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

Childhood Blood Lead Surveillance in Delaware

2021 Annual Report

Calendar Year 2021 Data

September 2022

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Delaware Department of Health and Social Services
Division of Public Health
Health Systems Protection Section
Office of Healthy Environments
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Executive Summary

Childhood lead poisoning is a completely preventable disease yet continues to be a significant and widespread environmental hazard in Delaware. Lead is a neurotoxin, causing permanent and irreversible damage to the human body. Once lead enters the bloodstream, it finds its way to the brain, kidneys, and bones.

Young children up to age six, whose brains develop rapidly, are at greatest risk of harm from lead exposure. Childhood exposure to lead can cause long-term neurological damage and decreased intelligence that may be associated with learning and behavioral problems. Even low levels of lead in the body correlate to a lower IQ and reduced ability to pay attention, impairing academic achievement. Children with even slightly elevated blood lead levels have a higher risk of developing attention-deficit/hyperactivity disorder.

Medical providers should continue to emphasize to parents the importance of getting a blood lead test for their children. If records show that the child has not received a blood lead test previously, the child should get one. Delaware law requires that parents must provide proof from their doctor that their child received a blood lead test in order to enroll in a childcare center, early learning program, or kindergarten. Health care providers should follow the Center for Disease Control and Prevention's (CDC) Recommended Actions Based on Blood Lead Level guidelines to identify and follow up with children who are exposed to lead.

Children are exposed to lead from many sources, including water from lead in pipes in older buildings and some consumer products. The most widespread and dangerous sources of lead exposure for young children are lead-based paint and lead-contaminated dust. Many homes built before 1978 contain lead-based paint (now banned) that can flake, peel, or create dust. Children may also chew on surfaces with lead paint, including windowsills, old toys, and furniture. The best way to reduce childhood lead poisoning is by primary prevention, which focuses on removing lead hazards from the environment. In addition, early diagnosis and treatment of children with high blood lead levels is a key strategy to reduce the health impacts of environmental lead contaminants.

The Delaware Department of Health and Social Services, Division of Public Health's (DPH) Lead Poisoning Prevention Program performs childhood blood lead surveillance for Delaware. Delaware's Childhood Lead Poisoning Prevention Act has been a state law since 1994. This law requires that all laboratories, hospitals, and medical providers send all blood lead tests results to the DPH Lead Poisoning Prevention Program. On June 30, 2021, the Delaware General Assembly passed new legislation, now signed into law, that requires universal blood lead level testing of all Delaware children at 12 months of age and again at 24 months of age.

The Childhood Lead Poisoning Protection Act law also requires that DPH release a comprehensive annual report on statewide childhood blood lead testing and surveillance. This first report includes calendar year (CY) 2021 data on childhood blood lead test results.

Calendar Year 2021 (CY21) Lead Surveillance Highlights

According to the Delaware Department of Health and Social Services, Division of Public Health's (DPH) Lead Poisoning Prevention Program (the Program):

* In CY21, 6,648 children 0-72 months of age had a blood lead test. This is an increase of 347 children (+5.2%) compared to CY20 (6,301) and a decrease of 3,795 (-36%) compared to CY19 (10,443).

* A person may have multiple tests in the same year. In CY21, 9,208 blood lead test results for children 0-72 months of age were reported to the Program. This is an increase of 760 test results (+9.0%) compared to CY20 (8,448), and a decrease of 5,943 (-39%) compared to CY19 (15,151).

* In CY21, 29 children 0-72 months of age were identified with a blood lead level ≥10 micrograms per deciliter (µg/dL); the level which triggers case management by DPH. This was an increase of 13 children (81%) compared to CY20 (16) and 12 fewer (-31%) than CY19 (41).

* In CY21, 85 children 0-72 months of age were identified with a blood lead level of five to nine micrograms per deciliter (µg/dL). This is the same number of children (0.00% change) as in CY20 (85) and 60 fewer (-41%) than CY19 (145).

Overview: The Impact of Childhood Lead Poisoning in Delaware

Childhood lead poisoning is a completely preventable disease and continues to be a significant and widespread environmental hazard for children in Delaware. Lead is a neurotoxin, causing permanent and irreversible damage to the human body. Once lead enters the bloodstream, it finds its way to the brain, kidneys, and bones.

