

Delaware Lead Poisoning Prevention Conference

Celebrating National Lead Poisoning Prevention Week

October 25, 2023 I 9:30 a.m. to 1:30 p.m.



Quality Insights Overview

- Non-profit organization focused on improving health care quality in the pursuit of better care, smarter spending, and healthier people
- Strive to be a change agent, partner, and integrator of local organizations collaborating to improve care







Time	Speaker	Торіс	
9:30 - 9:40 a.m.	Quality Insights	Introduction	
9:40 - 10:30 a.m.	Dr. Jessica Rohde	Lead Exposure and Testing Overview	
10:30 - 10:40 a.m.	Dr. Jessica Rohde	Q&A	
10:45 - 11:15 a.m.	Kurt Olinger	New Legislation and Reporting	
11:15 - 11:25 a.m.	BREAK		
11:30 a.m Noon	Trevell Alston	DPH Case Management	
12:00 - 12:30 p.m.	Sarah Newman	Indiana State Success	
12:30 - 1:15 p.m.	Adam Binder and Andrea Hutchinson	Point-of-Care Testing	
1:15 - 1:30 p.m.	All panelists (except Dr. Rohde)	Q&A	



Housekeeping Notes

- All attendee lines are muted.
- Please submit your questions to our panelists via the Q&A feature.
- Questions will be addressed at the end of the session, as time permits.



Continuing Education

- In order to obtain contact hours you must:
 - Participate in the entire conference (live or recorded)
 - Complete evaluation & post-knowledge checks (80%)
- Continuing Education
 - In support of improving patient care, this activity has been planned and implemented by Quality Insights and CAMC Institute for Academic Medicine. CAMC Institute for Academic Medicine is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.
 - Physicians: The CAMC Institute for Academic Medicine designates this live activity for a maximum of **3 hour for** AMA PRA Category I Credit(s)[™]. Physicians should only claim credit commensurate with the extent of their participation in the activity.
 - Nurses: The CAMC Institute for Academic Medicine is an approved provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. This offering has been approved for **3 contact hours**.
 - The expiration for this enduring material is 10/24/2026.





Disclosures

- The following planners, speakers, and panelists of this CME/CE activity have no relevant financial relationships with commercial interests to disclose:
 - Danielle Collins
 - Dr. Jessica Rohde
 - Kurt Olinger
 - Trevell Alston
 - Sarah Newman





Learning Outcomes

After this course, the learner will:

- Define the health care provider's role in the prevention, detection, treatment, and mitigation for pediatric lead exposure.
- Describe the services offered by the Delaware Division of Public Health Lead Prevention Program for patient and provider support surrounding elevated blood lead levels.
- Demonstrate lead testing and reporting at appropriate intervals based on updated Delaware legislation.
- Develop a workflow to implement point-of-care lead testing within the pediatric primary care setting.



Welcome: Presenter Panel



Jessica Rohde, MD

Kurt Olinger

Trevell Alston

Sarah Newman

Adam Binder

Andrea Hutchinson



Overview of Pediatric Lead Poisoning Prevention,

Testing and Treatment

Dr. Jessica Rohde

Primary Care Pediatrician

Delaware Childhood Lead Poisoning Prevention Subcommittee Member jessica.rohde@nemours.org





Objectives

- Define lead poisoning and describe the importance of detecting lead poisoning in children.
- Identify common sources of lead exposure.
- Understand the historical context of lead exposure.



- Describe primary and secondary prevention approaches to lead poisoning.
- Understand testing recommendations by the AAP and mandates in the State of Delaware.
- Identify resources to guide action in the setting of an elevated blood lead level.



What is lead poisoning? Why do we care about lead?

What is lead poisoning?

- Lead poisoning = lead toxicity = elevated blood lead levels = above blood lead reference value
 - Diagnosed by doing a blood test if capillary testing done, needs confirmation with venous testing
 - Blood lead reference value of 3.5 µg/dL (as of October 2021)
 - THERE IS NO SAFE LEVEL OF LEAD IN CHILDREN

Blood Lead Levels in Children

What Do You Need to Know to Protect Children?

Lead exposure occurs when a child comes in contact with lead by swallowing or breathing in lead or lead dust. After a child inhales or swallows lead, it quickly enters the blood. No safe blood level in children has been identified. Even low levels of lead in blood have been shown to affect a child's learning capacity, ability to pay attention, and academic achievement. The effects of lead exposure can be permanent. The most important step parents, doctors, and others can take is to prevent lead exposure before it occurs.

Top 8 Ways to Protect Children from Lead Exposure

- Get a blood test. Parents can talk to their child's healthcare provider about getting a blood lead test. A
 blood test is the best way to determine if a child has been exposed to lead. Based on blood lead test results,
 healthcare providers can recommend follow-up actions and care.
- Get the child's home checked. Have the home checked by a licensed lead inspector if they live in a home or building built before 1978. Those who rent should ask their landlord to have their home checked. <u>Visit the</u> <u>Environmental Protection Apency ViEPA web page to find a certified inspector or risk assessor.</u>
- 3. Hire trained contractors. When planning renovations, hire contractors who are trained in lead-safe practices. Visit <u>EPA's web page</u> to find a certified contractor.
- Regularly wet-mop floors, windows, and windowsills. Household dust can be a major source of lead in homes and buildings built before 1978.
- Leave shoes by the door or outside. This is especially important when someone works with lead or has a hobby that involves lead, such as construction or shooting firearms.
- 6. Shower and change clothes and shoes after working around lead-based products. This can keep lead dust from being tracked through the home and prevent families from being exposed.
- Protect soil. Cover bare soil with grass, mulch, or wood chips and prevent children from playing in bare soil that may be contaminated with lead. See the <u>Lead in soil web page</u> for more information.
- Avoid certain children's products and toys. Some toys, especially imported toys, and toy jewelry
 may contain lead. Visit the <u>Consumer Product Safety Commission's (CPSC) web page</u> for photos and
 descriptions of currently recalled toys.



Lead can be found in a variety of sources. These include

- Paint in homes and buildings built before 1978
- Water supplied through pipes or plumbing fixtures that contain lead
- Soil contaminated with lead from exterior lead-based paint, car exhaust, and factories
- · Some products such as toys and jewelry
- Some imported foods and medicines
- Certain jobs and hobbies

CS 330982-B July 22, 2022

Source: Blood Lead Levels in Children Fact Sheet, CDC, 2022



Blood Lead Reference Value

- Introduced by the CDC in 2012, the aim is to identify children exposed to more lead than most other children in the U.S.
- Blood lead reference value corresponds to the 97.5 percentile of blood lead distribution for children in the U.S. ages 1 to 5 years (based on National Health and Nutrition Examination Survey (NHANES) data
- It is a population-based screening tool, not a health-based threshold



Year	Blood lead level (µg/dL)	Interpretation*
1960	60	Not applicable
1970	40	Undue or increased lead absorption
1975	30	Undue or increased lead absorption
1978	30	Elevated blood lead level
1985	25	Elevated blood lead level
1991	10	Level of concern
2012	5	Reference value
2021	3.5	Reference value

Previous Definitions for Interpreting Childhood Blood Lead Levels

*https://stacks.cdc.gov/view/cdc/61820



Younger Children at Highest Risk

- Blood lead levels when living in lead-contaminated environments:
 - Increase rapidly between 6 and 12 months of age
 - Peak between 18 and 36 months of age
 - Then gradually decrease
- Younger children absorb lead more efficiently than older kids and adults
- Iron deficiency can increase the absorption of lead

Peak is related to:

- Normal mouthing behaviors
- Increase in mobility



Effects of Elevated Blood Lead Level

	Nervous system (central and peripheral)	Renal	Gastrointestinal	Endocrine	Hematologic
*	 <u>Neurobehavioral</u> <u>effects</u> <u>Cognitive</u> <u>Behavioral</u> Acute encephalopathy At BLLs >100- 150 Hearing loss Rarely peripheral neuropathy 	 Decreased renal function 	 Lead colic – vomiting, intermittent abdominal pain, constipation 	 Decreased formation of vitamin D At BLLs of 30 Low calcium intake can lead to increased absorption of lead 	• Rarely anemia



TABLE 2 Effects of Low-Level Lead Exposure on Academic and Intellectual Abilities, Puberty, Kidney

 Function, Postnatal Growth, Hearing, and Other Health Endpoints

Blood Lead Concentration	Evidence Level	Health Effect
	Sufficient	Decreased academic achievement
		Lower IQ scores
		Attention-related behavior problems
		Antisocial behaviors
	Limited	Delayed puberty
		Decreased kidney function in children \geq 12 y of age
<10 µg/uL	Summent	Delayed puberty
		Reduced postnatal growth
		Decreased hearing
	Limited	Hypersensitivity by skin prick test
	Inadequate	Asthma and eczema
		Cardiovascular effects
		Kidney function <12 y of age

From the US Department of Health and Human Services, National Institute of Environmental Health Sciences, 2012.



