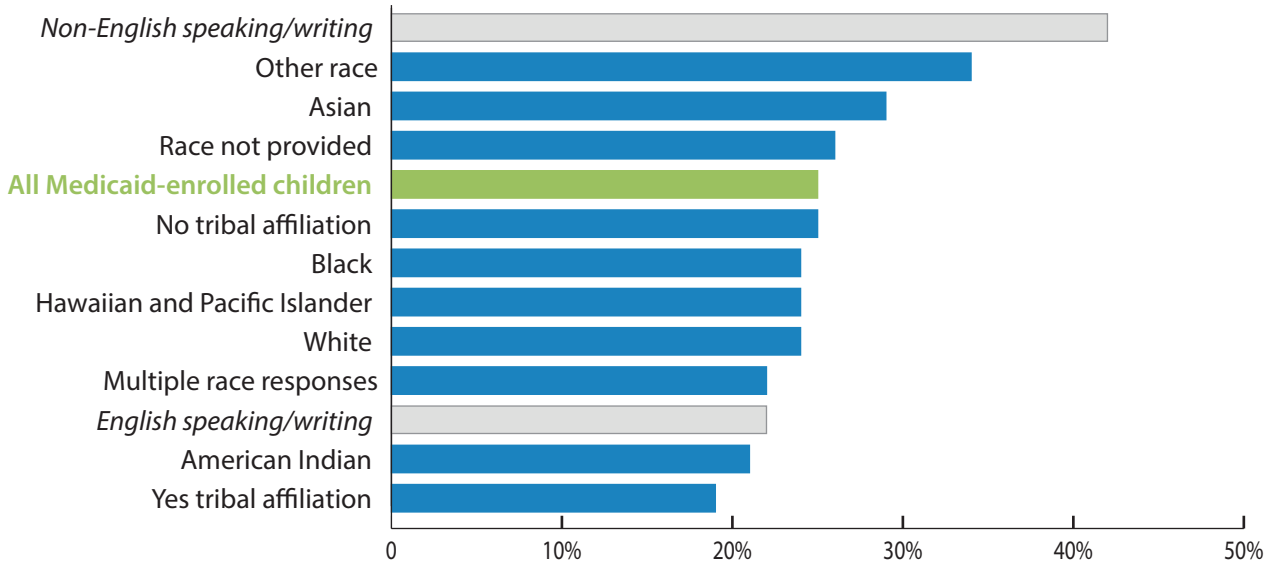
Source: Auditor generated; results calculated using DOH and HCA data from the 3-year-old group.

Analysis examining the demographic characteristics of these children found some notable differences

We assessed testing rates for several demographic categories, including race, language spoken, and whether the child was served by a managed care practice or a fee-for-service provider. The demographic groups we assessed are those that are collected in HCA's data sets. While most of these groups were tested at similar rates, some notable differences appeared in the analysis. **Exhibit 5** shows the rates of testing for three of these characteristics: race, tribal affiliation, and whether the family's main language was English or not. **Appendix D** shows testing rates and rates of elevated results for all the demographic characteristics we assessed.

Exhibit 5 – Testing rates by race and language spoken/written

Percent of children tested at 12 or 24 months, 3-year-old group (born 2017-2019)



Source: DOH and HCA test result data.

Testing rates were nearly twice as high for children whose families did not speak or write English

Several of the stakeholders we interviewed expressed concerns that people who do not speak English may be less likely to receive a test due to language barriers, even as they might also be at higher risk of lead exposure. To the contrary, these children were tested at a rate much higher than the average and double the rate of native English speakers: 42 percent compared to 22 percent.

Representatives from DOH, HCA and the Seattle-King County Public Health Office offered some possible explanations for this positive outcome. According to DOH, most refugee children are screened for lead exposure when they enter the state from another country, as required by law. Staff at HCA also thought health care providers who work with the children of agricultural workers might have greater awareness of the risks of lead exposure for this population, due to parental exposure to various pesticides and fertilizers. Additionally, DOH and the Seattle-King County Public Health Office have worked with immigrant and refugee community groups to spread information on the importance of blood lead testing. These efforts have been supported by funding from the CDC.

However, testing rates were lower for children affiliated with a tribe or who identified as American Indian

DOH data shows that tribal members were tested at lower rates than those with no tribal affiliation (19 percent for those with tribal affiliation, compared to 25 percent without tribal affiliation). However, labs operated on tribal or federal lands are not required to report test results to DOH, so actual testing rates may be higher. Across race categories, those identifying as American Indian had the lowest testing rate at 21 percent. Children in these two groups also had more elevated test results than most other groups, suggesting more blood lead testing is needed.

Even for children at the highest risk of lead exposure, the state has not met the Medicaid testing requirement

Answer in brief

Analyzing lead risks at the county level can mask community-level differences. Although Washington has multiple factors that can increase a child's risk of lead exposure, most children with the highest risk have never been tested. Children in areas with a heightened risk were tested at higher rates; however, three-quarters were not tested at all. Some communities with higher numbers of elevated test results also test the fewest children.

Analyzing lead risks at the county level can mask community-level differences

Any amount of lead in a child's blood can be harmful. State health departments must apply their limited resources strategically, with the related goals of identifying and eliminating sources of lead exposure in order to reduce children's blood lead levels. To help health departments determine where to focus their resources, the Centers for Disease Control and Prevention (CDC) has established a reference value to identify children with blood lead levels that are higher than most others in their communities. From 2012 through 2021, the value was 5 micrograms of lead per deciliter of blood (5 mcg/dl), a number which testing guidance from the American Academy of Pediatrics still uses. Since then, the CDC has lowered its reference value to 3.5 mcg/dl. Our analyses used the CDC's current value when we were not referring specifically to the Academy's testing guidance.

Our analysis of data provided by the Department of Health (DOH) and the Health Care Authority (HCA) found that statewide, 2.4 percent of childhood lead test results for children enrolled in Medicaid were above 5 mcg/dl, and 4.6 percent were above 3.5 mcg/dl.

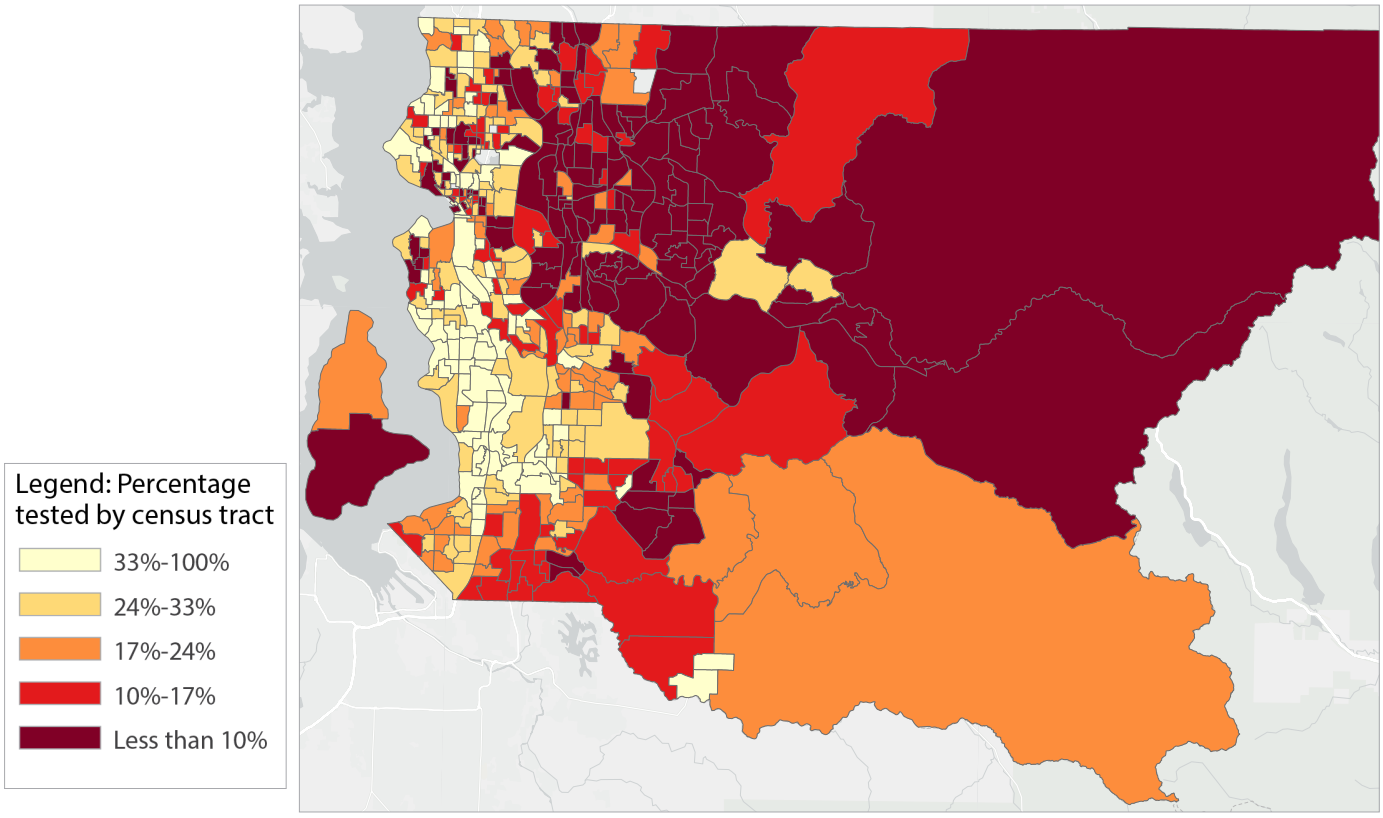
Our analyses also considered whether the state's testing practices showed evidence that it focused its resources on specific places where children experienced the greatest likelihood of exposure to lead. Because analysis at the level of counties or even large cities was too imprecise, we examined census tracts (see sidebar). For the purposes of this report, we used the more flexible term "community."

Census tracts are small, relatively permanent geographic entities within counties. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are to be as homogeneous as possible with respect to population characteristics, economic status and living conditions.

We assessed community risk and testing rates at this level because the considerable variation within counties could otherwise go unnoticed. For example, King County tests a similar percentage of Medicaid-enrolled children compared to the state when considered as a whole, but testing rates varied from zero to 68 percent in communities where at least 20 children were tested. The map in **Exhibit 6** shows testing rates for all communities in King County.

Exhibit 6 – Map of testing rates in King County by census tract

Percent of Medicaid-enrolled children tested at least once between 12 and 36 months; 3-year-old group (born 2017-2019)



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Across the state, testing rates were somewhat lower in rural areas. The median testing rate for rural communities was 16 percent, as opposed to 21 percent in other, more urban communities.

Although Washington has multiple factors that can increase the risk of lead exposure, most children at high risk were not tested at 12 to 36 months

We considered the following five risk factors in Washington when assessing which communities are at greater risk for lead exposure:

1. High concentration of elevated blood lead test results
2. Homes built before 1960
3. Population living below the federal poverty level
4. Area once used as orchard land
5. Area near a former smelter

1. High concentration of elevated blood lead test results. A high percentage of elevated blood lead test results in a certain area can indicate a common source of lead in the community, be it an environmental, occupational or consumer-related source. The American Academy of Pediatrics recommends testing all children – not only those enrolled in Medicaid – in communities where 5 percent or more of test results exceed 5 mcg/dl.

For our analysis, we considered children to be at higher risk when they live in a community where 5 percent or more of test results are at or above the rate specified by the Academy.

We identified five counties in Washington where this was the case: Okanogan, Asotin, Garfield, San Juan, Lincoln. Appendix D presents detailed information about this analysis.

2. Homes built before 1960. The American Academy of Pediatrics recommends testing all children in communities where 25 percent or more of homes were built before 1960. U.S. Census Bureau data shows that roughly one-fifth (22 percent) of housing units in the state were built prior to 1960 (although older homes are more prevalent in some areas than others).

For our analysis, we considered children to be at higher risk when they live in a community where this is the case. In 18 of Washington's 39 counties, more than 25 percent of homes were built before 1960.

3. Population living under the poverty level. Research has demonstrated that higher rates of elevated blood lead are associated with higher levels of poverty. According to U.S. Census Bureau data, 10 percent of people in Washington live under the federal poverty level. The county-level proportion of people under the poverty level range from 7 percent in Snohomish to 25 percent in Whitman.

For our analysis, we considered children to be at higher risk when they live in a community where the percent of people living under the federal poverty level is higher than 80 percent of other communities in the state.

4. The area was once orchard land. From 1900 to 1950, the pesticide lead arsenate was commonly used on fruit tree orchards. The Department of Ecology has identified more than 100,000 acres of land in central Washington where the soil may still be contaminated by lead. This area includes land across seven counties: Benton, Chelan, Douglas, Franklin, Klickitat, Okanogan and Yakima.

For this reason, we considered children to be at higher risk when they live in a community that includes former orchard land.

5. The area is near a former smelter in Tacoma or Everett. For almost 100 years, the smokestacks of a copper smelter in Tacoma emitted lead and other heavy metals into the air. The Department of Ecology reported that these metals settled onto surface soil for 1,000 square miles around the smelter, an area that includes four counties: King, Pierce, Thurston and Kitsap. Another smelter operated in Everett from 1894 to 1912. The plume from its smokestacks settled for one square mile in Snohomish County.

For this reason, we considered children to be at higher risk when they live in a community affected by a smelter plume.