Young children up to age six, whose brains develop rapidly, are at greatest risk of harm from lead exposure. Childhood exposure to lead can cause long-term neurological damage and decreased intelligence that may be associated with learning and behavioral problems. Even low levels of lead in the body correlate to a lower IQ and reduced ability to pay attention, impairing academic achievement. Children with even slightly elevated blood lead levels have a higher risk of developing attention-deficit/hyperactivity disorder. Childhood lead poisoning extends across the lifespan, impacting higher learning and the ability to earn good grades as well as holding a job. (The Association between Lead and Attention-Deficit/Hyperactive Disorder: A Systematic Review, *Int. J. Environ. Res. Public Health* 2019, *16*(3), 382; https://doi.org/10.3390/ijerph16030382)

There is no safe level of lead in the body. Even very small amounts of lead in a child's body can be harmful. Continuing research has led to a better understanding of poor health outcomes in children due to this environmental toxin at even lower levels than previously understood. Based on this research, on October 28, 2021, the Centers for Disease Control and Prevention (CDC) lowered its elevated blood lead level (EBLL) reference value from 5.0 to 3.5 µg/dL (micrograms per deciliter) to identify children with blood lead levels that are higher than most children's levels.

The best way to reduce childhood lead poisoning is by primary prevention, which focuses on removing lead hazards from the environment before a child is exposed. In addition, early diagnosis and treatment of children with high blood lead levels is a key strategy to reduce the health impacts of environmental lead contaminants.

Although children are exposed to lead from many sources, including water from lead in pipes and some consumer products, lead-based paint and lead-contaminated dust are the most common, widespread, and dangerous sources of lead exposure for young children. The federal government banned lead paint in residential properties in 1978. Many homes built before 1978 still contain lead-based paint that can flake, peel, or create dust as they get older. Children may also get lead poisoning by chewing on surfaces with lead paint, including windowsills, old toys, and furniture.

In Delaware, more than half of the homes in Delaware (57%) were built before 1978 (Source: U.S. Census Bureau, American Community Survey, 5-Year Estimates). While properties built prior to 1978 may have lead-based paint and a significant number of residential rental units have been made lead-free, many untreated homes and apartments remain that may cause lead exposure in young residents.

There are several lead poisoning "hot spots" in Delaware, which are areas with older housing stock and lower income families. As is the case nationally, lead poisoning is largely (but not exclusively) a problem faced by poorer families with limited capacity to move to better housing or remediate the contaminated

housing on their own. Many Delawareans live in rental properties and do not have the financial ability or legal authority to remediate the presence of lead.

Work over the last 20 years has resulted in a significant drop in the number of children with elevated blood lead levels in Delaware. Despite the success, disparities persist, with those disproportionately affected including children living below the federal poverty level, children living in older housing, non-Hispanic Blacks, Latinos, immigrants, and refugees.

On average, more than 350 children each year are identified with blood-lead levels that may require follow-up or further action. Yet less than 25% of children in Delaware get a blood lead test by 24 months of age, even though state law mandates that the primary health care provider for a child order a blood lead test at around 12 months of age and again at or around 24 months of age. For children in the Medicaid program, the federal requirement is to test blood for lead at ages 12 months and 24 months, or once between 24 and 72 months for children with no record of a previous blood lead test. The Delaware Department of Health and Social Services (DHSS), Division of Public Health's (DPH) Lead Poisoning Prevention Program estimates that every year, more than 1,200 children in Delaware have high lead levels in their bodies but most go undetected because they are not tested. Therefore, it is essential that all Delaware children get a blood lead test so that no child is left undiagnosed. If lead is not removed from the body, it can lead to childhood development delays and permanent learning disabilities.

The Lead Poisoning Prevention Program performs childhood blood lead surveillance for Delaware. All laboratories, health systems, and medical practices are required by law to send all blood lead tests to DPH. Delaware requires proof of one blood lead test, at any age, up to age 6 years, for entry into a licensed childcare facility and public schools. Delaware law requires that DPH release a comprehensive annual report on statewide childhood blood lead testing and levels. This first report presents childhood blood lead test results for calendar year 2021 (CY21). With few exceptions, all numbers in this report refer to children from birth to 72 months of age.