Source: AAP COUNCIL ON ENVIRONMENTAL HEALTH. Prevention of Childhood Lead Toxicity. Pediatrics. 2016;138(1):e20161493

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Neurologic Effects

- NO lower limit of blood lead level is safe regarding neurocognitive deficits
- Neurobehavioral effects of lead appear to persist into adolescence and adulthood

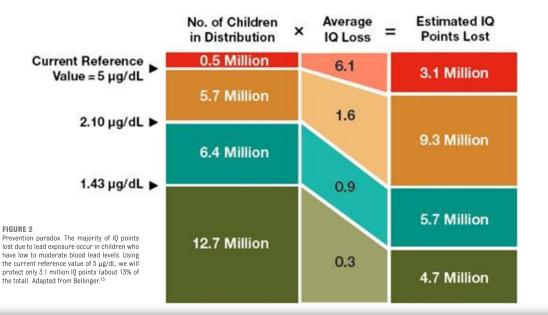


Neurologic Effects (cont.)

"If the focus is only on reducing exposures for children who have a blood lead concentration $\geq 5 \,\mu g/dL$ (≥ 50 ppb), we will fail to preserve more than 20 million (>80% of total) of the 23 million IQ points lost among U.S. children with lower lead exposure because there are so many more children who have low to moderate blood lead concentrations."

Source: AAP COUNCIL ON ENVIRONMENTAL HEALTH. <u>Prevention of</u> <u>Childhood Lead Toxicity</u>. Pediatrics. 2016;138(1):e20161493

Estimated Loss of IQ in US Children at Different Intervals of Blood Lead (µg/dL)







National and Delaware-Specific Data

National level data

Healthy People 2020 objectives for blood lead levels:

- To reduce blood lead levels in children (in the 97.5 percentile, age 1–5 years)
- Baseline was 5.8 µg/dL and is currently 3.5 µg/dL, representing a 40% reduction
- To reduce the mean blood lead levels in children (geometric mean, age 1–5 years)
- Baseline was 1.8 µg/dL and is currently 0.8 µg/dL, representing a 55% reduction

Disparities exist

 Non-Hispanic Black children, children living in low-income households, and children who are immigrants or refugees are more likely to live in communities where there is increased exposure to lead

Source: <u>Healthy People Objectives</u>, CDC, accessed 10/10/23



1999–2002		2003-2006		2007-2010		2011-2016		
Characteristic	No.	GM, µg/dL (95% CI)	No.	GM, µg/dL (95% Cl)	No.	GM, µg/dL (95% CI)	No.	GM, µg/dL (95% CI)
Overall	1,621	1.95 (1.79-2.12)	1,879	1.61 (1.52-1.71)	1,653	1.33 (1.26-1.41)	2,321	0.83 (0.78-0.88)
Age group, yrs								
1-2	779	2.19 (2.01-2.39)	919	1.81 (1.71-1.92)	793	1.49 (1.39-1.59)	1,024	0.93 (0.86-1.00)
3-5	842	1.82 (1.64-2.01)	960	1.48 (1.38-1.60)	860	1.24 (1.15-1.33)	1,297	0.77 (0.72-0.82)
Sex								
Male	851	1.95 (1.77-2.14)	951	1.61 (1.51-1.72)	872	1.34 (1.25-1.43)	1,213	0.86 (0.80-0.92)
Female	770	1.95 (1.77-2.16)	928	1.61 (1.49-1.73)	781	1.32 (1.24-1.41)	1,108	0.79 (0.74-0.85)
Race/Ethnicity [†]								
Black, non-Hispanic	439	2.81 (2.56-3.09)	530	2.43 (2.12-2.80)	338	1.77 (1.62-1.93)	608	1.07 (0.97-1.18)
Mexican American	541	1.89 (1.75-2.03)	611	1.57 (1.46-1.69)	490	1.28 (1.17-1.39)	526	0.78 (0.72-0.84)
White, non-Hispanic	454	1.83 (1.60-2.09)	535	1.44 (1.35-1.54)	536	1.26 (1.14-1.39)	563	0.79 (0.71-0.88)
Income to poverty ratio	9 ⁶							
<1.3	808	2.44 (2.24-2.66)	936	2.01 (1.85-2.18)	864	1.57 (1.48-1.67)	1,149	0.97 (0.90-1.05)
≥1.3	686	1.60 (1.45-1.77)	857	1.39 (1.30-1.49)	676	1.17 (1.08-1.27)	997	0.72 (0.67-0.77)

TABLE 2. Weighted geometric mean blood lead levels* in U.S. children aged 1–5 years, by selected sociodemographic characteristics — four National Health and Nutrition Examination Survey cycles, United States, 1999–2016

Abbreviations: CI = confidence interval; GM = geometric mean; NHANES = National Health and Nutrition Examination Survey.

* Weighted estimates derived from the observed data for the study population using NHANES-specified sampling weights. The GM blood lead levels in children aged

1-5 years have decreased over time.

⁺ Data by race and Hispanic origin were limited to the three racial and Hispanic origin groups available across all survey cycles (non-Hispanic White, non-Hispanic Black, and Mexican American).

⁵ Computed as the total family income divided by the poverty threshold.

Source: Ruckart PZ, Jones RL, Courtney JG, et al. Update of the Blood Lead Reference Value – United States, 2021. MMWR Morb Mortal Wkly Rep 2021;70:1509–1512. DOI: http://dx.doi.org/10.15585/mm.wr.mm7043a4extemal_icon.





DELAWARE HEALTH AND SOCIAL SERVICES Division of Public Health Office of Healthy Environments

Childhood Blood Lead Surveillance in Delaware

2022 Annual Report

Fiscal Year 2022 Data

December 2022

Prepared by: Delaware Department of Health and Social Services Division of Public Health Health Systems Protection Section Office of Healthy Environments Lead Poisoning Prevention Program



2022 Surveillance Reports - Caveats

- Reporting period: July 1, 2021 June 30, 2022
 - In October 2021, the CDC changed the reference value from 5.0 mcg/dL to 3.5 mcg/dL
 - However, for the report, the reference value of 3.5 mcg/dL was used
- Delaware laws
 - Since 1994, children have been required to be tested for lead at 1 year of age, and risk assessment to be done at 2 years of age to determine if repeat testing is needed
 - In 2021, HB 222 mandated universal testing for lead at ages 1 and 2 years of age



Delaware Data

- 208 children (of 8,627 tested) between ages 0 – 72 months had elevated levels of >= 3.5mcg/dL (2.41%)
 - Elevated blood lead level cases
 - By race
 - Unknown race 3.23%
 - Black 2.64%
 - Other 2.06%
 - White 1.56%



- By ethnicity
 - Non-Hispanic 6.12%
 - Hispanic 2.42%
 - Unknown 0.84%



COVID-19 Pandemic Decreased Testing and Detection of Elevated Blood Lead Levels

Table 5. Reported Lead Testing Rates and Blood Lead Levels (μ g/dL) from 2017 to 2021 for children 0-72 months, Delaware

	2017	2018	2019	2020	2021
Number of children tested	10,156	8,973	10,324	6,274	7,169
Age Distribution of Children receivi	ng an Initial B	lood Lead (BLL) Test		
0-9 months	146	153	182	142	114
10-15 months	4,583	4,002	4,495	2,908	3,103
16-21 months	1,207	1,075	1,252	903	876
22-27 months	821	828	1,129	579	928
28-33 months	443	365	469	255	336
34-39 months	445	401	450	250	291
40 and above	2,511	2,149	2,347	1,237	1,521
Total number of BLL tests	10,156	<mark>8,973</mark>	10,324	6,274	7,169
Elevated Blood Lead Level (ug/dL)					
Total EBLL 3.5-4.9 ug/dL	198	186	193	88	74
Total EBLL ≥ 5 ug/dL	118	88	164	94	103
Total EBLL tests	316	274	357	182	177

Footnote: BLL = Blood Lead Level, µg/dL = micrograms per deciliter

Source: Delaware Department of Health and Social Services, Division of Public Health, Lead Poisoning Prevention Program, October 2022



Where is lead coming from?



Know the common sources of lead

Lead can be found where children live, play, and learn.



Paint. In homes or buildings built before 1978, assume that the paint contains lead unless tests show otherwise. When the paint peels and cracks, it makes lead paint chips and dust. Children can be exposed to lead if they eat flaking paint chips or breathe in lead dust.



Soil. Lead particles from exterior lead-based paint, leaded gasoline, aviation fuel and lead industries can settle in soil and last for years. Children can be exposed to lead in soil by swallowing or breathing in lead-contaminated soil while playing. This soil can also get on shoes and clothes and be brought into the home or other locations where children spend time.



Water. Some water pipes, faucets, and plumbing fixtures may contain lead that can get into drinking water.



Consumer products. Lead can be found in toys, jewelry, antiques, and collectible items. Some glazes used on ceramics, china, and porcelain also contain lead, which might get into food.



Imported foods and medicines. Some candies, candy wrappers, spices, cosmetics, traditional medicines, and ceremonial or religious powders purchased or brought from outside the US contain lead.



Jobs and hobbies. Certain jobs and hobbies, such as stained-glass work, involve leadbased products and might result in parents or caregivers bringing lead into the home.