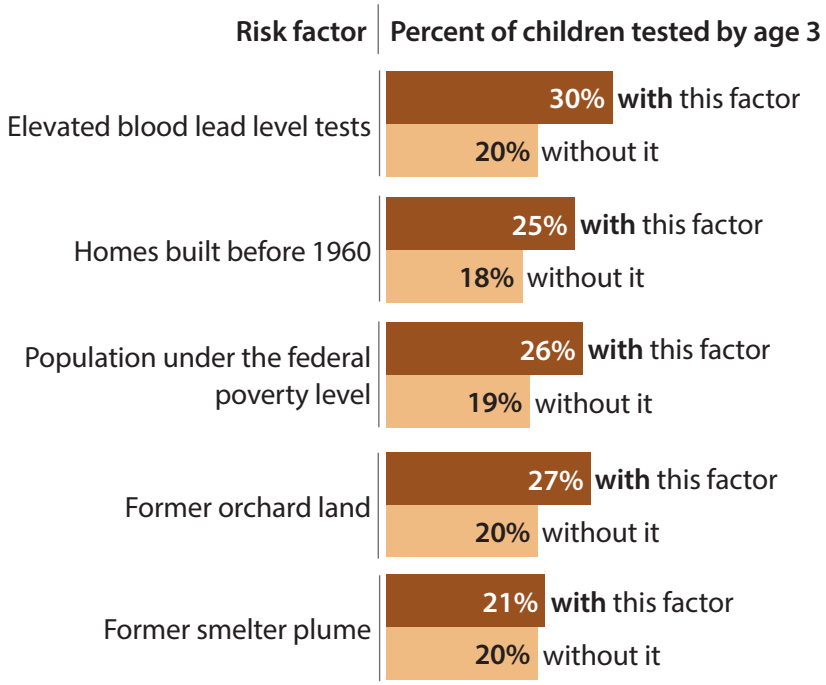
Although children in areas with heightened risk were tested at higher rates, three-quarters have not yet met even the minimum Medicaid standard

More than 60 percent of Washington communities have at least one of the risk factors for lead exposure listed above. In these communities, almost three-quarters (72 percent) of continuously enrolled children were not tested between 12 and 36 months. Our analysis showed that about 46,000 continuously enrolled children born in 2017, 2018 or 2019 were not tested at all, even though they may be at greater risk of lead exposure. When applied to the full Medicaid population, we estimate this would be more than 60,000 children.

On the positive side, the children living in these communities were tested at higher rates than other children in the state, who lived in communities without a risk factor. Overall, the median testing rate for communities with at least one risk factor was 23 percent, compared to 16 percent for other communities. This was true for each of the individual risk factors shown in **Exhibit** 7. For example, on average, children in communities on former orchard land were over 30 percent more likely to be tested than children living in other places.

Exhibit 7 – Percentage of children tested, living in communities with or without selected lead risk factors

Percent of Medicaid-enrolled children tested at least once between 12 and 36 months; 3-year-old group (born 2017-2019); calculated as median percentage tested by census tracts



Source: DOH and HCA test result data.

These results suggest that some providers know they work in a high-risk area and test more children as a result. A few of the providers we interviewed confirmed this was the case. However, according to guidance issued by the CDC and the American Academy of Pediatrics, as well as CMS, many more children in communities with a risk factor should be tested than actually are. Until that happens, these families are less likely to know if their children have an elevated level of lead in their blood and what they can do about it. Offering providers detailed information about the risks in the community where they practice, as opposed to risks present for the entire county, could help the state improve test results.

Some communities with higher numbers of elevated test results also test the fewest children

Exhibit 7 also shows that children who live in communities with a higher percentage of elevated blood lead test results were generally more likely to be tested than other children. We evaluated 10 communities where the rate of children with at least one elevated (at 3.5 mcg/dl or above) blood lead test result was roughly five times higher than the state average (at least 16 percent for the communities, compared to 3.6 percent for the state). Their testing rates ranged from 12 percent to 61 percent. Six of these communities had testing rates below the state average of 25 percent. **Appendix E** presents more detailed information about test results in these 10 communities.

The state lacks an adequate process to ensure children enrolled in Medicaid receive required blood lead testing

Answer in brief

Data analyses at state agencies is insufficient to accurately assess lead testing rates of Medicaid-enrolled children. Without active data-sharing agreements, the Health Care Authority (HCA) and Department of Health (DOH) cannot conduct thorough test analyses. HCA lacks adequate performance measures to monitor the state's compliance with Medicaid's lead testing requirement. Additionally, HCA has not used its existing, federally required, performance measure to actively monitor or increase testing compliance. HCA's contracts with managed care organizations (MCOs) also lack clear expectations and performance standards necessary for effective compliance with Medicaid blood lead test requirements.

Data analyses at state agencies is insufficient to accurately assess lead testing rates of Medicaid-enrolled children

Leading practices suggest that the state Medicaid agencies share data with health departments. The Centers for Disease Control and Prevention (CDC) and the Kaiser Family Foundation both recommend that state Medicaid agencies coordinate with their health departments to share data to track whether children receive required tests. (See *Bibliography: Populations at higher risk for lead exposure*.) The state also needs to be able to identify where Medicaid testing rates are low so it can focus resources where they are most needed.

Without active data-sharing agreements, the Health Care Authority (HCA) and Department of Health (DOH) cannot conduct thorough test analyses

While Washington collects the Medicaid eligibility data and test-result data, the two state agencies responsible for coordinating the statewide response currently do not coordinate their data or activities to conduct analyses that would measure compliance with initial testing.

HCA and DOH do share data to identify children who have elevated blood lead levels. HCA sends DOH a list of all Medicaid-enrolled children who have had a blood lead test, which DOH matches against its data to create a list of Medicaid enrollees who had an elevated test result. This match is focused on identifying children with elevated blood lead levels so HCA can work with managed care organizations (MCOs) to ensure they receive appropriate care. However, the agencies do not coordinate analyses to perform a match of Medicaid clients to identify children that need an initial screening test.

DOH has requested additional data from HCA that would allow it to achieve two goals:

- **Identify children who lack required testing.** This would enable DOH to better calculate rates of children who have had required tests.
- **Identify Medicaid providers who have billed for well-child visits but not for blood lead tests.** This would enable DOH to conduct focused outreach to clinics to educate them on the blood lead testing requirement.

However, DOH cannot obtain the data to perform these tasks until its data-sharing agreement with HCA has been finalized. DOH officials said the agency initiated conversations around the data-sharing agreement in July 2022. However, as of July 31, 2023, it has yet to be finalized by both agencies. This agreement is essential for two additional purposes: to enable DOH to meet CDC grant requirements, and to enable HCA to establish adequate performance measures.

HCA lacks adequate internal performance measures to monitor the state's compliance with Medicaid's lead testing requirement

To act effectively on low testing rates, HCA must be able to assess the state's compliance with the Medicaid requirement. Leading practices suggest better monitoring and accountability can help increase compliance with such requirements.

HCA currently uses one federally required measure (see sidebar) to assess the state's progress on childhood lead testing, but it does not speak to the full Medicaid requirement. The "lead screening in children" measure was developed by the National Committee for Quality Assurance as part of the Healthcare Effectiveness Data and Information Set used by many hospitals across the country. The measure uses Medicaid billing data to count how many children have been tested at least once before their second birthday. Although this is a well-established measure, it has some limitations.

This measure, formally known as the HEDIS Lead Screening in Children (LSC) performance measure, tracks:

"The percentage of children 2 years of age who had one or more capillary or venous lead blood test for lead poisoning by their second birthday."

- **It does not capture testing rates for both the 12 and 24 month tests.** Tracking rates for both these required tests is important because lead exposure first appears around 12 months but usually continues to worsen: Levels that had not been hazardous can become concerning by 24 months. One nonprofit organization, A Toxic Free Future, has recommended states publish data on rates of testing at both milestone ages.
- **It does not capture testing rates for six-year-olds.** Medicaid effectively requires that all children have been tested by their sixth birthday.
- **It does not include the small percentage of young children who see fee-for-service health care providers** rather than an MCO provider.
- **Detailed measure data is not available for geographic analyses.** HCA summarizes results of the measure at the state level, by MCO, and by region of the state, but detailed data is not available for further analyses.
- **The measure results only include children who were continuously enrolled in Medicaid from birth to their second birthday** (except for one 45-day gap). This excludes many children who may be tested at lower rates, including immigrant children and those from families with fluctuating income levels who periodically lose Medicaid coverage.

Establishing additional internal performance measures that address these issues will better equip HCA to understand compliance and determine if children with the greatest need are getting tested.

Additionally, HCA has not used its existing performance measure to actively monitor or increase testing compliance

In 2021, MCOs tested between 27 percent and 41 percent of the children in their care at least once, as measured by HCA's existing performance measure. For a test that is to be universally applied, these are low rates. HCA has left it up to MCOs to determine their next steps for addressing the lead testing performance measure, and has not required any MCO to take corrective action for underperforming.

Other states have taken more direct approaches to improving provider compliance. For example, Wisconsin, New York and North Carolina all use billing data to identify low-performing providers and then notify them on how well they are or are not meeting the Medicaid requirement. HCA could require the MCOs to do something similar with their provider groups. Wisconsin also used Medicaid billing data and blood lead testing data to identify Medicaid-enrolled children who had not received the required tests. Providers were notified of children in their practice who had not been tested. After implementing this provider outreach, the share of children who received an age-appropriate test increased from 46 percent to 55 percent. As HCA works to improve its systems of monitoring and accountability, the agency could consider how best to work with the MCOs to give their providers more direct feedback on their own performance.

HCA's contracts with MCOs lack clear expectations and performance standards necessary for effective compliance with Medicaid blood lead test requirements

HCA's contracts do not clearly specify that MCOs are responsible for ensuring providers conduct all required blood lead tests. First, the contracts say covered services include "*appropriate* blood lead screening" instead of "*required* blood lead screening." The word "appropriate" could incorrectly imply either that it is not appropriate to test some children, or that providers can screen children for blood lead using an "appropriate" tool, such as a risk questionnaire. Second, the contract says that the MCO "shall be responsible for all EPSDT [Early and Periodic Screening, Diagnostic and Treatment] screening, diagnostic, and treatment services *found to be medically necessary*." Again, this wording could be misinterpreted in a way that emphasizes the provider's discretion in providing screening services because it does not allude to any state or federal requirements.

Clarifying contract language and setting clear expectations would be helpful in two respects specific to Medicaid-enrolled children.

1. **Doing so would better enable MCOs to promote testing through outreach or incentives.** HCA's contracts with the MCOs specify that the MCOs "shall conduct outreach efforts with enrollees to promote completion of EPSDT services" and that MCOs "may implement enrollee and primary care provider incentives to ensure that enrollees under the age of 21 receive screenings services." The Kaiser Family Foundation suggests that states link MCO payments with bonuses or penalties to promote increased blood lead testing.
2. **It would provide greater accountability through established targets for lead testing rates.** Currently, HCA does not provide a target in their contracts for the MCOs to meet on the one measure, nor any thresholds that would trigger corrective action, should it become necessary.

HCA has other opportunities to clarify expectations around blood lead testing with the MCOs. For example, HCA meets with the MCOs periodically to discuss case management for children with elevated blood lead levels. The agency could use this time to discuss ways the MCOs might work to improve testing rates, such as by mentioning the requirement to providers while conducting lead case management activities.

Most MCOs are not actively working to improve lead testing rates. Representatives from some of the MCOs said they review their results on the one "lead screening in children" measure, and some said they share the results with the medical groups they work with. But for the most part, MCOs focus much more on ensuring children with elevated blood lead levels receive follow up care. For example, MCO staff will call health care providers to remind them to repeat a test on the recommended schedule. One also said that their contractual requirement has focused on case management, so that has been their priority.

As part of the state's work to reduce children's blood lead levels and mitigate the effects of lead exposure on children, efforts to engage with MCOs and health care providers are very important. But the results of our analyses suggest that much more could and should be done.

To help improve test rates, the state could do more to ensure providers have a clear understanding of testing requirements

Answer in brief

Health care provider uncertainty about Medicaid lead test requirements has likely contributed to low testing rates. The state could do more to ensure providers receive clear, consistent messaging about Medicaid requirements. DOH's efforts to promote testing could help the state coordinate testing and increase awareness of lead exposure risks. In addition, we found that by increasing awareness about the benefits of point-of-care testing and health records systems prompts, the state could help clinics and providers improve their processes to help reduce barriers to lead testing.

Health care provider uncertainty about Medicaid lead test requirements has likely contributed to low testing rates

Health care providers responsible for ordering and administering blood lead tests must clearly understand Medicaid requirements if they are to fulfill them accurately. We spoke with a range of health care professionals to learn more about why Washington has such low testing rates and what can be done to ensure Medicaid-enrolled children and others at risk of lead exposure are tested. The interviews included family medicine and pediatric providers, all five of the managed care organizations (MCOs), and other leading organizations involved in Washington's public health. Broadly, we found providers may not know about the requirement at all or have misunderstood what they are expected to do to comply with it. This likely contributes to the state's low testing rates.

For example, one expert, who educates providers about childhood lead exposure, explained that there is a real lack of education for doctors to know what to look for with blood lead testing. The expert further suggested that pediatricians who trained in Washington might not know that blood lead testing is a requirement. One explained that she herself had only recently learned about the requirement:

"I was only made aware of the recommendation somewhat recently from Washington Academy of Family Physicians staff, so I spread that [information] around my clinic. I had not known about the Medicaid requirement. I mostly thought of it in a risk-based setting. In retrospect, probably a lot of our patients on Medicaid likely have the higher risk. I have several doctors in my clinic, and one who came from another part of the country was surprised it was not part of the standard process here."

Research conducted in Washington concurs that providers' unfamiliarity with Medicaid requirements can contribute to low testing rates. A thesis written by a master's degree student at the University of Washington found only about a quarter of providers in King County were aware of Medicaid lead testing requirements and identified this as a barrier to testing.