A recent review shows a significant decline in childhood lead screenings in 2020 due to the Coronavirus disease 2019 (COVID-19) pandemic. In the first six months of 2020, Delaware's childhood lead testing rates dropped by an average of 54% compared to the pre-pandemic year 2019. In the first six months of 2021, the state's lead testing rates fell by an average of 63% compared to 2019. The CDC reported a rise in U.S. testing in 2021, though it is still not up to pre-pandemic levels.

Statistical Report

Childhood blood lead level testing is the only way to identify children who may have been exposed to lead hazards. Medical provider testing and reporting of blood lead testing results are critical to the success of childhood blood lead surveillance activity.

In CY21, 10,443 children from birth to 72 (0-72) months of age were tested for lead exposure statewide. Table 1 summarizes statewide blood lead testing in calendar years 2019, 2020, and 2021.

Table 1. Lead testing rates and blood lead levels (µg/dL) in children 0-72 months of age, Delaware, 2019-2021

	2019	2020	2021
Number of Tests vs. Children Tested (≤72months)			
Total number of tests	15,151	8,448	9,208
Total number of children tested	10,443	6,301	6,648
Number of Children who received a Blood Lead Test			
0-16 months	5,104	3,325	3,160
17-28 months	2,127	1,261	1,524
29-40 months	904	498	553
41-52 months	645	307	364
53-64 months	967	518	612
65-72 months	696	392	435
Total Blood Lead Level tests	**10,443**	**6,301**	**6,648**
Number of Test Completed by Sample Type ≤ 72 months			
Venous	7,213	4,290	4,889
Capillary	3,230	2,011	1,759
Blood Lead Level (BLL) (ug/dL			
Total BLL 3.5-4.9 ug/dL	198	91	68
Total BLL 5-9.9 ug/dL	145	85	85
Total BLL ≥ 10 ug/dL	41	16	29
Total BLL Tests	**384**	**192**	**182**

Footnote: Blood Lead Level (BLL), Elevated Blood Lead Level (EBLL), µg/dL = micrograms per deciliter
Source: Delaware Department of Health and Social Services, Division of Public Health, Lead Poisoning Prevention Program, May 2022

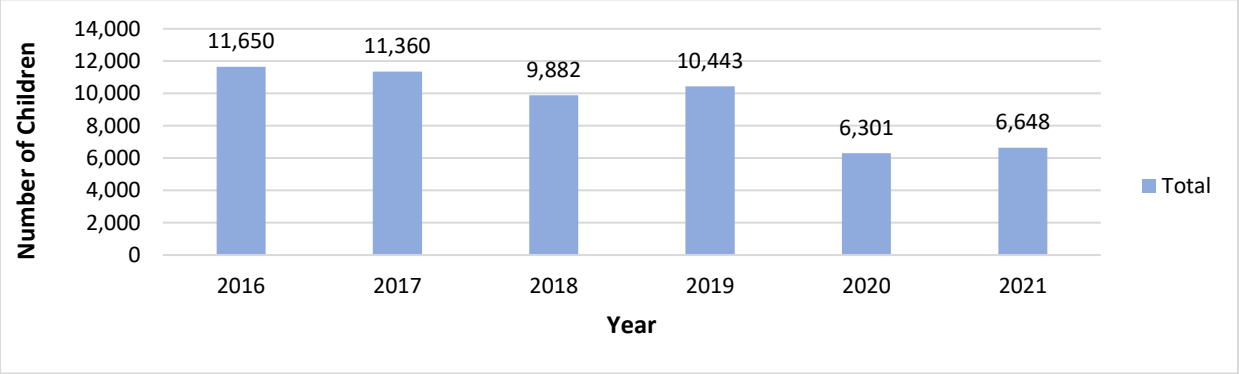
Table 2. Blood lead testing rates and levels (µg/dL) in children 0-72 months of age, Delaware, 2016-2021

Year	Estimated Yearly Births in Delaware	Number of Children ≤ 72 months who received a Blood Lead Level test	Total BLL ≥ 3.5 µg/dL	Total BLL ≥3.5 µg/dL as % of Number of Children ≤72 months tested	Total BLL ≥ 10 µg/dL	Total BLL ≥ 10 µg/dL as % of Number of Children ≤72 months tested
2016	10,992	11,650	530	4.55%	35	0.30%
2017	10,855	11,360	411	3.62%	31	0.27%
2018	10,621	9,882	363	3.67%	31	0.31%
2019	10,562	10,443	384	3.68%	41	0.39%
2020	10,392	6,301	192	3.05%	16	0.25%
2021	9,851	6,648	182	2.74%	29	0.44%