Source: How to Prevent Lead Poisoning in Children, CDC, 2022



Source	Comment			
House paint used before 1978 but especially before 1960	Deteriorated paint releases fine lead dust during home renovation.			
Toys and furniture painted before 1976 Painted toys made outside the United States				
Lead bullets, fishing sinkers, certain weights	Exposures often occur during practice in firing ranges			
Plumbing, pipes, and faucets	Lead leaches into drinking water when the pipes are connected with lead solder.			
Soil contaminated by lead	Often in soil near highways and in yard of houses with exterior lead paint.			
Hobbies involving soldering such as stained glass, jewelry making, pottery glazing, and miniature lead figures	Always check the labels.			
Children's paint sets and art supplies	Always check the labels.			
Pewter pitchers and ceramic dinner ware				
Storage batteries				
Parental occupation	Auto repair, mining, battery manufacture, pipe fitting and plumbing, welding, firing range use, ship building, painting, construction.			
Folk remedies	Greta and Azarcon, Hispanic traditional medicines; Ghasard, an Indian folk medicine; and Ba-baw-saw, a Chinese herbal remedy, contain lead.			
Cosmetics	Examples include Swad brand Sindoor, a cosmetic product used by traditional Hindus; Tiro, an eye cosmetic from Nigeria.			
Candy from Mexico	Ingredient tamarind may contain lead.			
Toy jewelry	A child died in 2006 after swallowing a metal heart charm that came with a purchase of shoes made by Reebok.			

TABLE 3 Common Sources of Lead Exposure

Source: AAP COUNCIL ON ENVIRONMENTAL HEALTH. <u>Prevention of Childhood Lead Toxicity</u>. Pediatrics. 2016;138(1):e20161493



Lead-based Paint

- Lead-based paint is the most common, highly concentrated source of lead exposure for children who live in older housing
- In Delaware, 57% of the homes were built before 1978
- Lead-based paint ≠ lead paint hazard → lead paint hazard is more predictive!
 - Lead paint hazard "Any condition that causes exposure to lead from contaminated dust, leadcontaminated soil, or lead-contaminated paint that is deteriorated, or the presence of accessible (or chewable) surfaces, friction surfaces or impact surfaces that would result in adverse human health effects"
 - A key determinant in lead paint hazard \rightarrow age of the housing/structure





Exposure Pathway

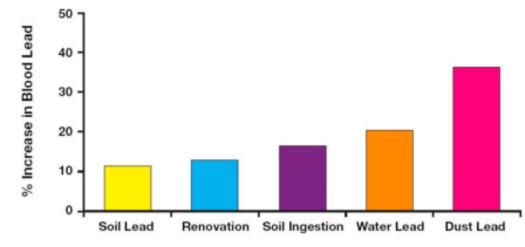


FIGURE 3

Contribution of lead exposure to children's blood lead concentrations. Adapted from Lanphear et al³¹ and Spanier et al.⁴⁵

Source: AAP COUNCIL ON ENVIRONMENTAL HEALTH. Prevention of Childhood Lead Toxicity. Pediatrics. 2016;138(1):e20161493



What about water?

- Important, often overlooked source
- Especially important for infants who are formula fed
- Increased risk if lead service lines and inadequate anticorrosion control







MAIN WATER LINE

Source: Infographic: Lead in Drinking Water, EPA, 2017



Levels of Lead in Water

Lead level	Source	Goal, Recommendation, or Action Level
0 ppb	Maximum Contaminant Level Goal in the Federal Lead and Copper Rule ¹	The level at which there are no adverse health effects from lead in drinking water
1 ppb	American Academy of Pediatrics ²	Lead in water in schools and child care facilities should not exceed 1 ppb.
5 ppb	Food and Drug Administration Bottled Water standard ³	Lead in bottled water should be no greater than 5 ppb.
12 ppk	Action level in the Michigan LCR starting June 1, 2025 ⁴	Corrosion control is not providing sufficient reduction in lead levels
15 ppt	Action Level in the Federal Lead and Copper Rule	¹ Corrosion control is not providing sufficient reduction in lead levels.

Source: Graham Sustainability Institute - University of Michigan, 2023



Flint, Michigan

- Summer 2015 Dr. Hanna-Atisha was with a high school friend who was a drinking water expert and told her that Flint tap water wasn't treated properly and probably contained lead
- What happened budget crisis in 2014 → water supply was switched from Lake Huron to Flint River → residents noted changes in color, odor, and taste of water



- Dr. Hanna-Atisha compared blood lead levels for children under 5 years before and after the change in water source → found they were higher after the change and disadvantaged areas had greatest increase in levels
- She held a press conference and was accused by state officials of having different data than theirs
 → although they did conclude that the research was consistent with Dr. Hanna-Atisha's findings
- A federal emergency was declared to support the response to the water crisis and recovery

Image source: https://www.cdc.gov/nceh/lead/programs/flint-registry.htm



Delaware

- https://publichealthalerts.delaware.gov/safe-school-drinking-water/
- October 2020: Started sampling Delaware school water to identify levels of lead in the drinking water system
- During COVID-19: Testing was done in buildings with extended periods of stagnant water also testing of non-consumption points
- December 2022: Started next round of testing to retest all fixtures that initially tested at 7.5ppb or higher and all consumption points at schools statewide
- All fixtures testing at or above 7.5 ppb were turned off or had signage noting that water is not for consumption



How can we prevent lead poisoning?



Key = PRIMARY PREVENTION

Identification and elimination of major sources of lead in the environment BEFORE exposure occurs!



Policies

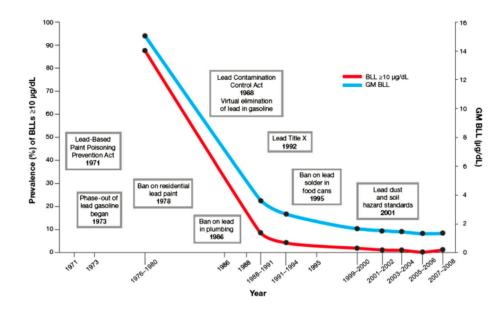


TABLE 1 Federal Lead Poisoning Prevention Policies

Policy or Legislation	Year	Comment
Lead Based Paint Poisoning Prevention Act	1971	First major lead-based paint legislation; addressed lead-based paint in federal housing.
Phase Out Lead in Gasoline	1973	US EPA regulated a phase-out of lead in gasoline.
Ban on Residential Paint	1978	CPSC banned lead paint in residential properties.
Safe Drinking Water Act	1986	US EPA banned use of lead pipes and lead solder in plumbing.
Housing and Community Development Act	1987	Highlighted the danger to children of lead- contaminated dust.
Lead Contamination Control Act	1988	Authorized CDC to make grants to state and local programs to screen children and to provide for education about lead poisoning.
Residential Lead-Based Paint Hazard Reduction Act, Title X	1992	Established primary prevention of lead poisoning as a national strategy.
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing	1995, 2012	HUD established guidelines for evaluating and controlling residential lead-based paint hazards.
Ban Lead Solder in Food Cans	1995	FDA amended food additive regulations to ban lead solder from food cans.
Lead Safe Housing Rule	1999, 2012	Regulation issued by HUD setting forth new requirements for lead-based paint notification, evaluation, and remediation.
Hazard Standards for Lead in	2001	US EPA established a definition of a lead-based paint
Paint, Dust and Soil		hazard and standards for paint, dust, and soil in children's play areas.
Consumer Product Safety Improvement Act	2008	CPSC lowered the cap on lead in paint from 0.06% to 0.0009% and incorporated the Lead-Free Toy Act, setting limit on lead content in toys.
Lead Renovation, Repair and Paint Rule	2010	US EPA required contractors working on homes built before 1978 to be certified and follow lead safe guidelines.

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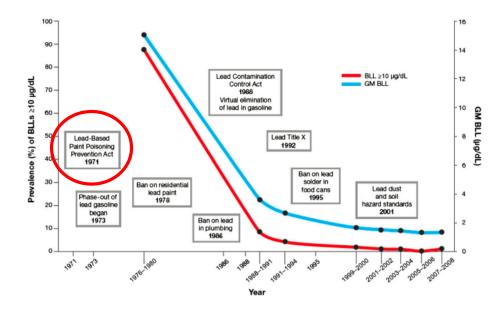


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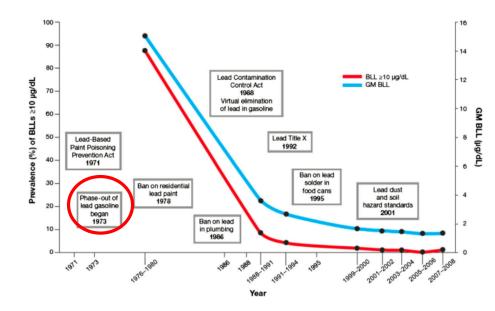


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Consumer Product Safety Improvement Act	2008	CPSC lowered the cap on lead in paint from 0.06% to 0.0009% and incorporated the Lead-Free Toy Act, setting limit on lead content in toys.
Lead Renovation, Repair and Paint Rule	2010	US EPA required contractors working on homes built before 1978 to be certified and follow lead safe guidelines.