Providers in Washington who do know about the requirement may still be uncertain about the actions they should take. Two factors contribute to their confusion.

- **Unclear definitions.** Federal requirements are clear that conducting a blood lead test is the only way to satisfy the Medicaid requirement. However, in an interview with one MCO, the quality control staff member described how doctors could go through the risk questionnaire and meet the requirement without testing. This misconception exists because providers can receive guidance on lead testing requirements from multiple, different sources that sometimes do not use clear definitions for testing terms. For instance, blood lead tests are often referred to as "a lead screening" – to see if a child has lead in their blood. However, "a screening" can also refer to a questionnaire used to screen for risk, such as the one directed at providers which DOH posts on its website.
- **Changing guidelines.** Professional guidelines on blood lead testing for all children, not just those enrolled in Medicaid, have changed over time. Since 2006, some professional guidelines, such as American Academy of Family Physicians and the U.S. Preventive Services Task Force, recommended against testing asymptomatic children unless they were clearly at risk of lead exposure. HCA officials thought many providers chose not to follow Medicaid guidelines for this reason. However, current guidance from the American Academy of Pediatrics and Bright Futures, a national health promotion and prevention initiative, recommend screening in accordance with state and federal laws. The Preventive Services Task Force now maintains a neutral position on testing given emerging discoveries of sources of lead in the environment, a position which is supported by the American Academy of Family Physicians.

The state could do more to ensure providers receive clear, consistent messaging about Medicaid requirements

The testing guidance distributed to providers by the state has also often been unclear and inconsistent. We reviewed documents from DOH, HCA and the MCOs to see how they explained Medicaid requirements to their various audiences. While some key documents were clear about the requirement, such as HCA's Medicaid billing guide and contracts with MCOs, others were less so. And consequently, state messaging has been inconsistent as well.

For example, DOH's "Blood Lead Testing" website page advises providers to "assess all children for risk of lead poisoning," and "recommends performing a blood lead test" on children who match a list of certain risk factors. The webpage does not mention that blood lead testing is a requirement for all children enrolled in Medicaid. Instead, the webpage says:

> "** ***The Health Care Authority has applied for a waiver to perform targeted testing in children covered by Apple Health. The waiver request is currently pending.***"

MCOs are also inconsistent between companies in how they inform their associated providers about Medicaid test requirements, which means providers across the state receive different information depending upon their MCO affiliation. Each MCO contracted with Washington to provide Medicaid patient care develops its own manual of policies and requirements around patient care.

- Three of the five MCOs made it clear that blood lead testing is required, with one giving very clear instructions "to comply with federal government requirements." It goes on to advise: "You should also give blood screening lead tests to children older than 24 months up to 72 months if you have no past record of a test."
- A fourth MCO manual requires the user to click through two links to see the requirement as shown in HCA's billing guide.
- The fifth manual incorrectly says the completion of a risk-based questionnaire is sufficient to meet the requirement.

DOH could do more to help providers understand local lead risk to improve testing rates among children at the highest risk for lead exposure

Lead test result surveillance is an important step to ensure that children at the greatest risk of lead exposure are tested. DOH's Blood Lead Testing webpage links to its Lead Exposure Risk mapping tool, which allows users to view a variety of environmental public health data online. It includes a filter that displays lead risks in the state. However, providers do not have access to community level information on elevated blood lead levels and testing rates because the most local unit displayed in the maps and tables for these measures is the county.

Providers have mixed understanding regarding community-specific risks. Historically, Washington has not been viewed as high risk for lead exposure and so lead testing has not been a focus in provider training. People we interviewed and news articles we reviewed said lead poisoning is considered an East Coast issue because the average age of houses is older there. One provider connected this perception to the low emphasis given to lead poisoning in medical and nursing schools in Western states. While explaining that Washington has its own risk factors could help providers appreciate the reasoning behind testing, it is more important that providers understand blood lead tests are required for all Medicaid-enrolled children.

DOH's efforts to promote testing could help the state coordinate testing and increase awareness of lead exposure risks

DOH has sought to increase testing for all children at increased risk of lead poisoning, including identifying children enrolled in Medicaid to determine their testing rates. Before the pandemic, the agency created a testing promotion plan that identified areas in the state to target for increased messaging about the importance of blood lead testing. The agency was unable to complete planned activities due to the coronavirus pandemic and staff turnover.

As of July 2023, DOH has nearly completed the testing promotion plan and hired a full-time coordinator to move the plan forward. If implemented, the plan's activities would likely increase childhood testing rates, as it underscores the importance of Medicaid-required tests. It states in part:

> ***"While Washington State has not adopted universal testing protocols, Medicaid requires all enrolled children to be tested for lead at 12 and 24 months of age or between 24 to 72 months of age if no record of a previous blood lead test exists. [This plan] promotes testing using a targeted approach to reach children who are most at risk, including children who are enrolled in Medicaid and children living in identified areas of higher environmental lead."***

The updated plan details outreach and education activities, and lists DOH's current community partners. The latter include local health jurisdictions; health care providers; Head Start; Women, Infants and Children Nutrition Program; the Northwest Pediatric Environmental Health Specialty Unit; and the Refugee and Immigrant Health Program. For a detailed list of DOH's planned activities, see **Appendix F**.

DOH has additional activities planned as part of its overarching Childhood Lead Poisoning Prevention Program CDC grant which will also likely help increase Medicaid blood lead testing rates. These activities include:

- Create and administer a statewide lead advisory committee
- Identify providers and clinics that are not testing Medicaid-enrolled children, and conduct outreach to educate Medicaid providers about requirements
- Ensure annual review and adjustment of screening and testing plan
- Develop a data-sharing agreement for data collaboration with HCA to identify and/or generate appropriate counts of children enrolled in Medicaid to analyze and report on testing and elevated rates
- Develop an evaluation and performance measure plan
- Develop a sustainability plan to assure goals of program continue beyond the period of performance

Additionally, DOH has contracted with HCA to send information to all new parents to raise awareness about lead poisoning. For example, the "Watch Me Grow: 12 Months" mailer includes a short questionnaire to help parents identify possible risks of lead exposure; answering "yes" to any of the six questions means their child should have a blood lead test. "Medicaid enrollment" is included as one of the six indicators. Finally, the agency also runs a program that lends, and occasionally donates, point-of-care capillary lead testing machines to community programs.

By increasing awareness about the benefits of point-of-care testing and health records systems prompts, the state could help clinics and providers improve their processes to help reduce barriers to lead testing

We have assembled a list of other leading practices that can increase awareness and improve understanding of the importance of lead testing among providers in **Appendix G**. Two strategies in particular, described below, would help the state improve testing rates by minimizing barriers at clinics and helping families access tests more easily. While individual clinics must decide what works best for their practice, managers need good information to make informed decisions. By providing information about strategies that can help reduce barriers to testing, HCA can help clinic leaders choose achievable options (listed on the following page) that in turn might increase testing rates.

1. Point-of-care testing

Expanding access to in-office blood lead testing at clinics could help improve testing rates. A 2021 article in the *Journal of Pediatrics* found that introducing point-of-care testing to a clinic substantially increased testing rates at 12- and 24-month well child visits. In-office testing helped remove barriers a family might encounter in getting to another location for a test; it also provided immediate feedback that a child's results might require care.

The U.S. Preventive Services Task Force found that capillary testing – more easily performed in a doctor's office if the needed testing machine is available – accurately identifies children with elevated blood lead levels. It also considered risk-based questionnaires inaccurate at detecting children with elevated blood lead levels. Additionally, when five MCOs in New Jersey compiled a list of best practices to increase lead testing rates, they included providing in-office lead testing to improve compliance and decrease missed opportunities for testing.

Multiple stakeholders in Washington said it can be challenging to get children into clinics for their well child visits due to families' schedules and transportation issues. At least one provider said that when families are then instructed to travel to a different site before a blood lead test, it is much less likely the family will make it to the lab.

One provider suggested that improved access to in-office capillary testing machines could help increase testing rates. HCA could use its existing communication channels with MCOs to discuss both the importance of in-office testing to remove barriers for families, and the options that might be available through DOH's program for lending testing machines.

2. Health records systems that prompt providers if a child needs a lead test while in an appointment

Even if providers are aware that Medicaid requires blood lead testing, they might not know their patient's Medicaid enrollment status while in the treatment room. As a result, they may not test the children who are required by law to be tested. One provider said that providers focus more on patients' health issues or needs rather than considering what tests their insurance might require. The provider went on to explain that some clinic record systems might not have the ability to show nuanced prompts:

> ***"The records aren't sophisticated enough to specify that with different types of insurance, you do different things. The records say providers can test the blood level or not. Those are the choices."***

One Ohio hospital with a network of 30 different primary care locations conducted a process improvement review to increase blood lead testing. It reported that having the electronic health records pre-order lead tests increased the rate of compliance significantly.

HCA could take steps to ensure all Medicaid providers and clinics are aware of the importance of system prompts. Since electronic health record systems vary considerably, each clinic would then need to decide how best to incorporate these helpful prompts to increase lead testing. If there are technical reasons a clinic cannot add a flag in its system, then clinic managers or staff could develop another process to ensure their providers are aware of which patients require tests.

State Auditor's Conclusions

Here in the beautiful Evergreen State, we may think lead exposure is only an issue on the East Coast or in the Midwest – places with a history of industrial pollution and older homes. However, this performance audit shows we can never be complacent about the risks our children face. In fact, when compared to six other western states, Washington had the highest percentage of children with elevated blood lead levels, yet tested children for lead exposure at the second-to-lowest rate in the group.

There is no safe level of lead in the body. This audit found most children enrolled in Medicaid and at the highest risk for exposure were not tested. Overall, only 26 percent of these children received at least one of the federally required tests between 1 year and 6 years old, increasing the risk that some will not get the follow-up care they need.

Despite those low statewide testing rates, there are positive findings in this report. We identified two counties that test more than half the enrolled children in their area. And community outreach by health care workers seems to improve testing rates – children whose first language is not English were tested at nearly twice the rate of native English speakers.

Importantly, state agencies have the tools and data they need to increase the number of children screened for lead exposure. This report makes recommendations to the state Department of Health and the Health Care Authority to better communicate testing requirements to health care providers. We also recommend they regularly analyze testing rates and identify communities at higher risk for lead exposure.

By acting with urgency, the state can soon improve the number of children tested for lead exposure. With more than 240,000 Medicaid enrollees under the age of 6, the benefits of increased community awareness of this issue will in turn benefit generations of Washingtonians.

Recommendations

To ensure children enrolled in Medicaid in Washington receive required tests, our recommendations fall into two main categories: creating clear and consistent guidance for providers, and implementing a monitoring process using data the state already collects to identify children who have not received a blood lead test.

For the Health Care Authority

To address the need for increased analysis and monitoring to ensure the state meets the Medicaid lead testing requirement, as described on pages 27-30, we recommend HCA:

1. Develop and use internal performance measures that capture and track whether all children enrolled in Medicaid – whether served by managed care organizations (MCOs) or fee-for-service providers – are receiving all required blood lead tests
2. Update contracts with MCOs to establish clear expectations and internal performance measures and thresholds regarding Medicaid testing requirements

To improve provider understanding of the Medicaid blood lead testing requirement, as described on pages 31-35, we recommend HCA:

3. Work with the Department of Health (DOH) to ensure all guidance that providers receive from the state about this requirement is clear and consistent, and includes contact information if a provider has questions about the requirements
4. Work with DOH to create a communication plan to ensure providers statewide understand this requirement and how to implement it

To increase awareness and improve understanding of steps providers can take to increase testing rates, as described on pages 35-37, we recommend HCA:

5. Educate Medicaid providers to help them understand how in-office lead testing can increase testing rates
6. Educate Medicaid providers to help them understand how system prompts to health care providers while they are at point-of-care with a patient can help increase compliance with required testing

For the Department of Health

To improve provider understanding of lead exposure risks for their patients, as described on pages 20-21 and pages 33-34, we recommend DOH:

7. Create a plan to regularly (at least annually) identify and assess Washington communities (at the census tract or zip code level) that are most at risk for lead exposure. Also, ensure providers have access to community level risk assessments.

To address the need for increased analysis and monitoring to ensure the state meets the Medicaid lead testing requirement, as described on pages 26-27, we recommend DOH:

8. Work with HCA to finalize a data-sharing agreement (DSA) to conduct a coordinated analysis, at least annually, to determine the extent to which children enrolled in Medicaid are receiving required lead tests, and whether children at the highest risk (based on the risk analysis performed in the previous recommendation) are receiving required testing.

To improve provider understanding of the Medicaid testing requirement and the lead exposure risks in Washington in order to ensure children are receiving the required lead tests, as described on pages 34-35, we recommend DOH:

9. Implement its current testing promotion plan and continue to update it at least annually

Agency Response

STATE OF WASHINGTON

November 22, 2023

Honorable Pat McCarthy
Washington State Auditor
P.O. Box 40021
Olympia, WA 98504-0021

Dear Auditor McCarthy:

Thank you for the opportunity to review and respond to the State Auditor's Office performance audit report, *"Lead Testing for Children Enrolled in Medicaid."* The Department of Health (DOH), Health Care Authority (HCA), and Office of Financial Management (OFM) worked together to provide this response.

We appreciate the State Auditor Office's (SAO) efforts to assess barriers to testing and to identify opportunities to improve testing rates. While DOH and HCA have different roles, responsibilities, and areas of influence on systems affecting children enrolled in Medicaid, both agencies have integral and interrelated responsibilities to improve lead testing rates. The only way to reliably know if a child has been exposed to lead is to test their blood.

We agree that childhood lead exposure and poisoning is preventable and that testing rates should be improved. Both DOH and HCA commit to working together, to continue to identify strategies and opportunities to improve, and to partner on the recommendations SAO identified.