Footnote: BLL = Blood Lead Level, µg/dL = micrograms per deciliter
Sources: Delaware Department of Health and Social Services, Division of Public Health, Lead Poisoning Prevention Program, May 2022
Delaware Population Consortium, Population Projection Series, updated January 2022

Figure 1 shows that 3,795 fewer Delaware children 0-72 months of age were tested for lead in CY21 (6,648) compared to CY19 (10,443). Blood lead levels testing rates appear to be flattening relative to data from earlier years.

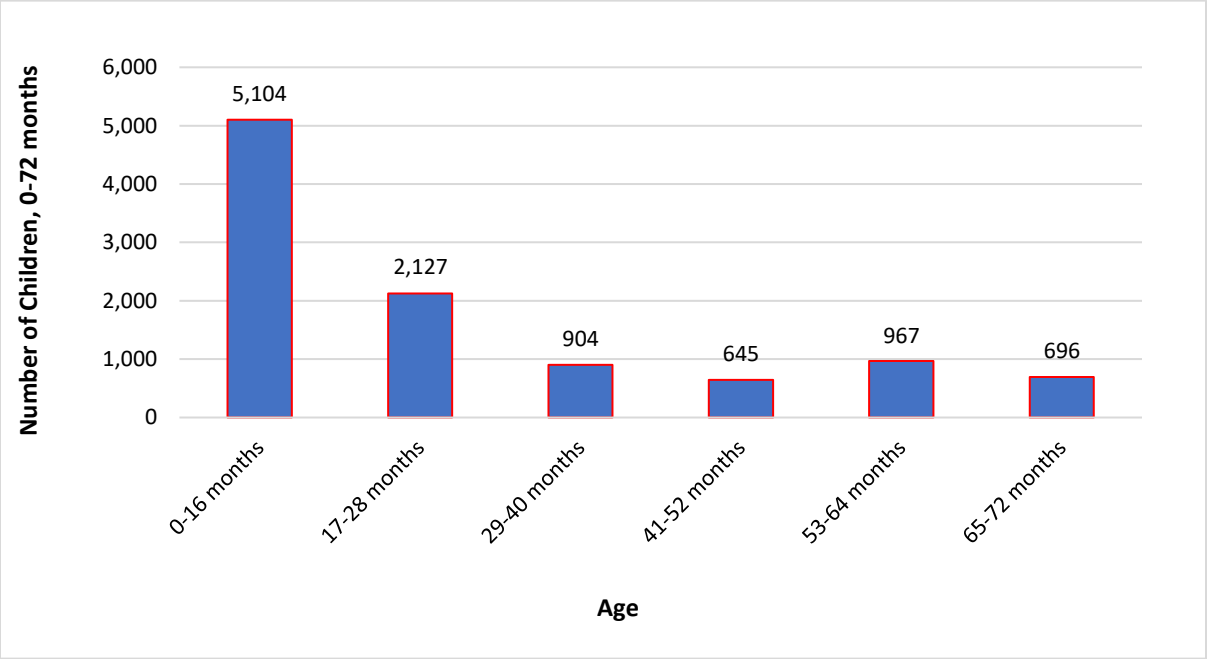
Figure 1. Number of children 0-72 months of age tested for lead, Delaware, 2016-2021



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

According to DPH records, less than 25% of children received a blood lead test by 24 months of age (Figure 2). Early detection of high lead levels and identifying the source of the lead hazards help prevent long-lasting health effects.