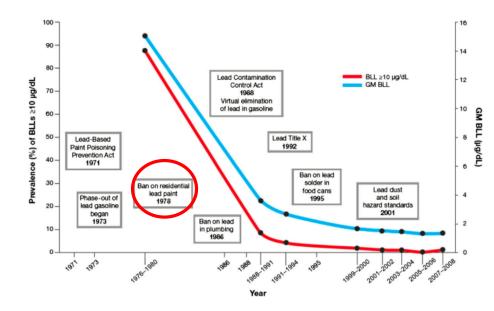


TABLE 1 Federal Lead Poisoning Prevention Policies

Policy or Legislation	Year	Comment
Lead Based Paint Poisoning Prevention Act	1971	First major lead-based paint legislation; addressed lead-based paint in federal housing.
Phase Out Lead in Gasoline	1973	US FPA regulated a phase-out of lead in gasoline
Ban on Residential Paint	1978	CPSC banned lead paint in residential properties.
Sate Drinking Water Act	1986	US EPA banned use of lead pipes and lead solder in plumbing.
Housing and Community Development Act	1987	Highlighted the danger to children of lead- contaminated dust.
Lead Contamination Control Act	1988	Authorized CDC to make grants to state and local programs to screen children and to provide for education about lead poisoning.
Residential Lead-Based Paint Hazard Reduction Act, Title X	1992	Established primary prevention of lead poisoning as a national strategy.
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing	1995, 2012	HUD established guidelines for evaluating and controlling residential lead-based paint hazards.
Ban Lead Solder in Food Cans	1995	FDA amended food additive regulations to ban lead solder from food cans.
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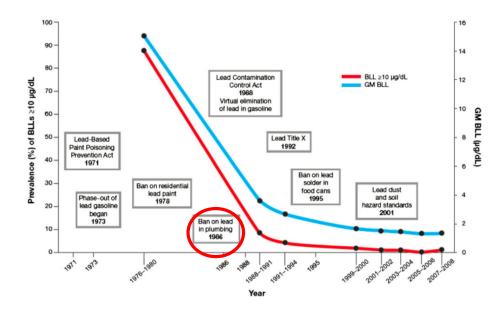


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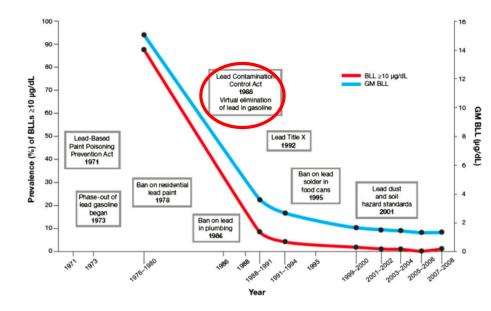


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Paint, Dust and Soil		hazard and standards for paint, dust, and soil in children's play areas.
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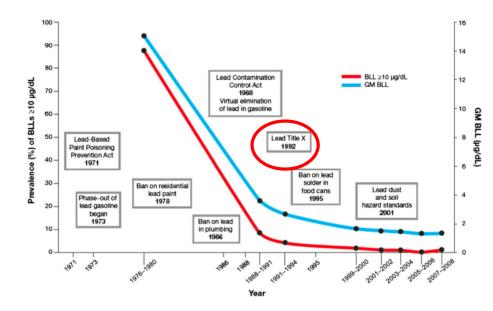


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Control of Lead-Based Paint		controlling residential lead-based paint hazards.
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Rule		built before 1978 to be certified and follow lead safe guidelines.



Previous Definitions for Interpreting Childhood Blood Lead Levels

Year	Blood lead level (µg/dL)	Interpretation*
1960	60	Not applicable
1970	40	Undue or increased lead absorption
1975	30	Undue or increased lead absorption
1978	30	Elevated blood lead level
1985	25	Elevated blood lead level
1991	10	Level of concern
2012	5	Reference value
2021	3.5	Reference value

*https://stacks.cdc.gov/view/cdc/61820



Secondary Prevention Testing Recommendations

Testing Mandates & Recommendations

State of Delaware

- 12 months
- 24 months

American Academy of Pediatrics

• 12 months

 24 months if high risk or universal screening requirements



At Higher Risk

- Live or spend time in a house or building built before 1978
- Are from low-income households
- Are immigrants, refugees, or recently adopted from less developed countries
- Live or spend time with someone who works with lead or has hobbies that expose them to lead



Blood Test





Capillary sample (finger or heel prick)

- Benefit fast, less skill needed
- BUT can produce higher results if there is lead on the skin
- Need confirmatory venous test if capillary test is elevated

Venous level

- Less risk for contamination
- BUT takes a trip to the lab and time to come back

Source: Recommended Actions Based on Blood Lead Level, CDC, 2022



What to do with results?

- <u>Recommended Actions Based</u> on Blood Lead Levels | Lead | <u>CDC</u>
- <u>https://www.cdc.gov/nceh/lea</u> <u>d/advisory/acclpp/actions-</u> blls.htm

Initial Screening Blood Lead Level

Healthcare providers may use a capillary or venous sample for initial BLL screening. If the capillary results are equal to or greater than CDC's <u>Blood Lead Reference Value (BLRV</u>), providers should collect a venous sample. If a venous sample was taken during the initial screening test, skip to <u>Confirmed Venous Blood Lead Level</u>.

If the patient's BLL is \ge 3.5 micrograms per deciliter (µg/dL)

 \sim

Confirmed Venous Blood Lead Level

CDC recommends that healthcare providers use a venous draw for confirmatory BLL screening. If the initial screening test used a venous sample, the patient does not need another venous draw.

If the patient's BLL is < 3.5 micrograms per deciliter ($\mu g/dL$)	\sim
If the patient's BLL is 3.5–19 micrograms per deciliter ($\mu g/dL$)	\sim
If the patient's BLL is 20–44 micrograms per deciliter ($\mu g/dL$)	\sim
If the patient's BLL is \ge 45 micrograms per deciliter (µg/dL)	\sim

Table 1: Recommended Schedule for Obtaining a Confirmatory Venous Sample

Blood Lead Level (µg/dL)

Time to Confirmation Testing**



What to do with results? Capillary level is >= 3.5 mcg/dL

- Educate on common sources of lead exposure and how to prevent further lead exposure
 - Common sources
 - Homes built before 1978
 - Contaminated soil
 - Contaminated drinking water
 - Decrease exposure by
 - Frequently washing children's hands especially before meals
 - Frequently wiping and cleaning children's toys



What to do with results? Capillary level is >= 3.5 mcg/dL

- For children living/visiting homes/structures built before 1978:
 - Regularly wet-wipe windows, windowsills, and wet-mop floors.
 - Avoid repairs and construction projects that may create leadbased paint dust.
 - Cover chipping or peeling paint to keep lead from spreading.
 - Use approved methods for removing lead hazards from the home and using contractors certified by the EPA when repairs or renovations are needed.



What to do with results? Capillary level is >= 3.5 mcg/dL

• Order a venous sample!

Recommended Schedule for Obtaining a Confirmatory Venous Sample

Capillary Blood Lead Level (µg/dL)	Time to Confirmation Testing
≥3.5-9	Within 3 months
10–19	Within 1 month
20-44	Within 2 weeks
≥45	Within 48 hours



BLL < 3.5 mcg/dL

BLL 3.5-19 mcg/dL

• Education as above

- Check development and nutrition (focus on iron and calcium intake) at WCCs
- Follow-up blood lead testing at recommended intervals based on age

• Report test to state/local health departmen

- Obtain environmental exposure history to identify sources of lead
- Arrange for environmental investigation of the home
- Test and treat any iron deficiency for child
- Diet discussion iron and calcium intake refer to WIC if needed
- Check development refer to Early Intervention as needed

BLL 20-44 mcg/dL

BLL >= 45 mcg/dL

- Complete history and physical, assessing for signs/symptoms of lead exposure
- Arrange for/refer family for environmental investigation of home and a lead hazard reduction program
- Consider abdominal Xray for lead-based paint chips or other radio-opaque foreign objects
- Contact Pediatric Environmental Health Specialty Unit or Poison Control Cente
- Neurologic exam
- Abdominal Xray, bowel decontamination if appropriate
- Admission to hospitalif signs/symptoms of lead poisoning or if home is not lead-safe and they are unable to find alternate lead-free space, or source of lead exposure not yet identified
- Consult medical toxicologist re: GI decontamination or chelation therapy



BLL < 3.5 mcg/dL	{	
BLL 3.5-19 mcg/dL	{	 Report test to state/local health department Obtain environmental exposure history to identify sources of lead Arrange for environmental investigation of the home Test and treat any iron deficiency for child Diet discussion –iron and calcium intake – refer to WIC if needed Check development – refer to Early Intervention as needed
BLL 20-44 mcg/dL	{	
BLL >= 45 mcg/dL	{	



BLL < 3.5 mcg/dL	{	
BLL 3.5-19 mcg/dL	{	
BLL 20-44 mcg/dL	{	 Complete history and physical, assessing for signs/symptoms of lead exposure Arrange for/refer family for environmental investigation of home and a lead hazard reduction program Consider abdominal Xray for lead-based paint chips or other radio-opaque foreign objects Contact Pediatric Environmental Health Specialty Unit or Poison Control Center



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Table 2: Schedule for Follow-Up Blood Lead Testing^a

Venous blood lead levels (µg/dL)	Early follow up testing (2–4 tests after initial test above specific venous BLLs)	Later follow up testing after BLL declining
≥3.5-9	3 months*	6–9 months
10–19	1–3 months*	3–6 months
20-44	2 weeks–1 month	1–3 months
≥45	As soon as possible	As soon as possible

^a Changes in BLLs due to seasonal weather changes may be more apparent in colder climate areas. Greater exposure in the summer months may necessitate more frequent follow ups.