We appreciate that the report recognized Washington's improved test rates and a higher confirmed test rate than a peer state. We also acknowledge that we can do better to help individuals most vulnerable to lead exposure be identified, tested, and connected to the care and resources needed to help reduce long-term impacts.

We also agree on the importance of leveraging communication, education, and structural accountabilities – such as contracts – to change behaviors and systems to help improve lead testing rates. DOH receives a federal Centers for Disease Control and Prevention grant that enables foundational support for program efforts around increasing testing rates. Without these funds the program would not function in the same way and would be much more limited in nature.

HCA has already enhanced its efforts and made additional contract expectations for the Medicaid Managed Care Organizations (MCO) that will be effective January 1, 2024. These changes include testing of all children in the home if one child has elevated levels; proactive messaging and provider education regarding lead testing; care gap reporting; and creation of a referral procedure for the DOH childhood lead poisoning prevention team or local health jurisdictions.

HCA is also considering additional amendments to MCO contract terms but recognizes that managed care plans may not be in an effective position to demand provider change without resources and capacity in the health care system. We have limited ability to address these barriers. HCA will work internally and with DOH to strengthen billing guidance language and issue provider communications to reiterate the federal requirement for lead testing in children insured by Medicaid. DOH looks forward to partnering with HCA to support these efforts to update MCO contracts, analyze and provide data, and connect with providers.

HCA will also explore measure tracking. However, the available national Healthcare Effectiveness Data and Information Set (HEDIS) quality measures do not fully match the federal government requirements. Otherwise, state-based measures proposed in the report will not be nearly as effective to implement. The state must follow federal requirements.

The lead testing rates for children identifying as American Indian and Alaska Native (AIAN) and those whose families did not speak or write English as their first language were developed by the SAO and neither HCA nor DOH were able to verify their accuracy.

Laboratories operated by Tribal entities are not subject to the notifiable conditions in Washington law that requires reporting test results to DOH. Tribes have sovereignty over their own data. Given this, we would hesitate to make conclusions about testing rates for children identifying as AIAN. The cost of missing or wrong information has negative impacts on public health planning, policy creation, and the wider sharing of resources that impact AIAN health.

Furthermore, children arriving in Washington State as refugees or other humanitarian entrants are eligible for a medical screening examination (including lead testing). Per a program monitoring and evaluation report for federal fiscal year 2022 from DOH, 91% of eligible children received blood lead level screening at the time of the domestic medical examination. While efforts are underway to test children born in this country to parents who do not speak or write English as their first language, the universal testing requirements for children entering the country are key to these numbers.

Lastly, it is worth noting that the pandemic put a huge burden on both the medical and public health systems in the state, as well as across the nation and world. We are emerging with new perspectives and are well-positioned to increase testing rates for all children in Washington, including those enrolled in Medicaid.

Please thank your team for their work on this audit. We will use the information and recommendations as an opportunity to improve. Many improvements are well underway.

Sincerely,

Umair Shah, MD, MPH
Secretary
Department of Health

David Schumacher
Director
Office of Financial Management

Sue Birch, MBA, MSN, RN
Director
Health Care Authority

cc: Jamila Thomas, Chief of Staff, Office of the Governor
Kelly Wicker, Deputy Chief of Staff, Office of the Governor
Rob Duff, Executive Director of Policy and Outreach, Office of the Governor
Mandeep Kaundal, Director, Results Washington, Office of the Governor
Tammy Firkins, Performance Audit Liaison, Results Washington, Office of the Governor
Scott Frank, Director of Performance Audit, Office of the Washington State Auditor

Official Response to the Performance Audit on Lead Testing for Children Enrolled in Medicaid
November 22, 2023

The Department of Health (DOH), Health Care Authority (HCA) and Office of Financial Management (OFM) provide this management response to the State Auditor's Office (SAO) performance audit report received on October 24, 2023.

SAO Performance Audit Objectives

The SAO's performance audit addressed three questions:

1. To what extent are children enrolled in Medicaid receiving required lead testing?
2. If enrolled children are not receiving required tests, what are the causes for this?
3. What should the state do to ensure children at highest risk receive tests?

Recommendations to HCA in brief:

SAO Recommendations 1-2: To address the need for increased analysis and monitoring to ensure the state meets the Medicaid lead testing requirement:

1. Develop and use internal performance measures that capture and track whether all children enrolled in Medicaid are receiving all required blood lead tests.
2. Update contracts with MCOs to establish clear expectations and internal performance measures and thresholds regarding Medicaid testing requirements.

STATE RESPONSE: The current performance measure in place does not track testing rates in a manner that exactly aligns with the Medicaid rules. We agree that better alignment between the measures and requirements could be beneficial; however, that measure is established at the federal level and is not one that we have the authority to change. Developing a concurrent process to track the testing utilization data required by the Medicaid rule would require additional resources since the current measure must still be used.

We agree that language in the contracts with the MCOs can be clarified around the expectations for blood lead testing.

Action Steps and Time Frame

- To better align the existing national tracking of lead screening in children with Medicaid requirements, HCA will provide feedback to the measure sponsor on alignment when the measure is next open for public comment. While there is an annual measure review process, the measure is not required to be opened up for comment as part of that process. Because of this, we do not have an anticipated completion date but will monitor annually and provide feedback when we are able. *By December 31, 2025.*
- HCA will convene a work group to explore the feasibility of additional utilization tracking that aligns with the Medicaid requirements. *By June 30, 2024.*
- HCA will update the language in the MCO contracts to clarify expectations for blood lead testing. *By January 31, 2025.*

SAO Recommendations 3-4: To improve provider understanding of the Medicaid blood lead testing requirement:

3. Work with the Department of Health (DOH) to ensure all guidance that providers receive from the state about this requirement is clear and consistent and includes contact information for who to contact if a provider has questions about the requirements.
4. Work with DOH to create a communication plan to ensure providers statewide understand this requirement and how to implement it.

STATE RESPONSE: HCA agrees with the recommendations to work with DOH to improve guidance and communications around blood lead testing.

Action Steps and Time Frame

- HCA will work with DOH to establish a work group that will develop a plan to address both of these recommendations. *By June 30, 2024.*

SAO Recommendations 5-6: To increase awareness and improve understanding of steps providers can take to increase testing rates:

5. Educate Medicaid providers to help them understand how in-office lead testing can increase testing rates.
6. Educate Medicaid providers to help them understand how system prompts to health care providers while they are at point-of-care with a patient can help increase compliance with required testing.

STATE RESPONSE: HCA agrees with the recommendations to provide additional guidance and information to providers on blood lead testing requirements, including suggestions on how to increase compliance.

Action Steps and Time Frame

- HCA will establish a work group that will develop a plan to address both of these recommendations. *By June 30, 2024.*

Recommendations to DOH in brief:

SAO Recommendation 7: To improve provider understanding of lead exposure risks for their patients:

7. Create a plan to regularly (at least annually) identify and assess Washington communities (at the census tract or zip code level) that are most at risk for lead exposure. Also, ensure providers have access to community level risk assessments.

STATE RESPONSE: We concur with this recommendation.

Identifying communities most at risk for lead exposure and communicating information to providers, families and communities can help improve understanding of lead exposure risks and testing. DOH has done substantial work in this area with the Washington Tracking Network (WTN), which includes most all risk factors included by SAO, though with different definitions.

DOH will review risks, definitions and methodology identified by SAO to determine opportunities for inclusion in WTN. It will take time and resources to fully review, assess and develop an implementation plan. DOH looks forward to improving and refining our efforts moving forward.

As part of developing the Childhood Lead Testing Promotion Plan (Recommendation 9), we used the WTN lead risk map to identify communities most at risk for lead exposure to focus testing promotion. We will continue to integrate community level risk assessments into the annual Testing Promotion Plan update.

Action Steps and Time Frame

- Work to identify a funding source for a new epidemiologist. *By June 30, 2024.*
- Review existing risks, definitions and analysis to identify opportunities to improve existing risk factors displayed on WTN. *By June 30, 2025.*
- Develop an action plan to integrate changes to WTN. *By December 31, 2025*.
- Identify and assess Washington communities that are most at risk for lead exposure at the census tract or zip code level as available in WTN, as part of updating the Testing Promotion Plan. *By December 31, 2024*, and annually thereafter.

SAO Recommendation 8: To address the need for increased analysis and monitoring to ensure the state meets the Medicaid lead testing requirement:

8. Work with HCA to finalize a data-sharing agreement (DSA) to conduct a coordinated analysis, at least annually, to determine the extent to which children enrolled in Medicaid are receiving required lead tests, and whether children at the highest risk (based on the risk analysis performed in the previous recommendation) are receiving required testing.

STATE RESPONSE: We concur with this recommendation.

Both DOH and HCA have been working diligently to finalize the data sharing agreement (DSA) which we hope to be fully executed by early next year. We will collaborate with HCA to determine the extent to which children enrolled in Medicaid are receiving required lead tests and if the children at the highest risk are receiving required testing.

To ensure analysis is valuable to both agencies, we propose creating a cross-agency work group comprised of members who are knowledgeable about the data analysis as well as those involved in programmatic efforts to increase lead testing. These data analysis efforts align with HCA efforts in Recommendation 1. In addition, we will:

- Develop and use internal performance measures that capture and track whether all children enrolled in Medicaid are receiving all required blood lead tests.
- Update contracts with MCOs to establish clear expectations and internal performance measures and thresholds regarding Medicaid testing requirements.

Action Steps and Time Frame

- Fully execute the data sharing agreement. *By March 31, 2024*.
- Identify work group members from HCA and DOH. *By March 31, 2024*.
- Begin work group meetings. *By June 1, 2024*.
- Review and solidify an initial set of core performance measures, as well as a reporting format that would be beneficial for both agencies. *By December 31, 2024*.

SAO Recommendation 9: To improve provider understanding of the Medicaid testing requirement and the lead exposure risks in Washington in order to ensure children are receiving the required lead tests:

9. Implement its current testing promotion plan and continue to update it at least annually.

STATE RESPONSE: We concur with this recommendation.

The testing promotion plan will be finalized and released by early next year. To develop the plan, DOH incorporated findings from the lead risk map on the Washington Tracking Network and we also worked with the Lead Advisory Committee. We delayed final review and publishing of the plan to incorporate major findings from this audit.

Moving forward we will continue to improve the testing promotion plan annually, incorporating elements from the recommendations above. To ensure that we are appropriately reaching Medicaid providers in an effective manner, we will work to include HCA during plan update efforts in future years.

Action Steps and Time Frame

- Finalize and communicate the testing promotion plan. *By January 31, 2024*.
- Launch and implement the testing promotion plan. *By December 31, 2024*.
- Identify HCA contact(s) to assist with the test plan review and modification. *By June 30, 2024.*
- Update and publish the testing plan. *By December 31, 2024,* and annually thereafter.

Appendix A: Initiative 900 and Auditing Standards

Initiative 900 requirements

Initiative 900, approved by Washington voters in 2005 and enacted into state law in 2006, authorized the State Auditor's Office to conduct independent, comprehensive performance audits of state and local governments.

Specifically, the law directs the Auditor's Office to "review and analyze the economy, efficiency, and effectiveness of the policies, management, fiscal affairs, and operations of state and local governments, agencies, programs, and accounts." Performance audits are to be conducted according to U.S. Government Accountability Office government auditing standards.

In addition, the law identifies nine elements that are to be considered within the scope of each performance audit. The State Auditor's Office evaluates the relevance of all nine elements to each audit. The table below indicates which elements are addressed in the audit. Specific issues are discussed in the Results and Recommendations sections of this report.

I-900 element	Addressed in the audit
1. Identify cost savings	**No.**
2. Identify services that can be reduced or eliminated	**No.**
3. Identify programs or services that can be transferred to the private sector	**No.**
4. Analyze gaps or overlaps in programs or services and provide recommendations to correct them	**No.**
5. Assess feasibility of pooling information technology systems within the department	**No.**
6. Analyze departmental roles and functions, and provide recommendations to change or eliminate them	**No.**
7. Provide recommendations for statutory or regulatory changes that may be necessary for the department to properly carry out its functions	**No.**

I-900 element	Addressed in the audit
8. Analyze departmental performance data, performance measures and self-assessment systems	**Yes.** The audit evaluated Health Care Authority (HCA) and Department of Health (DOH) performance data to determine the extent to which the state has met the Medicaid lead testing requirement. The audit evaluated performance measures and self-assessment systems the agencies have implemented and makes recommendations to monitor compliance with the requirement.
9. Identify relevant best practices	**Yes.** The audit reviewed best practices from across the country and within Washington, and makes recommendations to HCA and DOH to implement these best practices so the state can ensure children enrolled in Medicaid receive required blood lead testing.

Compliance with generally accepted government auditing standards

We conducted this performance audit under the authority of state law (RCW 43.09.470), approved as Initiative 900 by Washington voters in 2005, and in accordance with generally accepted government auditing standards as published in *Government Auditing Standards* (July 2018 revision) issued by the U.S. Government Accountability Office. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The mission of the Office of the Washington State Auditor

To provide citizens with independent and transparent examinations of how state and local governments use public funds, and develop strategies that make government more efficient and effective. The results of our work are widely distributed through a variety of reports, which are available on our website and through our free, electronic subscription service. We take our role as partners in accountability seriously. We provide training and technical assistance to governments and have an extensive quality assurance program. For more information about the State Auditor's Office, visit www.sao.wa.gov.