Figure 2. Age of children first tested for lead, 0-16 months through 65-72 months, Delaware, 2019

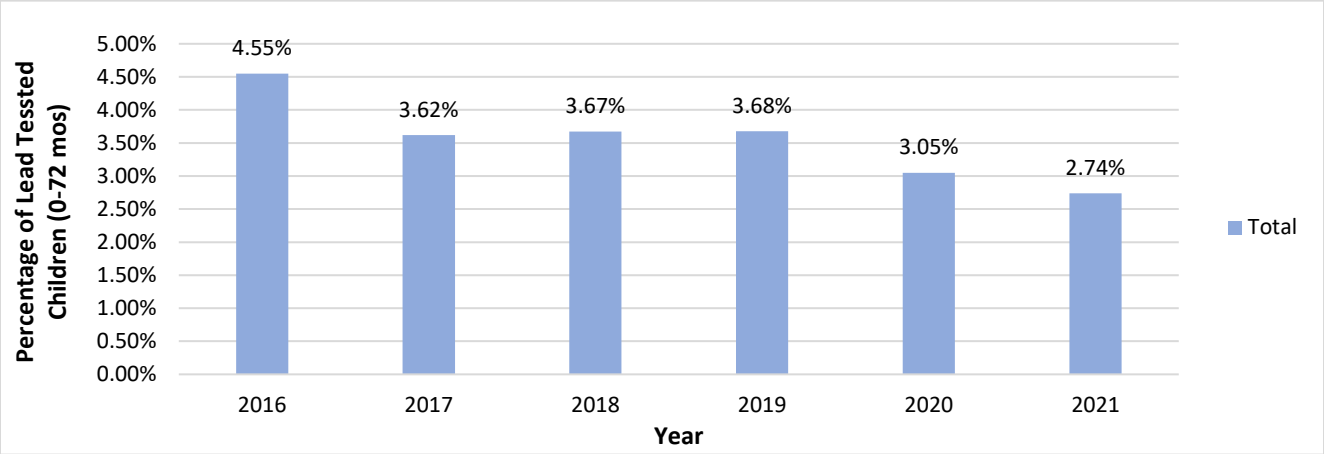


Source: Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

The number of children aged 0-16 months tested for lead CY19 is 5,104. Some children are not tested at 12 months as stated in the regulations due to scheduling issues and other factors. Therefore, children tested for lead at 16 months are still considered compliant. Most children do not receive their second test at 24 months as required in the regulations. This is shown in the total number of children aged 17-28 months (2,127) tested for lead in CY19.

As presented in Table 2, 2.74% of lead tested children in 2021 under age 6 years had elevated blood lead levels of 3.5µg/dL or higher compared to 4.55% in 2016 (Figure 3). While significant, this decline can also be attributed to the low lead testing rate due to the COVID-19 pandemic. The percentage of blood lead levels equal to, or greater than, 3.5 µg/dL in tested children in Delaware has declined over the last six years (4.55% in 2016 compared to 2.74% in 2021).

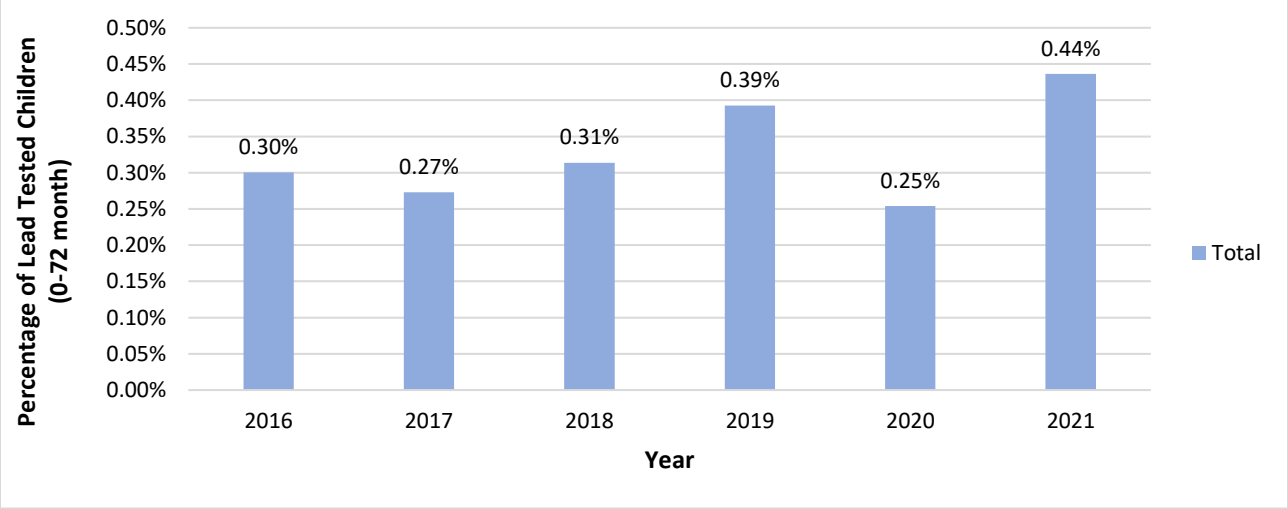
Figure 3. Percentage of lead tested children 0-72 months of age with a Blood Lead Level of 3.5 µg/dL, Delaware, 2016-2021