*Some case managers or healthcare providers may choose to repeat blood lead tests on all new patients within a month. Repeated testing may confirm that the child's BLL is decreasing.





Pearls from a Pediatrician Testing and Protecting Our Children

Point-of-Care Testing

- Point-of-care testing for screening eliminates some barriers to initial screening
 - Pros:
 - Don't lose families who can't go to the lab
 - Able to get screening capillary samples and act more quickly
 - Cons:
 - Supply chain problems, time/staffing required to do it in the office



Watch out for the 3 and 4 year olds who need testing!

- Some 3 and 4 year olds turned 2 prior to the updated mandate for screening around/after 24 months of age.
- These kids are important to catch at their well visits.
- These children may also be caught at school entry.





• Missing lead results from school forms:

 Not the ideal time to screen, but helps identify children who weren't screened PART II – IMMUNIZATIONS Entire section below to be completed by MD/DO/APN/NP/PA Printed VAR form may be attached in lieu of completion.

CHILD'S NAME

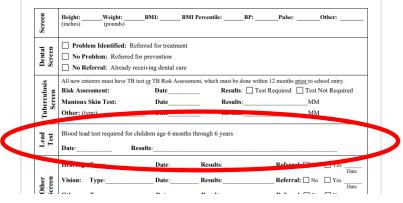
Immunizations - Shaded Vaccines Required. Regulations is located at Title 14 Section 804 Immunizations.

DTaP/DT	DTaP/DT	DTaP/DT	DTaP/DT	DTaP/DT
OPV/ IPV				
PCV7/ PCV13				
Hib	Hib	Hib	Нів	
MMR	MMR	HepB/HepB-2	HepB/HepB-2	HepB
VAR	VAR	RV-2/ RV-3	RV-2/ RV-3	RV-3
MCV4	MCV4	HPV	HPV	HPV
Hep A	Hep A	Td/ Tdap	Td/ Tdap	Td / /
Influenza	Influenza	PPSV23	PPSV23	
Other:	Other:	Other:	Other:	Other:

Child is fully immunized per DPH/CDC recommendations (refer to cover page)

PART III - SCREENING & TESTING

Entire section below to be completed by MD/DO/APN/NP/PA





Options for Testing

- Pediatrician office
- Delaware Public Health
 - Mobile Unit Sussex
 County, New Castle
 County
 - State Service Centers \rightarrow

Source: Sate Services Providing Blood Lead Testing, Delaware Division of Public Health, 2022



DELAWARE HEALTH AND SOCIAL SERVICES Division of Public Health Office of Healthy Environments

State Services Providing Blood Lead Testing

New Castle County

Hudson State Service Center Public Health Clinic 501 Ogletown Road, Newark DE 19711 302-283-7587 ext. 3

Porter State Service Center Public Health Clinic 509 W. 8th Street Wilmington, DE 19801 302-777-2860 Thurman Adams State Service Center Public Health Clinic 544 S. Bedford Street Georgetown, DE 19947 302-515-3174

Sussex County

Anna C. Shipley State Service Center Public Health Clinic 350 Virginia Avenue Seaford, DE 19973 302-628-6772

Kent County

Williams State Service Center Public Health Clinic 805 River Road Dover, DE 19901 302-857-5140

Milford State Service Center at the Riverwalk Public Health Clinic 253 NE Front Street Milford, DE 19963 302-424-7140

List dated 7/28/2022

JESSE S. COOPER BUILDING • FEDERAL STREET • DOVER • DELAWARE MAILING ADDRESS: 417 FEDERAL STREET • DOVER • DELAWARE • 19901 TELEPHONE: (302)744-4546 • WEBSITE: LEADSAFEDELAWARE.ORG



Top 8 Ways to Protect Children from Lead Exposure

- 1. Get a blood test. Parents can talk to their child's healthcare provider about getting a blood lead test. A blood test is the best way to determine if a child has been exposed to lead. Based on blood lead test results, healthcare providers can recommend follow-up actions and care.
- 2. Get the child's home checked. Have the home checked by a licensed lead inspector if they live in a home or building built before 1976. Those who rent should ask their landlord to have their home checked. <u>Visit the Environmental Protection</u> <u>Agency's (EPA) web page</u> to find a certified inspector or risk assessor.
- **3.** Hire trained contractors. When planning renovations, hire contractors who are trained in lead-safe practices. Visit <u>EPA's web</u> page to find a certified contractor.
- 4. Regularly wet-mop floors, windows, and windowsills. Household dust can be a major source of lead in homes built before 1978.
- 5. Leave shoes by the door or outside. This is especially important when someone works with lead or has a hobby that involves lead, such as construction or shooting firearms.
- 6. Shower and change clothes and shoes after working around lead-based products. This can keep lead dust from being tracked through the home and prevent families from being exposed.
- 7. Protect soil. Cover bare soil with grass, mulch, or wood chips to prevent children from playing in bare soil that may be contaminated with lead. See the <u>Lead in Soil web page</u> for more information.
- 8. Avoid certain children's products and toys. Some toys, especially imported toys, antique toys, and toy jewelry, may contain lead. Visit the <u>Consumer Product Safety Commission's (CPSC) web page</u> for photos and descriptions of currently recalled toys.

Source: Blood Lead Levels in Children Fact Sheet, CDC, 2022



Reduce Your Exposure To Lead





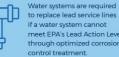


Use only cold water for drinking, cooking and making baby formula. Boiling water does not remove lead from water. Regularly clean your Consider using a water faucet's screen (also filter certified to remove known as an aerator). lead and know when it's time to replace the filter.

Before drinking, flush your pipes by running your tap, taking a shower, doing laundry or a load of dishes.

To find out for certain if you have lead in drinking water, have your water tested.

Replace Your Lead Service Line



to replace lead service lines meet EPA's Lead Action Level through optimized corrosion

Replacement of the lead service line is often the responsibility of both the utility and homeowner.

Homeowners can contact their water system to learn about how to remove the lead service line.

Identify Other Lead Sources In Your Home

lead. Consider contacting your doctor to have your children tested if you are concerned about lead exposure.



For more information, visit: epa.gov/safewater



Reduce/Eliminate Exposure to Lead in Tap Water

- "Point-of-use" filter to reduce lead in drinking or cooking water
 - Check to make sure the filter is certified by an independent testing organization
- Use only cold water from the tap for cooking or drinking
 - Warm or hot water can have higher levels of lead
 - Boiling water does not reduce the amount of lead
- Drink/use bottled water certified by an independent testing organization





Water **Filters**



A Consumer Tool for Identifying Point of Use (POU) Drinking Water Filters Certified to Reduce Lead

POINT OF USE FILTERS

Point of use, or POU, drinking water filters are used to remove impurities from water at the point that it is actually being used. Although there are others, the POU filters covered in this document are those used in filtration systems that are attached directly to water faucets, inserted into refrigerators for water dispensers and ice makers, or inserted into water pitchers and bottles.



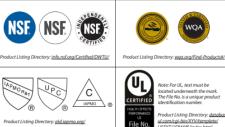
How do I know if a POU filter has been certified to reduce lead? There are several American National Standards Institute (ANSI) accredited third-party

certification bodies that evaluate POU drinking water filters for lead reduction. Each has a registered trademark that is used on certified products.

Certification bodies require their mark and a statement indicating testing against NSF/ANSI Standard 53 along with a claim of lead reduction. We recommend that you also look for filters tested against NSF/ANSI Standard 42 for particulate reduction (Class I)*.

The table below provides the certification bodies' approved marks and the text that indicates a filter has been certified for lead reduction capabilities. Some filters can be certified by more than one certification body and have multiple certification marks.

Certification Mark(s)





Some companies may indicate lead removal Product Listing Directory: csagroup.org/testingin the text, or might simply state NSF/ANSI certification/product-listina/ 53 or NSF/ANSI 42 above or below the mark.

the Performance Data Sheet.

Note: For UL, text must be located underneath the mark. The File No. is a unique product

ul.com/cai-bin/XYV/template/

EPA/600/F-18/335 | December 2018

LISEXT/1FRAME/index.html Text for NSF/ANSI Standards 42 & 53 next to certification marks: Example text on packaging: Tested and Certified by (name of certification body) against NSF/ANSI Standards 42 and 53 for the claims specified on

identification number. Product Listing Directory: database.

Is certification required for POU drinking water filters?

There is no mandatory federal requirement for the use of POU drinking water filters or for testing or third-party certification under the Safe Drinking Water Act. However, consumers can increase their level of confidence by purchasing filters that have been tested by an accredited third-party certification body or bodies for lead reduction and particulate reduction (Class I) capabilities against both NSF/ANSI Standards 42 and 53.

*Although particulate reduction (Class I) is for aesthetic effects, it is being suggested since some particulates can contain lead.

Disclaimer: This document is for informational purposes only. Any mention of trade names or commercial products does not constitute EPA endorsement or recommendation for use

Source: A Consumer Tool for Identifying Point of Use (POU) Drinking Water Filters Certified to Reduce Lead, EPA, 2018



Water Filters (cont.)