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Appendix B: Objectives, Scope and Methodology

Objectives

The purpose of this performance audit was to determine the extent to which children enrolled in Medicaid are receiving required blood lead tests and make recommendations for improvement. The audit answers the following questions:

1. **To what extent are children enrolled in Medicaid receiving required lead testing?**
2. **If enrolled children are not receiving required tests, what are the causes for this?**
3. **What should the state do to ensure children at the highest risk receive tests?**

For reporting purposes, the audit results have been organized into key findings. The messages relate to the original objectives as follows:

- The state has not ensured that Medicaid enrollees receive the required childhood lead testing (pages 13-21) – This finding addresses Objective 1.
- Even for children at the highest risk of lead exposure, the state has not met the Medicaid testing requirement (pages 22-25) – This finding addresses Objective 1.
- The state lacks an adequate process to ensure children enrolled in Medicaid receive required blood lead testing (pages 26-30) – This finding addresses Objectives 2 and 3.
- To help improve test rates, the state could do more to ensure providers have a clear understanding of testing requirements (pages 31-37) – This finding addresses Objectives 2 and 3.

Scope

This audit focused on determining the extent to which the state is meeting requirements for lead testing for children enrolled in Medicaid. Our analysis included only children enrolled in Medicaid, excluding all other individual programs. Children enrolled in multiple programs were included as long as one of the programs was Medicaid.

The Medicaid blood lead test requirement states that all enrolled children must receive blood lead screening tests at the age of 12 months and 24 months. In addition, any child between 24 and 72 months with no record of a previous test must receive one by the age of 6. To analyze the full requirement, we obtained Medicaid client eligibility data and lead testing data from 2015 through 2022.

This audit focused on the two state agencies with the biggest roles in lead testing in Washington, the Department of Health (DOH) and the Health Care Authority (HCA). Any references in our report to "the state" refer specifically to these two agencies.

Methodology

We obtained the evidence used to support the findings, conclusions and recommendations in this audit report during our fieldwork period (January to July 2023), with some additional follow-up work afterward. We have summarized the work we performed to address each of the audit objectives in the following sections.

Objective 1: To what extent are children enrolled in Medicaid receiving the required lead testing?

Crossmatch of Medicaid client data to lead testing data to determine testing rates.

HCA maintains eligibility data for children enrolled in Medicaid, and DOH stores the results of lead screening results performed on children statewide. We obtained records from 2015 through 2022 from both agencies for children born between January 1, 2014, and December 31, 2019. We then crossmatched HCA's Medicaid client eligibility data with DOH's lead testing data to determine which Medicaid-enrolled children had been tested. For analysis purposes, we divided the population into two cohorts, depending on their date of birth.

- **Cohort 1** – which we refer to as the "group of 6-year-olds" – included children born in 2014, 2015 or 2016. We looked at this group specifically to evaluate the state's compliance with the full Medicaid requirement: tested at both 12 and 24 months or, if not tested by 24 months old, then at least once between 12 and 72 months.
  - For the 12-month requirement, we consider children tested if they received a test while 1 year old.
  - For the 24-month requirement, we consider children tested if they received a test while 2 years old.
- **Cohort 2** – which we refer to as the "group of 3-year-olds" – included children born in 2017, 2018 or 2019. We looked at this group to understand the current testing situation and calculated the testing rate as the percent of children who were tested at 1- or 2- years old.

We did not count tests performed before a child's first birthday towards meeting the testing requirement because Medicaid testing requirement begins at 12 months old. Had we included this age group, we estimate the rate of 6-year-olds tested once by age 6 would increase by only 2 percentage points.

Focus on "continuously enrolled children." For both cohorts, we included children in our analyses only if they had been continuously enrolled in Medicaid from their first birthday until at least their sixth birthday for cohort 1 or until their third birthday for cohort 2. Our definition of "continuously enrolled" allows for up to one 45-day gap in enrollment each year, which is comparable to the "lead screening in children" performance measure currently used by HCA. We also allowed for up to 45 days for a child's enrollment in Medicaid after their first birthday. We focused on these continuously enrolled children to reduce the likelihood that a child in our population who was not tested in Washington was tested in another state and therefore fulfilled the Medicaid requirement.

Our focus on continuously enrolled children means the testing rates presented in this report are higher than they would have been if we had included data on the full Medicaid population. **Figures 1** and **2** show the testing rates for continuously enrolled children in the two age groups compared to children who were only enrolled for part of the time considered in our analysis ("partially enrolled") and the testing rate if these populations were combined.

Figure 1 – Group of 6-year-olds

Size of population and testing rates for children who were continually enrolled from their first to their sixth birthday, and those who were enrolled for only part of the time

	Continuously enrolled	Partially enrolled	Combined continuously and partially enrolled
Total number of children	71,927	61,615	133,542
Percent tested at 1 or 2 years old	21%	11%	16%

Source: Data from HCA and DOH, 6-year-old group.

Figure 2 – Group of 3-year-olds

Size of population and testing rates for children who were continually enrolled from their first to their third birthday, and those who were enrolled for only part of the time

	Continuously enrolled	Partially enrolled	Combined continuously and partially enrolled
Total number of children	95,343	28,685	124,028
Percent tested at 1 or 2 years old	25%	15%	23%

Source: Data from HCA and DOH, 3-year-old group.

Projecting testing rates to the full population of children enrolled in Medicaid. When we estimated the number of children who had not been tested by the required ages (pages 14, 15 and 23), we used the percentage of children tested from the continuously enrolled population and applied it to the number of children in the combined population. We did so because the testing rate for the continuously enrolled population is the more conservative approach (due to the higher testing rate) and the state is more likely to have complete testing information on this group.

Testing rates for 3-year-olds group by demographic characteristics. HCA eligibility data includes several fields with client demographic information that we used to summarize our matched data into the groups used for our risk analysis and detailed below. For the most part, demographic information is self-reported by enrollees, and the data set included some blank fields. However, we used the most recently available historical data to fill in many of the blanks. See Appendix D for a summary of the results.

Testing rates for 3-year-olds group by county and census tract. We mapped and calculated lead testing rates by both county and census tract using residential addresses from the DOH test result data and, when that was not available, from HCA's eligibility data. We used ArcGIS Pro to add census tract information to addresses from DOH and HCA. See Appendix E for a summary of the results.

Risk analysis

We also conducted an analysis to identify areas in the state that are at higher risk for lead exposure and the testing rates there. We completed this analysis only for the group of 3-year-olds using data from HCA, DOH, the U.S. Census Bureau, and the Washington State Department of Ecology. For analysis purposes, we considered children to be at higher risk when they lived in a census tract where any of these risks were present:

- 5 percent or more of tests results are elevated at or above 5 micrograms per deciliter (5 mcg/dl)
- 25 percent or more of homes were built before 1960
- The percent of people living under the federal poverty level is higher than 80 percent of other census tracts in the state
- The census tract includes former orchard land
- The census tract was affected by a smelter plume

Elevated blood lead levels. To analyze the percentage of elevated test results by county and census tract, we needed access to the largest possible number of records. For this reason, we calculated blood lead level rates using DOH test result data from 2016 through 2022. The results are for all children tested in the state, including children who are not enrolled in Medicaid.

We generally calculated rates of elevated blood lead in terms of the percentage of test results that were elevated. This is different from the number of children who had at least one test with an elevated result. (Appendices C and E provide more information about the difference and show numbers calculated both ways.)

However, when we calculated blood lead levels by demographic categories, we reported the percentage of children enrolled in Medicaid, with an elevated test result, from the 3-year-old group. The analysis is based on the match of DOH test result and HCA eligibility data (which has much more complete information on race), rather than only the DOH test result data. We were able to do this because we did not analyze the data by county and census tract, and so not as many test result records were needed.

We removed potentially false positive test results from our analysis of elevated blood levels. Specifically, when a child received more than one test on a given day, we did not use the highest result that day. Instead, we used the lowest result. And when a child was tested twice in a 12-week period and one of the results dropped by 5 or more micrograms in those 12-weeks, we did not use the highest result over those 12-weeks. Again, we used the lowest result.

Objective 2: If enrolled children are not receiving required tests, what are the causes for this?

To address this objective, we conducted a literature review of online resources to identify potential reasons why children enrolled in Medicaid might not be receiving the required tests. We conducted interviews with managers and program staff from DOH and HCA as well as individuals, associations and organizations that have a role in lead testing in Washington (see list below). We then compared results from these interviews to what we found during our literature review to determine key causes for low testing rates.

The groups we spoke with included:

- Seven health care providers
- All five managed care organizations (MCOs) in our state
- Associations including: Washington State Medical Association; Advanced Registered Nurse Practitioners United; Washington Chapter of the American Academy of Pediatrics; and Washington Academy of Family Physicians
- Seattle-King County Public Health Department
- Northwest Pediatric Environmental Health Specialty Unit at the University of Washington
- The Washington Poison Center
- The nonprofit organization Toxic Free Future
- A state legislator and staff members

Objective 3: What should the state do to ensure children at the highest risk receive tests?

To address this objective, we conducted a literature review of online resources to identify potential leading practices to ensure children enrolled in Medicaid receive all required lead tests. We then conducted interviews with managers and program staff from DOH and HCA as well as individuals, associations and organizations that have a role in lead testing in Washington (the same list as cited in Objective 2). We then compared results from these interviews to what we found during our literature review to determine key leading practices that could be implemented in the state to increase lead testing rates for children enrolled in Medicaid.

Work on internal controls

Since internal controls are significant to the audit objectives, we assessed HCA's and DOH's efforts to ensure required blood lead tests were being completed. We reviewed systems and processes HCA had in place to monitor compliance and communicate requirements, as well as mechanisms used to hold providers and MCOs accountable to the requirements. The team also reviewed DOH's processes around data collection, analysis and reporting.

Reporting confidential or sensitive information

We used confidential information, such as names and addresses of children enrolled in Medicaid, to complete our analysis. Furthermore, we did a census tract analysis to determine percent of tests that had an elevated blood lead level. Most census tracts in the state had fewer than 10 elevated blood lead test results; therefore, we omitted census tracks with few test results to protect the privacy of individuals with elevated blood lead levels.

Appendix C: Rates for testing and elevated blood lead level by county

Throughout the report, we calculated elevated blood lead levels as the percentage of all Department of Health (DOH) lead test results between 2015-2022 that were elevated. In these figures, we also include the percentage of unique children – including those not enrolled in Medicaid – with at least one elevated result in that time period. We consider elevated results to be those at or above 3.5 micrograms per deciliter, which has been the CDC's reference value since 2021.

This appendix shows testing rates and elevated blood lead level rates at the state (**Figure 3**) and county (**Figure 4**) levels. **Figure 5**, on page 51, also shows county results as a map. **Figure 6,** on page 52, shows testing rates for the state by census tract. In the figures, data indicating favorable results (high testing rates and low rates of elevated blood lead level results) are shown in **green**; less favorable – and so more concerning – results (low testing rates and high rates of elevated results) are shown in **orange**.

Figure 3 – Washington state rates of testing and elevated blood lead levels

	Medicaid-enrolled children only	All test results, not specifically Medicaid-enrolled children	
	Percent tested at 12 *or* 24 months	Percent of children with an elevated test result (3.5 mcg/dl)	Percent of test results that were elevated (3.5 mcg/dl)
All Washington children	**25%**	**3.6%**	**4.6%**

Source: Test results calculated using DOH and HCA data from the 3-year-old group.

Figure 4 – Washington county rates of testing and elevated blood lead levels

Highest tasting rate and lowest rate of elevated blood lead are highlighted in **green**.

Lowest testing rates and highest rates of elevated blood lead are highlighted in **orange**.

**** Indicates the percentage has been suppressed because fewer than 5 children had an elevated test result (column 3) or fewer than 5 tests had an elevated result (column 4).***

County results	Medicaid-enrolled children only	All test results, not specifically Medicaid-enrolled children	
	Percent tested at 12 *or* 24 months	Percent of children with an elevated test result (3.5 mcg/dl)	Percent of test results that were elevated (3.5 mcg/dl)
Adams	51%	2.2%	3.1%
Asotin	25%	6.5%	9.1%
Benton	14%	2.8%	3.3%
Chelan	32%	2.7%	3.8%
Clallam	7%	*	*
Clark	27%	2.2%	2.6%
Columbia	24%	5.7%	5.4%
Cowlitz	41%	5.3%	5.7%
Douglas	29%	5.1%	7.1%

Figure 4 – Washington county rates of testing and elevated blood lead levels, continued

Highest tasting rate and lowest rate of elevated blood lead are highlighted in **green**.

Lowest testing rates and highest rates of elevated blood lead are highlighted in **orange**.