Source: Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

In 2021, 0.44% of lead tested children under age 6 years had elevated blood lead levels of 10 µg/dL or higher, compared to 0.30% in 2016 (Figure 4). The 2021 percentage is the highest since 2016.

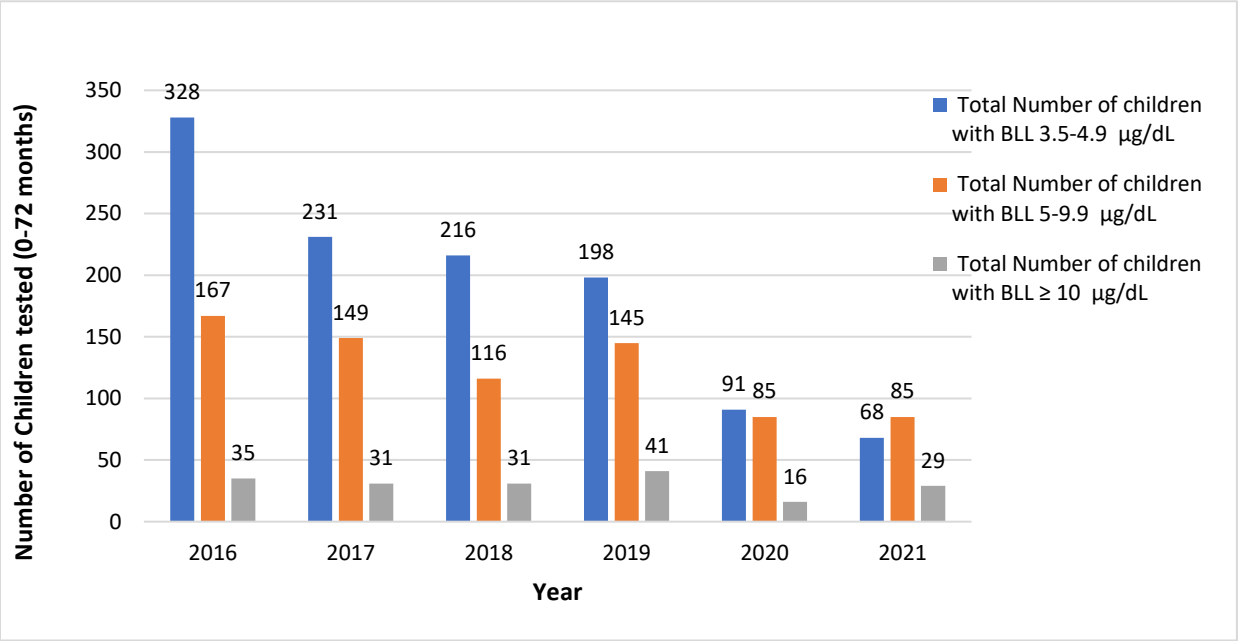
Figure 4. Percentage of lead tested children 0-72 months of age with a Blood Lead Level of 10 µg/dL, Delaware, 2016-2021



Source: Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

Of children age 0-72 months with elevated blood lead levels in 2021, 68 had levels of 3.5-4.9 µg/dL, 85 had levels of 5-9.9 µg/dL, and 29 had levels greater than 10 µg/dL. These latest data are significantly lower than the 2016 numbers: 328 at 3.5-4.9 µg/dL, 167 at 5-9.9 µg/dL, and 35 greater than 10 µg/dL (Figure 5). The sharp declines in CY20 and CY21 are directly attributed to the COVID-19 pandemic.