Kaz USA, Inc. a Helen of Troy Company

	Brand Name / Trade Name / Model
Faucet Mount	
PUR FM-2000B	
PUR FM-3000	
PUR FM-3333B	
PUR FM-3333BNM	
PUR FM-3400B	
PUR FM-3500B	
PUR FM-3700B	
PUR FM-4000B	
PUR FM-4100B	
PUR FM-8100L	
PUR FM2100B	
PUR FM2500V	
PUR FM2700G	
PUR PFM100B	
DUD DEM150W	

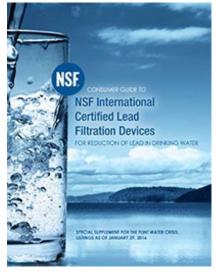
PUR PFM200B

Zero Technologies, LLC

The Brita Products Company

Brand Name / Trade Name / Model
Pour Through
ZBD-030 / 30-Cup Glass Dispenser
ZBD-040 2.5 Gal Glass Dispenser
ZD-010RP
ZD-012RP
ZD-018
ZD-023-1
ZD-030RP 30 Cup Ready-Pour Dispenser
ZD-20RPN 20-Cup
ZP-006
ZP-007RP
ZP-010
ZR-0810GN 8-Cup RedyPour Round Pitcher
ZR-0810N 10-Cup RedyPour Round Pitcher
ZBD-030 / 30-Cup Glass Dispenser
ZBD-040 2.5 Gal Glass Dispenser
ZD-010RP
ZD-012RP

Brand Name / Trade Name / Model Faucet Mount Brita Faucet Filtration System SAFF-100 Brita® Faucet Filtration System FF-100 Brita Faucet Filtration System SAFF-100 Pour Through LifeStraw Home BPA-Free 10-Cup LifeStraw Home BPA-Free 7-Cup LifeStraw Home Glass 7-Cup



Source: Certified Product Listings for Lead Reduction, The Public Health and Safety Organization, 2023



Take Away Points

- Any amount of lead in the blood is abnormal.
 - The current blood lead reference value is 3.5 mcg/dL.
- It is the law in Delaware that children have routine/universal lead testing at ages 1 and 2 years. Most common exposure lead paint hazards.
- The best way to protect our children is through primary prevention prevent exposure before it happens.
 - Best way: Through policies leading to widespread changes to environmental exposures.
- The CDC website has action items for elevated lead levels.
- Point-of-care testing (capillary screening tests) helps to eliminate some barriers to lead testing.



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- Safe School Drinking Water, <u>https://publichealthalerts.delaware.gov/safe-school-drinking-water/</u>, accessed March 27. 2023.
- What Parents and Caregivers of Young Children Need to Know, <u>https://graham.umich.edu/project/revised-lead-and-copper-rule/parents-caregivers</u>, accessed March 30, 2023.



Q&A with Dr. Rohde





Regulatory Overview of Childhood Lead Testing and Reporting Requirements in Delaware

Kurt Olinger

Division of Public Health

Administrator, Office of Healthy Environments Program Director, Delaware State Lead Paint Program <u>kurt.olinger@delaware.gov</u>





Legislation Requirements

Childhood Lead Poisoning Prevention Act (16 Del.C. §§2601-2606) and the enacted regulations (16 DE Admin. Code 4459A)

- All children must be screened or tested for lead at ages 1 and 2 years.
 - Range 9 15 months can used for 1 year old
 - Range 21 27 months can be used for 2 years old
 - Tests shall be ordered for ages 28 to 72 months if no previous test results are available
- Capillary screening results at or above 3.5 ug/dl must be confirmed by venous draw and laboratory analysis to be considered elevated.
- All laboratories and health-care providers shall participate in a universal reporting system.
 - Reporting is performed by those performing the analysis of the sample.



Legislation Requirements

- Report the result of a blood lead level screening or test to the Division of Public Health <u>within two weeks of</u> <u>analysis</u>.
- The parent or guardian of a child 12 months of age or older shall provide to the childcare facility, public or private nursery school, preschool, or kindergarten proof that the child received a blood lead level screening or test.



Reporting Requirements

- All laboratories and health-care providers involved in blood lead level <u>analysis</u> shall participate in a universal reporting system as established by the Division of Public Health.
- The information required by this regulation shall be collected at the time of drawing the blood specimen for a child younger than 18 years old.
- Missing information is the responsibility of the laboratory and provider to obtain and report missing information to the Division of Public Health.



Reporting Requirements

Child's Demographic Information:

- First name, middle initial, and last name
- Date of birth
- Country of birth
- Sex
- <u>Race and ethnicity</u>
- Master Client Index (MCI) number

- <u>**Complete</u>** home address, including house or apartment number, street, city, county, zip code, and state</u>
- Telephone number
- Parent's or guardian's name



Reporting Requirements (cont.)

Provider and Sample Information:

Provider Information:

- Type of blood specimen, venous or capillary
- Blood draw date
- Healthcare provider's name, office name, address, telephone number, and national provider identifier (NPI)

Laboratory Information:

- Name, address, telephone number, and clinical laboratory improvement amendment number (CLIA)
- Laboratory method used
- The method detection limit
- Result in micrograms per deciliter



Module 2 Conclusion



Kurt Olinger - DPH kurt.olinger@delaware.gov



Break



Please return at 11:25 am!



Delaware Division of Public Health Lead Poisoning Prevention Services and Case Management

Trevell Alston Delaware Division of Public Health Health Program Coordinator <u>DELeadProgram@delaware.gov</u>





DPH Services

- DPH offers a myriad of community health services publicly available at State Service Centers in each county.
- In addition to brick and mortar, DPH also utilizes a staffed mobile clinic to bolster areas with a high Social Vulnerability Index (SVI).



DPH Services Continued

- All qualifying children are simultaneously referred to Child Development Watch, regardless of case management eligibility.
- DPH employs a multidisciplinary team approach regarding Childhood Lead Poisoning and Prevention.



Office of Healthy Environments

Healthy Homes Program

Lead Poisoning Prevention Program

Cocupational Health Program

Radio Avarances Program

When Delaware's Lead Poisoning Prevention Program becomes aware that a child (or group of children) has tested with a high blood lead level (BLL), what outreach measures to the family does it take in response?

Follow up that occurs for children with confirmed blood lead levels between 3.5 mcg/dl and 6.9 mcg/dl: The parents/guardians who have children with confirmed blood lead levels between 3.5 mcg/dl and 6.9 mcg/dl are mailed educational materials from the Lead Program's Health Coordinator. A cover letter is also included which encourages the parent/guardian to contact the Health Coordinator if there are any questions. The following tooics are explained in the educational materials mailed:

- Information on common sources of lead hazards
- Instructions to test the blood lead levels of all children aged six and under living in the same house; Mothers of child-bearing age should also be tested.
- The importance of good nutrition to lower the risk of lead poisoning
- The importance of good hygiene to lower the risk of lead poisoning
- Prevention activities that can reduce lead poisoning
- Encourage parent/guardian to contact the Health Coordinator to voice any concerns or questions

Follow up that occurs for children with confirmed blood lead levels of 7.0 mcg/dl and above:

- In addition to all the information above being mailed to the parents/guardians, the Health Coordinator will call the parent/guardian and conduct a telephone consultation with the parent/guardian who have children with confirmed blood lead levels of 7.0 mcg/dl or higher. This now becomes an "Open Case" and follows CDC guidelines for Case Management Standards.
- In addition to the telephone consultation and the home wish by a Health Coordinator, an
 investigation will be conducted by the investigator. If lead paint hazards in the home are the likely
 cause of the high lead levels in the child, then a lead risk assessment of the residence may be
 arranged by the Healthy Homes & Lead Poisoning Prevention Program and conducted by an
 environmental testing firm under contract with the Office. A lead hazard risk assessment is a nonsite investigation to determine the existence, nature, severity, and location of lead-based paint
 hazards. The lead hazard risk assessment report provides options for what must be done to fin any
 lead-based paint hazards fork assessment.
- If the investigation does not find that lead paint hazards in the home are the likely reason for the child having high lead levels, then a further investigation is conducted to try and determine the root cause of the lead exposure.
- Examples of other sources may include:
 - Lead dust brought home from work (construction, manufacturing, steel fabricating, etc.)
 - Imported items like spices, ceramic pots, cosmetics, home remedies.