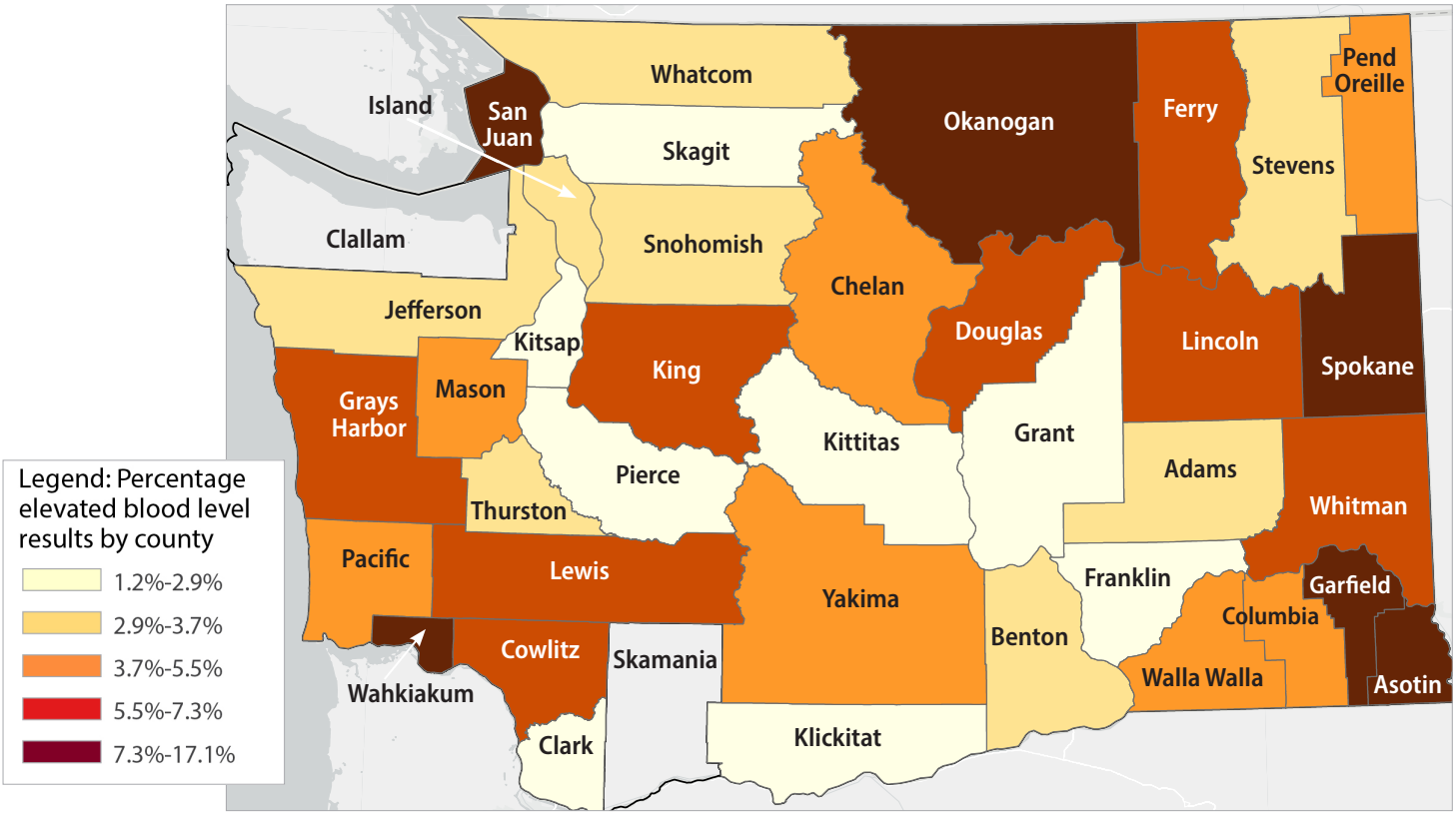
** Indicates the percentage has been suppressed because fewer than 5 children had an elevated test result (column 3) or fewer than 5 tests had an elevated result (column 4).*

	Medicaid-enrolled children only	All test results, not specifically Medicaid-enrolled children	
County results	Percent tested at 12 *or* 24 months	Percent of children with an elevated test result (3.5 mcg/dl)	Percent of test results that were elevated (3.5 mcg/dl)
Ferry	2%	8.5%	7.3%
Franklin	26%	1.0%	1.2%
Garfield	44%	12.5%	17.1%
Grant	33%	1.9%	2.2%
Grays Harbor	22%	5.6%	7.0%
Island	9%	2.8%	3.7%
Jefferson	20%	3.4%	3.5%
King	26%	5.1%	6.9%
Kitsap	24%	1.7%	2.3%
Kittitas	29%	1.6%	2.5%
Klickitat	24%	2.0%	2.0%
Lewis	10%	5.8%	6.6%
Lincoln	13%	*	6.5%
Mason	27%	3.4%	4.3%
Okanogan	17%	9.4%	10.6%
Pacific	27%	6.1%	5.5%
Pend Oreille	11%	4.9%	5.3%
Pierce	21%	1.6%	2.1%
San Juan	8%	7.4%	11.6%
Skagit	38%	3.0%	2.9%
Skamania	8%	*	*
Snohomish	21%	2.3%	3.1%
Spokane	23%	5.9%	7.8%
Stevens	8%	3.8%	3.5%
Thurston	17%	3.2%	3.5%
Wahkiakum	35%	*	7.5%
Walla Walla	55%	3.1%	4.1%
Whatcom	14%	2.3%	3.2%
Whitman	33%	6.0%	7.3%
Yakima	42%	3.1%	4.7%

Source: Test results calculated using DOH and HCA data from the 3-year-old group.

Figure 5 – Map: Percentage of test results above 3.5 mcg/dl, by county

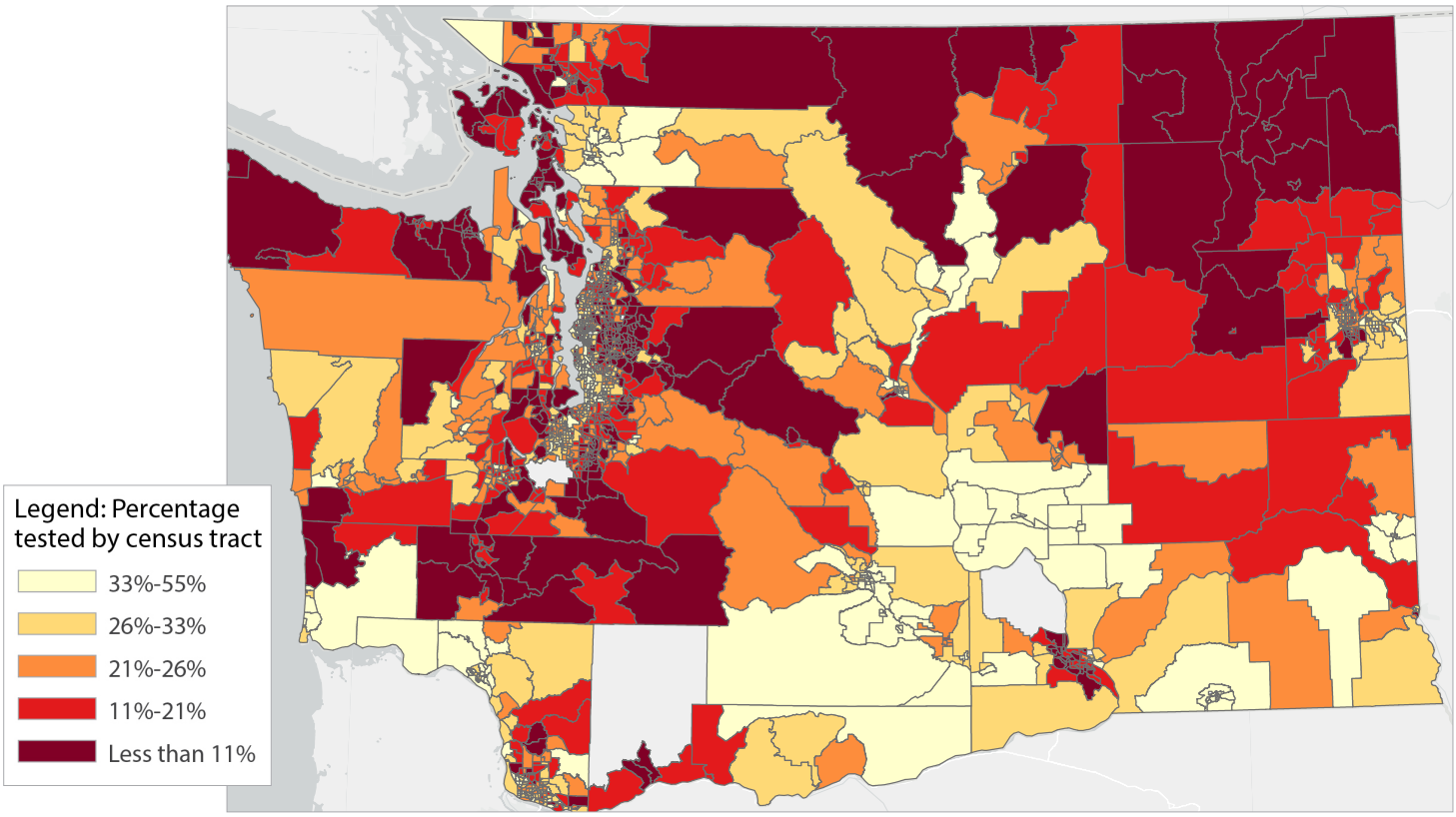
Percent of tests visualizes column 4 in Figure 5. Note: Counties with fewer than five elevated test results are not displayed on the map.



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Figure 6 – Map: Testing rates by census tract

Percent of Medicaid-enrolled children tested at least once between 12 and 36 months; 3-year-old group (born 2017-2019).
Note: Census tracts with no children enrolled in Medicaid are not displayed on the map.



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Appendix D: Rates for testing and elevated blood lead level by demographic factors

Throughout the report, we calculated elevated blood lead levels as the percentage of all Department of Health (DOH) lead test results between 2015-2022 that were elevated. This appendix reports the percentage of unique children continuously enrolled in Medicaid in the 3-year-old group with at least one elevated result in that time period. We consider elevated results to be those at or above 3.5 micrograms per deciliter, which has been the CDC's reference value since 2021.

Figure 7 shows testing and elevated blood lead level rates based on available demographic data from the Health Care Authority (HCA), including program (managed care or fee for service), poverty level, race, language read and spoken, and tribal affiliation. The demographic categories used were limited to the fields available in HCA's Medicaid eligibility data. In the figure, data indicating favorable results (high testing rates and low rates of elevated blood lead level results) are shown in **green**; less favorable – and so more concerning – results (low testing rates and high rates of elevated results) are shown in **orange**.

Figure 7 – Rates of testing and elevated blood lead levels by demographic factor

Highest tasting rate and lowest rate of elevated blood lead are highlighted in **green**.
Lowest testing rates and highest rates of elevated blood lead are highlighted in **orange**.

Demographic factor	Total Medicaid-enrolled children, 12-36 months old	Percent of Medicaid-enrolled children:	
		Tested at 12 *or* 24 months	With an elevated test result (3.5 mcg/dl)
All Medicaid-enrolled children	**95,343**	**25%**	**3.6%**
Fee-for-service care	798	25%	4.6%
Managed care	94,545	25%	3.6%
Under 100% of federal poverty level	73,164	25%	3.7%
At or above 100% of federal poverty level	22,179	25%	3.4%
Non-English speaking/writing	13,387	42%	4.1%
English speaking/writing	80,484	22%	3.5%
Tribal affiliation	1,610	19%	5.6%
No tribal affiliation	93,733	25%	3.6%
American Indian	3,157	21%	4.8%
Asian	2,887	29%	5.1%
Black	8,083	24%	3.1%
Hawaiian and Pacific Islander	3,484	24%	2.7%
White	47,850	24%	3.6%
Other	8,944	34%	3.6%
Multi-response (Different race information over time)	6,070	22%	5.0%
Race not provided	14,868	26%	3.1%

Source: Test results calculated using DOH and HCA data from the 3-year-old group.

Appendix E: Rates for testing and elevated blood lead level for 10 census tracts

In support of state and local public health offices that seek to increase testing in areas with high levels of blood lead, this appendix shows the results of the analysis described on pages 22-25. We conducted the analysis to see if – at a local level – the children at the highest risk of lead exposure had been tested at a higher rate. This type of analysis has not been done before, as the Department of Health (DOH) analyzes this data at the county level.

For the analysis, we identified the 10 census tracts in the state with the highest percentage of test results above 3.5mcg/dl. These 10 census tracts are located in King, Okanogan and Spokane counties. We next calculated the percentage of unique children with at least one elevated blood lead result, which is a better measure given children with an elevated test result should be tested at least twice. Both results are shown in **Figure 8**. (It has been sorted by column 5 because this is the information we used to select the 10 census tracts.) The figure also includes the testing rate and a summary of local risk factors (described on pages 20-23). Figures on the following pages present testing rates and results for the three counties and census tracts.

While the blood lead levels presented in Figure 8 are concerning, these census tracts have also done well in that they have tested enough children to allow us to analyze and report on the test results. Most census tracts in the state had fewer than 10 elevated blood lead test results, such that we would need to suppress the results to protect the privacy of children with elevated blood lead levels.

Figure 8 – Testing and elevated blood lead levels for children in 10 Washington census tracts

Highest tasting rate and lowest rate of elevated blood lead are highlighted in **green**.
Lowest testing rates and highest rates of elevated blood lead are highlighted in **orange**.

**** Indicates number was suppressed because fewer than 10 children had an elevated test result.***
FPL is Federal Poverty Level.

	Census tract			All test results, not specifically Medicaid-enrolled children		Medicaid-enrolled children only
County	Number	Location	Risk factors in tract	Percent of tests with elevated result	Percent of children with elevated test result (3.5 mcg/dl)	Tested at 12 or 24 months
King	290.04	Kent	Tacoma smelter plume, Percent below FPL (36.6%)	34.9%	28.1%	61.4%
Spokane	20	Spokane	Percent below FPL (36%), Homes built before 1960 (78.6%)	32.4%	24%	29.9%
Spokane	40.02	Spokane	Homes built before 1960 (73.2%)	31.4%	26.2%	21.9%

Figure 8 – Testing and elevated blood lead levels for children in 10 Washington census tracts, cont.

Highest tasting rate and lowest rate of elevated blood lead are highlighted in **green**.
Lowest testing rates and highest rates of elevated blood lead are highlighted in **orange**.

** Indicates number was suppressed because fewer than 10 children had an elevated test result.*
FPL is Federal Poverty Level.