Updated December 2022

JESSE S. COOPER BUILDING + FEDERAL STREET + DOVER + DELAWARE MALING ADDRESS: 417 FEDERAL STREET + DOVER + DELAWARE + 19901 TELEPHONE: (302)744-4548 + WEBSITE: LENDSAFEDELAWARE.ORG

Source:

https://www.dhss.delaware.gov/dhss/dph/hsp/files/ProceduresEBLLChild.pdf



DPH Case Management

- In efforts to continue to meet the growing demands of the Delaware public, DPH is bolstering its workforce to meet the unique needs of our citizens, both adults and children.
- Case management action levels are being revised to be in line with CDC guidelines. As this is a massive undertaking, the revamp is running concurrently with daily operations.
- Case management flow can be described in the following stages:
 - Alert > Confirmatory venous (if necessary) > Provider/parent outreach > Intake > Referral & Monitoring



Indiana State Success: Improving Lead Testing and Reporting Rates

Sarah Newman, MBA, BS

Project Manager Lead and Healthy Homes Division Indiana Department of Health

<u>SNewman2@health.in.gov</u>





Introduction

Indiana Department of Health/Lead and Healthy Homes Division

- Overview
- Mission Statement
- Projects and Collaborations







Ascension Health System Collaborative

- Projects and Collaborations
 - Filter Paper
 - Data sharing agreement with Indiana Medicaid
 - Collaborations with MCEs (Managed Care Entities)
 - Collaborations with LHDs (Local Health Departments)
 - Provider Outreach Project



Project Overview

- Filter Paper
- Data Sharing Agreement:
 - IDOH and the Indiana Office of Medicaid entered into a data-sharing agreement
 - Sharing updated Medicaid data on a monthly and quarterly basis

• Collaborations with MCEs:

- Monthly meetings
- Quarterly Report Cards distributed comparing lead claims with lead tests and Medicaid eligibility with lead tests

• Collaborations with LHDs:

- Quarterly Report Cards distributed comparing lead claims with lead tests and Medicaid eligibility with lead tests
- Member level detail data behind report cards distributed to providers of each county

• Provider Outreach Project:

- Direct correspondence between IDOH and provider offices throughout Indiana
- Distribute provider education on lead testing and reporting
- Medicaid member-level detail reports distributed to each provider



Project Successes

- Filter Paper
- LHD Collaborations
- Provider Outreach Project





Continuing to Improve Lead Testing Rates in Indiana

- Overcoming Challenges
- Future Outlook for Each Project and Collaboration
- Upcoming New Projects
- End Goal



Disclosures

- The following speakers have financial relationships with commercial interests to disclose:
 - Adam Binder
 - Employed by Meridian Bioscience™
 - Andrea Hutchinson
 - Employed by Meridian Bioscience™
- This section of the conference does not include CEs/CMEs since this section will talk about a product
 - Quality Insights does not endorse any products



Utilizing Point-of-Care for Lead Testing



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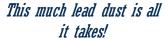




Lead Poisoning: The Threat

• Permanent neurotoxin

- Impairs cognition, lowers IQ, increases attention-related disorders
- Young children at highest risk
 - Absorb lead more readily
 - More hand-to-mouth behaviors
- Pregnant women also at risk
 - Lead crosses the placenta, impacts fetal development
- Sub-clinical presentation
 - The only way to know is a blood test







Why Lead Screening Is Important

- Lead poisoning is still an issue, irreparable and asymptomatic
- 500,000 children poisoned every year
- Easy to do in-house with multiple deployment options

Testing recommendations:

- Required for Medicaid participants at ages 1 and 2, and up to age 6 for those not tested
- Required for access to HeadStart programs
- Testing also recommended for:
 - Children living in homes built before 1978 and/or high-risk ZIP Codes
 - Recent (within 10 years) immigrant families
 - Children whose parents have occupational exposure
 - Expectant mothers meeting at least one risk criteria of ACOG or CDC



Note: Lead testing is a Medicaid EPSDT requirement and a HEDIS measure.





Lead is Still Lurking

"For children with BLLs from 5-9 µg/dL, no single source of lead exposure predominates."¹



"My patient was poisoned from the dust on Dad's work boots brought home from a renovation job site." -New Hampshire Nurse



"Our child was poisoned at his favorite playground which had lead contaminated soil." -New Orleans Parent Lead still hides in consumer products





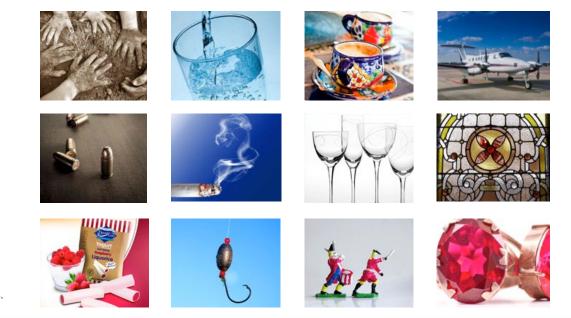
¹Brown, M.J. (2012). Lead in Drinking Water and Human Blood Lead Levels in the United States. Morbidity and Mortality Weekly Report, August 10 Supplement, 61,1-9.



"After a great deal of investigation, the source turned out to be a necklace in the mother's purse." -Oregon Nurse Practitioner

Many Sources Beyond Lead Paint

Lead paint is not the source of exposure for up to 30% of U.S. children.¹







¹Levin R. Lead Exposures in US Children, 2008: Implications for Prevention. *Environ Health Perspect*. 2008;116(10):1285-93.



- Leading supplier of pediatric blood lead testing, helping screen over 2.5 M children each year for lead exposure
 - Fast, quantitative, CLIA-waived platform for use in any setting, including physician offices to clinical laboratories
 - Developed in 2006 in collaboration with the CDC
- FDA Cleared, CLIA waived
- Requires just 50 µL blood sample from fingerstick
- Portable instrument for use anywhere
- Results in 3 minutes
- Channels: 1
- Reportable Range: 3.3-65 μg/dL
- Reimbursable
- Ensures test is completed during child's well-checl...
- 48 tests/kit, room temperature storage



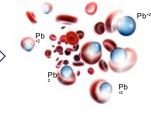


LeadCare Technology: Anodic Stripping Voltammetry (ASV)



Blood is mixed with acidic treatment reagent, lysing the red blood cells and releasing the lead.







A negative potential is applied to the sensor to accumulate lead on the electrode; the potential is rapidly reversed, and the lead ions are released.

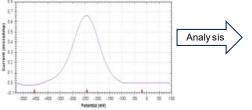


Reduction step

Oxidation (stripping) step



The current produced is directly proportional to the amount of lead in the sample. A quantitative blood lead result is displayed.

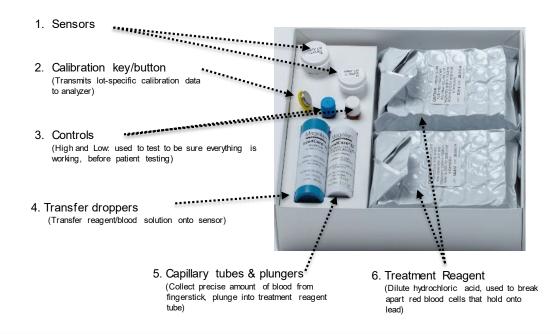


Result: 11.3 µg/dL





Leadcare II Test Kits – It's All in There!







Three Steps to a Quantitative Result



The LeadCare II instrument, along with the consumables provided in each test kit.

1) Collect sample (50 uL)

2) Dispense into reagent & mix

3) Test: insert sensor, apply sample



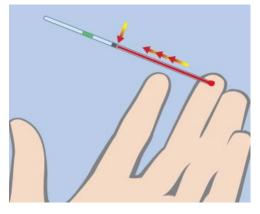




Capillary Sample Collection

Proper technique greatly reduces incidence of contaminated samples:

- Wash hands with soap and water, air dry
- Clean puncture site with alcohol wipe
- Dry
- Use lancet (2 mm lancet is recommended)
- Discard first drop
- Collect blood sample

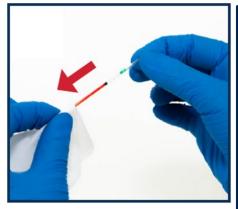


The CDC recommended capillary samples for lead testing in 2004 because many parents refused the test due to a venous draw. Venipuncture is one reason testing compliance is even lower for the second blood lead test required at the age of 2.





Test Procedure Best Practices

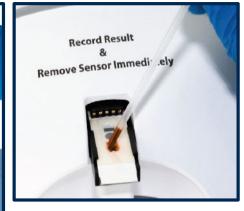


Remove excess blood from outside of tube with a clean wipe or gauze.



Inspect capillary tube for proper filling. Make sure there are no gaps, air bubbles, or any excess blood on outside of capillary.

Invert the tube 8-10 times to mix the sample thoroughly.



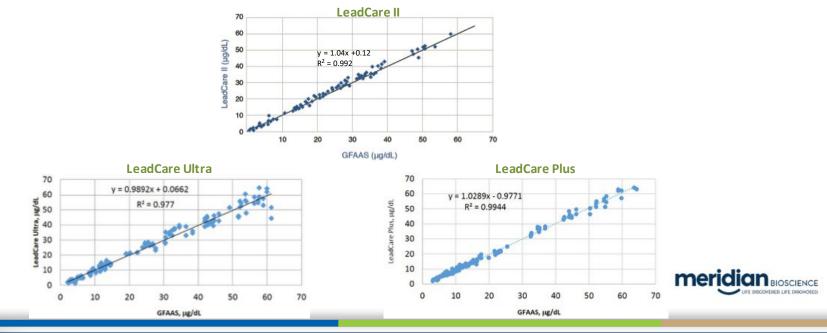
Touch the dropper to the "X" on the sensor and squeeze to dispense sample. The analyzer will "beep" when enough sample has been applied.





Performance Data from Package Inserts

Performance data from 510(k) studies, included in the devices' package inserts, demonstrates the approved performance of each system, expressed in terms of the percent correlation with GFAAS.