County	Census tract		Risk factors in tract	All test results, not specifically Medicaid-enrolled children		Medicaid-enrolled children only
	Number	Location		Percent of tests with elevated result	Percent of children with elevated test result (3.5 mcg/dl)	Tested at 12 or 24 months
Okanogan	9401	Nespelem, Coulee Dam, Elmer City	Percent below FPL (18.9%), Homes built before 1960 (34.2%) Former orchard land	28.9%	*	14.5%
King	228.04	Bellevue	None	28.3%	25.6%	15.9%
King	295.06	Kent	Tacoma smelter plume Percent below FPL (22%)	28.3%	24.2%	46.3%
King	312.06	Auburn	Tacoma smelter plume	28.1%	21.6%	11.7%
Spokane	24	Spokane	Percent below FPL (45.5%), Homes built before 1960 (44.4%)	26.7%	24.1%	13.2%
King	312.07	Auburn	Tacoma smelter plume, Percent below FPL (18.3%),	25.7%	20.6%	18.1%
King	303.04	Federal Way	Tacoma smelter plume	25.6%	20.7%	27.3%

Source: Test results calculated using DOH and HCA data from the 3-year-old group.

County maps

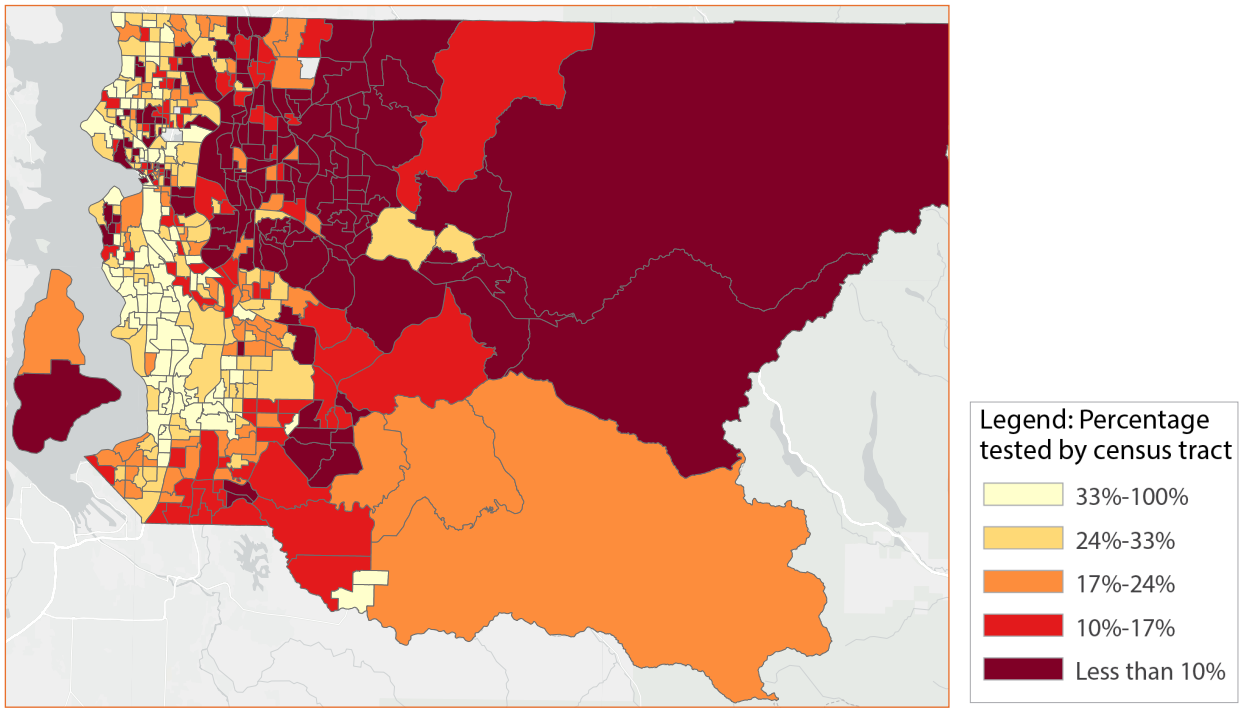
The maps in **Figures 9-14** on the next several pages visualize data in Figure 8 to illustrate these two key points:

- Communities where more blood lead testing is needed based on based on lower testing rates with higher percentages of elevated test results
- The variation within counties, illustrating the importance of community-level data analysis

King County results, by census tract

Figure 9 – King County testing rates for Medicaid-enrolled children, by census tract

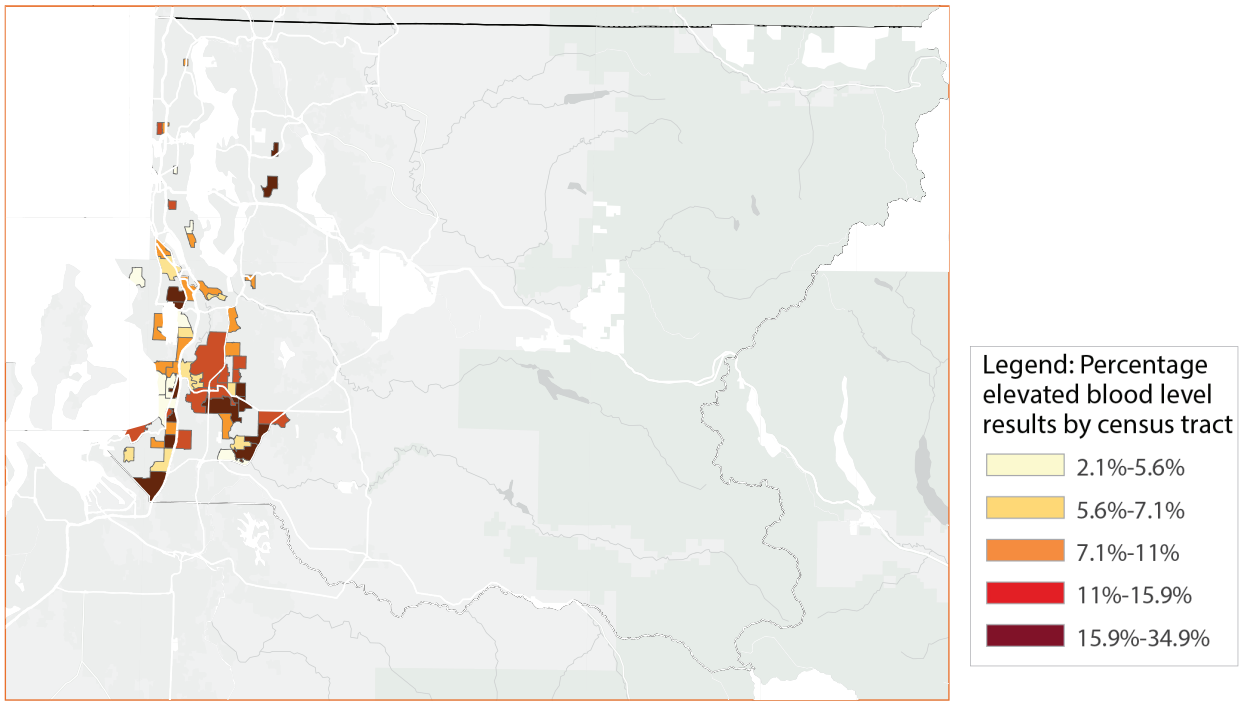
Percentage of continuously enrolled children tests at 12 or 24 months



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Figure 10a – King County percentage of test results above 3.5 mcg/dl, by census tract

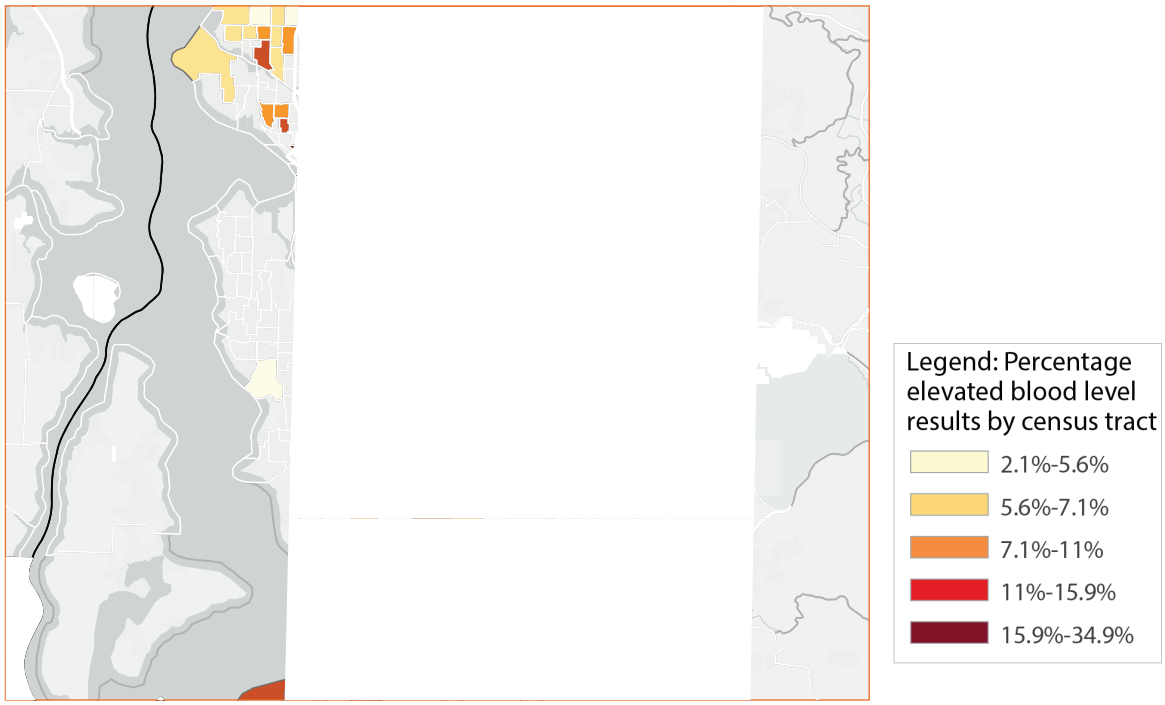
Data for all test results, 2016-2022



Source: Auditor generated; results calculated using DOH data from the three-year-old group.

Figure 10b – Western King County percentage of test results above 3.5 mcg/dl, by census tract

Data for all test results, 2016-2022

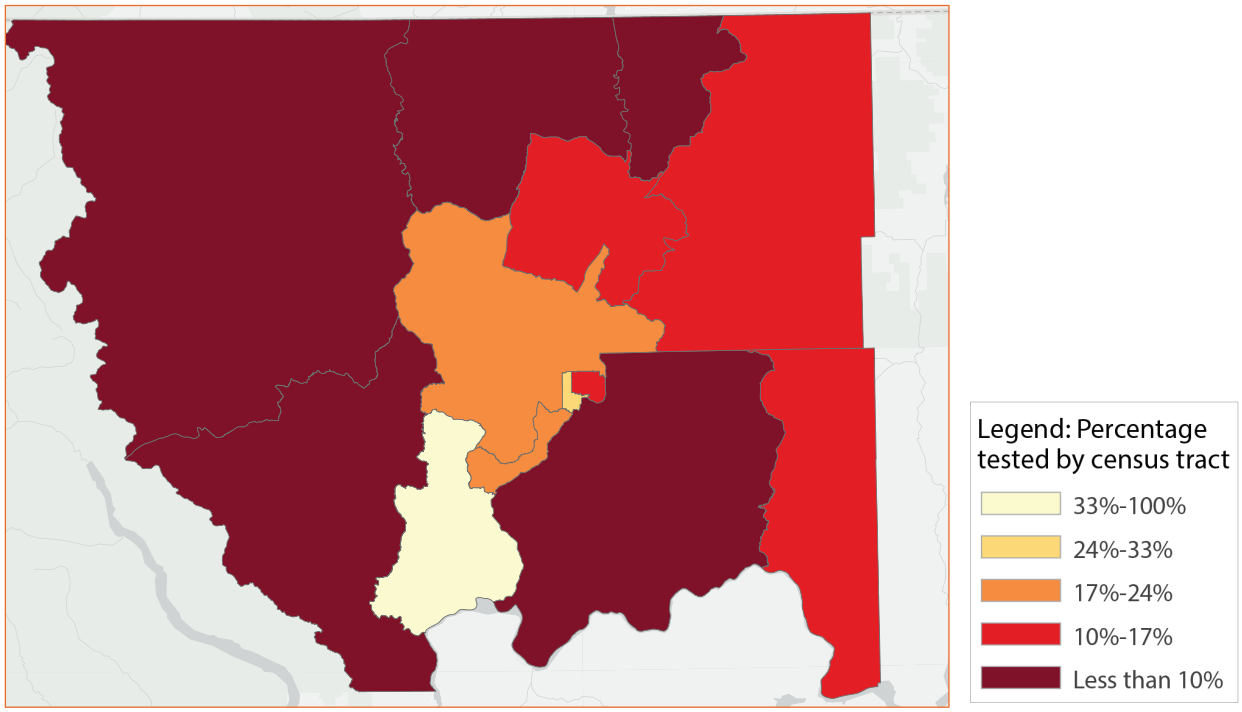


Source: Auditor generated; results calculated using DOH data from the three-year-old group.