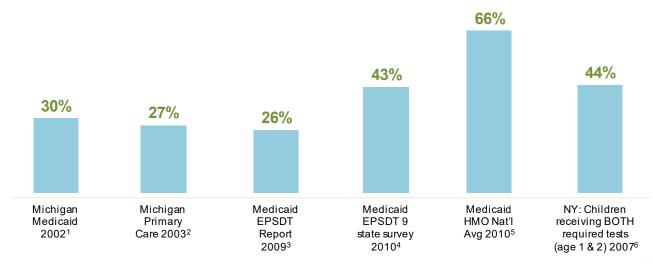
Why Point-of-Care?





Not Enough Children Are Tested

- Lead poisoning can only be diagnosed through a blood test.
- Despite the risks, only about 1 in 2 U.S. children receive required testing.¹⁻⁵



1) Kemper AR, et al. *Ambulatory Pediatrics*; 2005; 5:290-293. 2) Feinberg, A and Cummings CK. *Clin Pediatr.* 2005;44:569-574. 3) EPSDT Participation Report (CMS-416). www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Downloads/2009-National-Data.pdf. 4) Levinson, D. 2010. http://oig.hhs.gov/oei/reports/oei-05-08-00520.pdf. 5) NCQA, The State of Health Care Quality. 2010 report. http://www.ncqa.org/LinkClick.aspx?fileticket=J8kEuhuPqxk%3d&tabid=836. 6) City Health Information, New York City Department of Health and Mental Hygiene. May 2009. www.nyc.gov/html/doh/downloads/pdf/chi/chi28-suppl3.pdf



1. Improved Compliance

- Sending patients to an outside lab for a blood draw
 - 30 to 60% of lab slips go unfulfilled
 - 70% of Medicaid children did not go to the lab for a lead test.
 (2007 Ohio Department of Health Study)
- Blood lead testing is a HEDIS measure
 - One Maryland provider saw a 41% improvement in their HEDIS score within the first year of implementing POC lead testing
- In-office testing ensures the test gets done

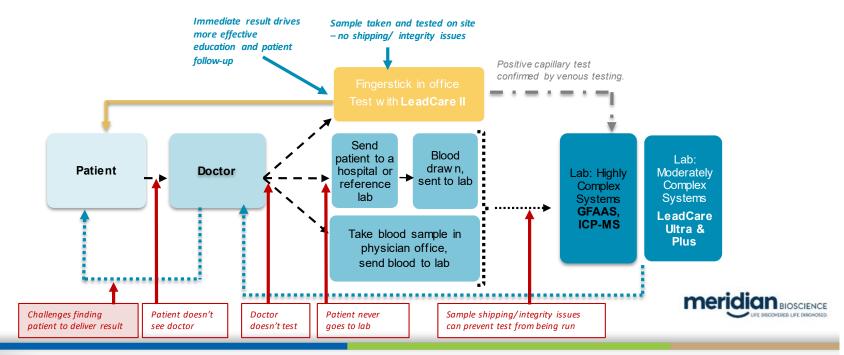




How LeadCare Helps Address the Gaps

Break-downs frequently occur in lab-based testing

Focus on education and access to improve outcomes





Lead Testing is a HEDIS* Measure

- The Healthcare Effectiveness Data and Information Set (HEDIS) is a tool used by more than 90% of America's health plans to measure performance on important dimensions of care and service.
- The Lead HEDIS measure is the percentage of children 2 years of age who had one or more capillary or venous blood lead tests performed by their second birthday.

Why It Matters

 Screening for lead is an easy way to detect an abnormal blood lead level in children. There is no safe blood lead level. If not found early, exposure to lead and high blood lead levels can lead to irreversible effects on a child's physical & mental health.

For the last 10 years, HEDIS measures for lead testing have remained flat. Even with the public awareness around Flint, only 66-68% of 1 & 2 year olds have had a blood lead test.





POC Blood Lead Testing Improves Quality

Improves HEDIS lead screening quality measures:

The combination of a CLIA-waived designation with accurate, 3-minute results means you're not missing patients.

A more efficient and quality system:

The only point-of-care test that increases compliance, helps to raise your quality measures, and adds coefficiencies to quality of care.



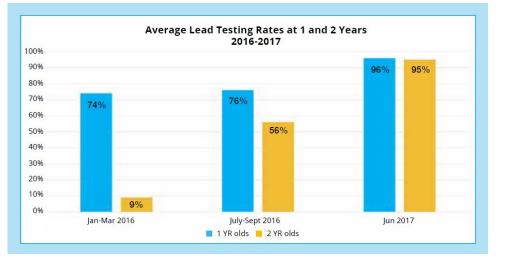




Quality Improvement Project

- Easy to do in-house with multiple deployment options
- Best quality comes from a standardized testing process
- Height
- Weight
- Fingerstick
- Face-to-face education with parent(s) encourages follow-up, if necessary
- Capillary samples are preferred by parents
- LeadCare II test results are accurate and reliable

Core Pediatric & Adolescent Medicine, New Hampshire Implementing Universal Blood Lead Screening



In an 18-month period, a verage lead testing rates of 1-year-olds went from 74% to 96%. Average lead testing rates at 24 months increased from 9% to 95%.





2. Improved Workflow

• Outsourcing the test requires:

- A lab script
- Follow-up with lab to document results in patient's medical record
- Follow-up with patients who have not gone to lab for the test

• In-office lead testing:

- Provides immediate results
- Opportunity to educate parents when the result is top of mind
- The perfect complement to in-office hemoglobin testing; same patients, same finger stick
- Generates practice revenue (reimbursable test)





3. Immediate Action When Necessary

• Outsourcing the test:

- Schedule follow-up visit for patients with elevated results
- 40% of children with elevated blood lead levels did not complete their follow-up care plan (2007 Ohio Department of Health Study)
- In-office lead testing:
 - No follow-up required because the patient is still there.
 - Know Before They Go[™]





4. Educational Impact

- In-office lead testing:
 - While waiting for the 3-minute result, staff educate parents about the dangers of lead and how to minimize the risk
 - Real-time results empower parents to protect their children
- Kent County, MI:
 - No shows for follow-up care decreased 75% with in-office lead testing – where the result was delivered during the initial visit





5. Patient Satisfaction

- Outsourcing the test:
 - Inconvenient for patient
 - Venous draws are traumatic
- In-office lead testing:
- Immediate results from a simple fingerstick
 - Convenient: one visit
 - Far easier than a venous draw
 - Peace of mind

80% of pediatricians performing in-office lead testing cite patient (parent) satisfaction as the #1 benefit.





Value of Point-of-Care Testing with LeadCare II

1) Convenient for physicians and staff

- CLIA-waived, simple to operate, only 2 drops of blood

2) Fast: initiate action and education immediately

Result in 3 minutes with parent in the office

3) Improves quality of care: solves compliance problem

- No tracking down parents, no additional visits required

4) Preferred by parents

Parents appreciate a single visit & a fingerstick in lieu of venipuncture

5) Reimbursable: established CPT code (83655)

Reimbursement rates will vary depending on payor mix

LeadCare II eliminates inefficiencies and improves patient care, allowing clinicians to test and take action, all in one visit. Customers typically see a return in less than a year.







Key Messages: Why Test

- Lead exposure is 100% preventable
- Asymptomatic in most cases
- Impact is irreversible need to test early to mitigate risk
- Point-of-care is the best solution to accomplishing testing
- Immediate test results
- A simple finger stick
- Simple to operate
- Patient/provider education provided
- Adheres to CDC guidelines
- Parent/patient approval vs. venous







Purchasing Information

LeadCare II Analyzer

- Catalog #: 70-6760
- List Price: \$3,172.00
- Available through all major distribution channels

LeadCare II Test Kit

- Catalog #: 70-6762
- List Price: \$458.00/kit
- Available through all major distribution channels

Promotions

- LeadCare II Start Up Promotion Buy One Analyzer, Receive One Free Test Kit
- LeadCare II Placement Program Customers who commit to purchasing 8 kits annually are eligible to receive the LeadCare II analyzer at no cost





Our Support Goes Beyond the Test Kit

Education

- Patient education materials (provider & parent) (E.g. sources of lead, etc.)
- LeadCare Resource Center

Implementation

- Meridian Bioscience Sales can provide in-service trainings, review policy, workflow, and system use
- Online 8-minute training video and certification exam

Ongoing Support

- Product support team is available by phone or email to troubleshoot
- 1-year warranty on all systems extended warranties available







LeadCare Contact Information



Meridian Inside Sales leadcaresales@meridianbioscience.com 888-763-6769 Delaware Regional POC Specialist Adam Binder (Southeast) adam.binder@meridianbioscience.com

LeadCare Product Support

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Product Manager

Andrea Hutchinson andrea.hutchinson@meridianbioscience.com





Thank you



Lead poisoning threatens millions of people, yet is entirely preventable. Our mission is to identify and protect those at risk.

Panelist Q&A





Evaluation & Post Knowledge-Check

Use the link below or the QR code to begin the evaluation:

https://www.surveymonkey.com/r/JQQKJM5



QR Code

Activate the camera on your smart phone and scan this QR code to link to the **evaluation.**



Quality Insights on the Web

- Danielle Collins, RN, BSN
 - Email: dcollins@qualityinsights.org
- Visit our <u>website</u>
- Connect with Quality Insights on social media via X (formerly Twitter) and LinkedIn



Quality Insights website



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THANK YOU!



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