Okanogan County results, by census tract

Figure 11 – Okanogan County testing rates for Medicaid-enrolled children, by census tract

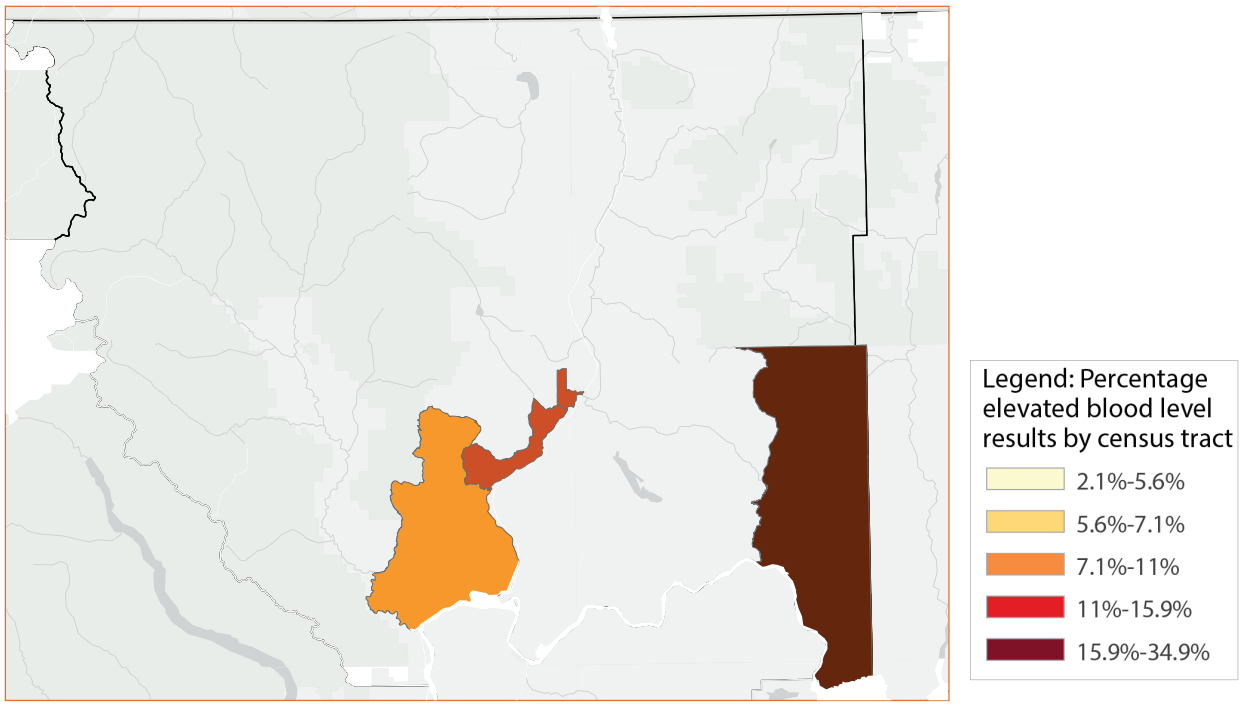
Percentage of continuously enrolled children tests at 12 or 24 months



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Figure 12 – Okanogan County percentage of test results above 3.5 mcg/dl, by census tract

Data for all test results, 2016-2022

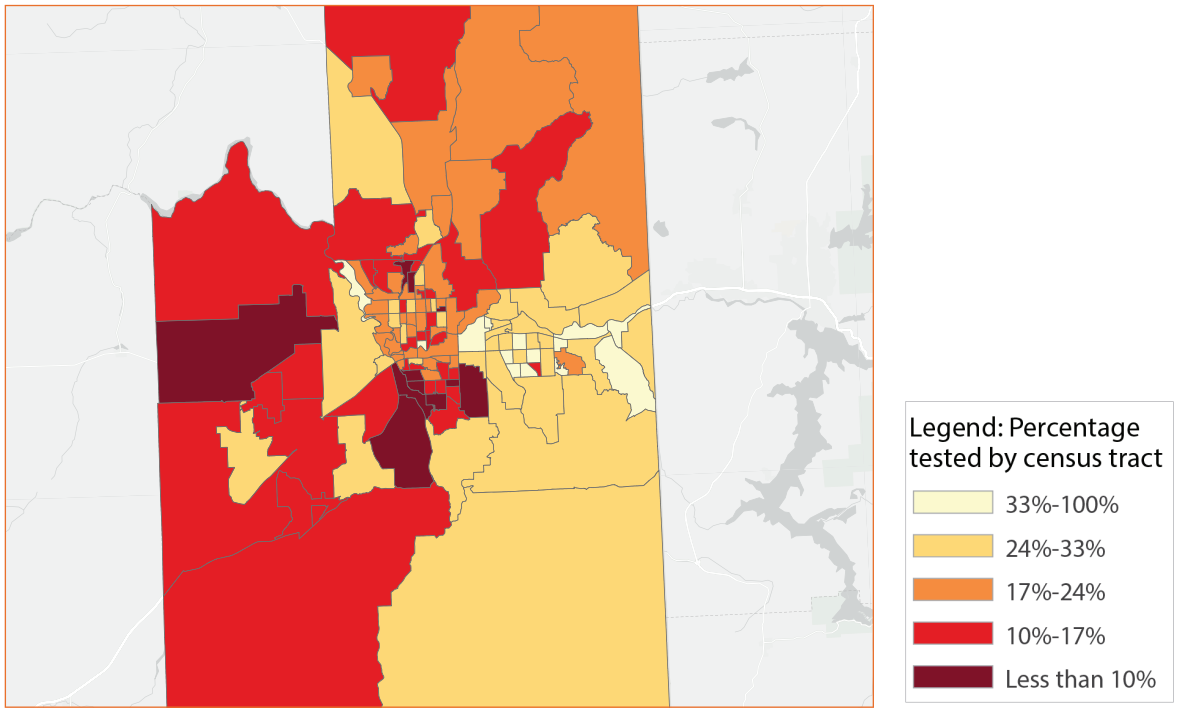


Source: Auditor generated; results calculated using DOH data from the three-year-old group.

Spokane County results, by census tract

Figure 13 – Spokane County testing rates for Medicaid-enrolled children, by census tract

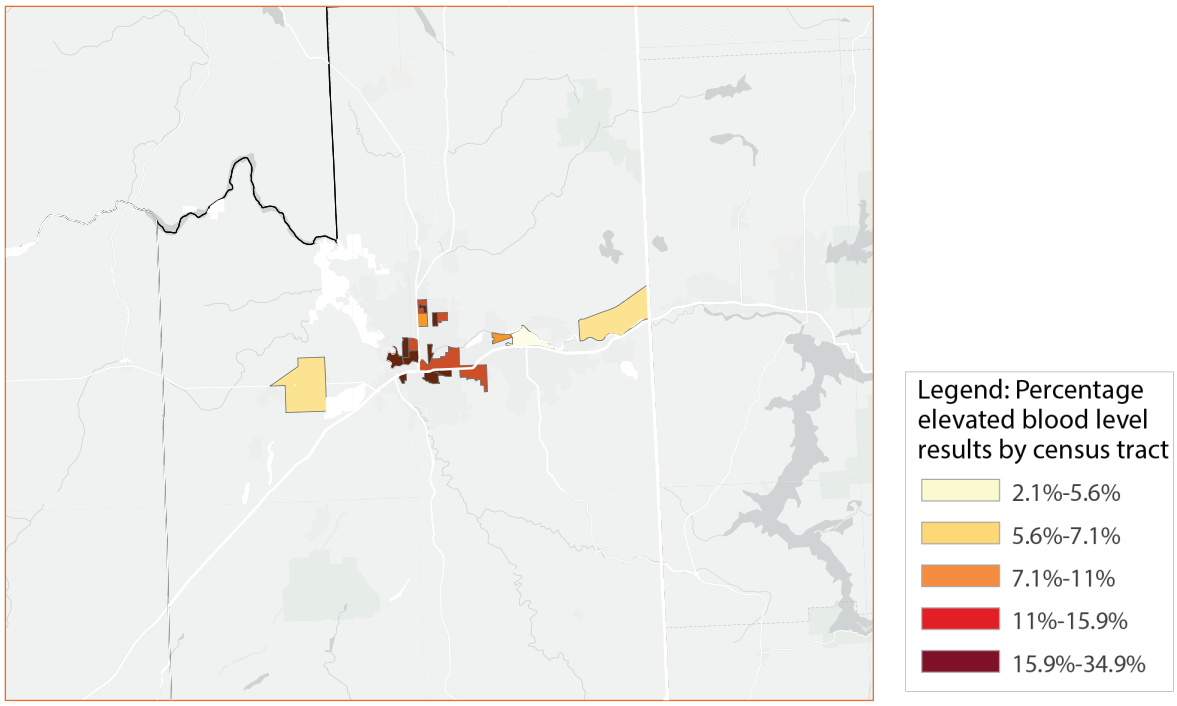
Percentage of continuously enrolled children tests at 12 or 24 months



Source: Auditor generated; results calculated using DOH and HCA data from the three-year-old group.

Figure 14 – Spokane County percentage of test results above 3.5 mcg/dl, by census tract

Data for all test results, 2016-2022



Source: Auditor generated; results calculated using DOH data from the three-year-old group.

Appendix F: Department of Health planned activities

This appendix contains DOH's planned activities around lead testing awareness, outreach and education, drawn from the agency's planning document. **Figure 15** outlines the primary audience, activity and goals.

Figure 15 – DOH planned activities to increase awareness around lead testing

Primary audience	Activity	Outreach and education goals
Health care providers	DOH loans LeadCare II Analyzers and donates test kits to Head Starts, tribal clinics, health departments, community clinics, and childcare centers.	Increased blood lead testing, especially where access to blood lead testing might be limited.
Health care providers	Annual mailing to providers and clinics located in focus areas including information on blood lead testing, the Medicaid testing mandate, and reporting requirements. The 2023 mailings will include a "Provider Tool Kit" with educational materials on lead testing and lead exposure guidance.	Increased provider knowledge of blood lead testing, the Medicaid mandate, and reporting requirements.
Women, Infant, and Child Program (WIC) certifiers and recipients	Partnered with WIC to design and promote new lead testing questions for their annual child nutrition assessment visits.	Increased lead testing and lead awareness with families accessing WIC services.
Health care providers and community health workers	Partnering with the Northwest Pediatric Environmental Health Specialty Unit (PEHSU) to create lead training for physicians, nurses, medical students, and community health workers.	Increased awareness of the ongoing dangers of childhood lead exposure and the methods of prevention and treatment, Medicaid testing requirements for children enrolled in Medicaid, and testing recommendations for children not enrolled in Medicaid.
Child care providers	Partnering with Snohomish County Health Department to create on-demand training for child care providers.	Increased lead awareness among child care workers and increase usage of lead-safe practices in child care centers.
Various audiences	Educational newsletter articles, blog posts, listserv and email messages reaching general audiences and health care providers.	Increased awareness of lead exposure and promote blood lead testing.

Figure 15 – DOH planned activities to increase awareness around lead testing, continued

Primary audience	Activity	Outreach and education goals
Various audiences	Creating and running monthly social media posts on Facebook, Instagram, and Twitter.	Increased lead exposure awareness in the general population and promote blood lead testing.
Parents and caregivers	Lead Test Card distributed widely through mailings, local health departments, clinics and the Web. Recently updated and translated into 17 languages. Lead testing information sent to parent of children at 12 and 36 months through the Watch Me Grow program.	Increased lead exposure awareness and promote blood lead testing.

Source: DOH planning document.

Next steps

DOH has also outlined these next steps:

- New lead testing education materials are in development and plans are in progress to update the Department of Health's lead webpages to make materials easy to access and use.
- Exploring outreach opportunities with Head Starts and the Early Childhood Education and Assistance Program (ECEAP).
- Collaborating with the Lead in School Drinking Water and Water Infrastructure Improvements for the Nation (WIIN) grant teams on lead education material development and distribution, and other efforts for lead exposure awareness.
- Working with local health jurisdictions (LHJs) to develop local testing promotion activities through the Foundational Public Health Services Model Program, including creating lead education materials and lead event materials which can be easily used as needed for local events and opportunities.

Appendix G: Leading practices

We reviewed literature in the fields of public health outreach and spoke with professionals in the state to identify ways the state can help inform health care providers about Medicaid lead testing requirements. The practices they recommended also included some aimed at informing parents and the wider community about the importance of testing young children for lead exposure.

Short webinars. The Washington Chapter of the American Academy of Pediatrics and the Washington State Medical Association recommend the state develop a short webinar aimed at busy doctors and providers. The webinar should communicate the importance of blood lead testing and explain the Medicaid childhood testing requirement. It could also offer some examples on how to incorporate the test into clinic workflows.

Education program for providers with peer support. The American Academy of Pediatrics, in collaboration with the Centers for Disease Control and Prevention (CDC), launched a federal program specifically designed to educate pediatricians on the importance of testing children to increase blood lead testing in other participating states. The program included guidance for blood lead reference values, peer-to-peer networks to provide tele-mentoring and follow up on data monitoring.

Accurate reflection of local risk. CDC guidance also says that health-care providers might be more likely to follow screening recommendations they believe more accurately reflect local risk for lead exposure and which they helped develop.

Strategic education campaigns. The nonprofit Safer Chemicals Healthy Families, a member of the Toxic-Free Future coalition, recommended strategic education campaigns aimed at both providers and parents. The campaigns should be designed to communicate with each audience in ways and in places where they are most likely to see the message. For example, brochures and posters within clinics will target both providers and families. Placing the same brochures and posters in childcare settings will also increase family awareness.

Community health and resource fairs. The Nevada Childhood Lead Poisoning Prevention Program directly engages community members by participating in health and resource fairs. Officials at DOH noted the agency used to hold community fairs but discontinued them during the coronavirus pandemic.

Targeted, coordinated media. The Community Preventive Services Task Force, an independent panel established in 1996 by the U.S. Department of Health and Human Services, determined that using targeted, coordinated media messages increased cancer screening. The "small media" approach included videos and printed materials such as letters, brochures and newsletters, designed to inform and motivate people to be screened for cancer. The same could be true for increase blood lead testing. For example, if DOH and HCA were to collaborate on what message is most effective in communicating both the requirement and the importance of blood lead testing, they could identify communities and locations to conduct a shared media campaign with that same message.

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