Figure 5. Number of Children 0-72 months of age by Elevated Blood Lead Level, Delaware, 2016-2021



Source: Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

COVID-19 Pandemic Causes Alarming Decrease in Lead Testing in Delaware

In December 2019, the world saw a global pandemic from a new virus causing Coronavirus disease (COVID-19). To protect public health and preserve life, the State of Delaware issued a Stay-at-home Order on March 16, 2020. Medical provider offices were closed or limited to urgent care; schools and early childhood facilities were closed; and well-child visits were transitioned to a telehealth model. These events significantly impacted childhood lead screening rates in 2020 and 2021 (Table 3).

Delaware's low 2019 blood lead level testing rate (23%) dropped by 40% in 2020 as many children's medical appointments were cancelled or conducted remotely. This was not a surprise as health systems were focused on pandemic response in 2020. Though childhood immunization rates rebounded in the fall of 2020 to near pre-pandemic levels as more children visited their pediatrician or family physician, many children did not get their required lead test ("Covid-19: Pediatric Vax Rates Decline During

Pandemic", *Physicians Weekly*, *October 12, 2021*, Cat ID 138; (covid-19-pediatric-vax-rates-decline-during-pandemic (physiciansweekly.com) Childhood blood lead screening rates stayed well below pre-pandemic levels throughout most of 2020 and 2021 (Table 3).

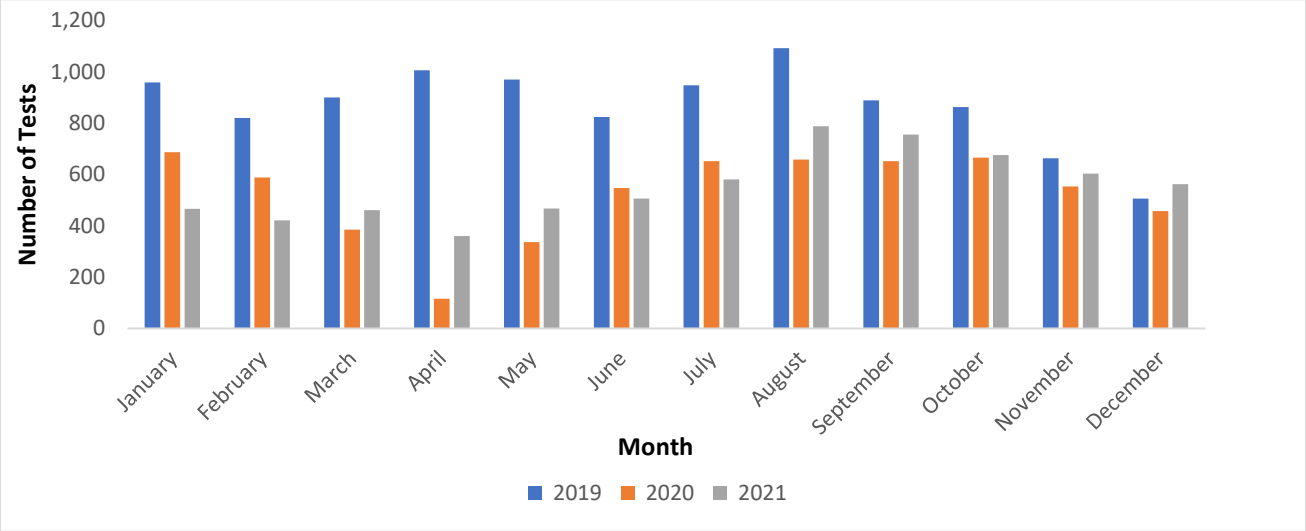
Table 3. Impact of COVID-19 pandemic on blood lead testing for children 0-72 months of age, Delaware, 2019-2021

Month	2019	2020	2021		
	Number of children tested per month (Total < 6 years)	Number of children tested per month (Total < 6 years)	Number of children tested per month (Total < 6 years)	% Change between 2019 and 2020	% Change between 2020 and 2021
January	959	687	466	-28%	-32%
February	820	589	421	-28%	-29%
March	901	385	461	-57%	20%
April	1007	116	360	-88%	210%
May	970	336	468	-65%	39%
June	824	547	506	-34%	-7.5%
July	948	652	581	-31%	-11%
August	1092	659	788	-40%	20%
September	889	652	756	-27%	16%
October	863	666	676	-23%	2%
November	664	554	603	-17%	9%
December	506	458	562	-9%	23%
Total	10,443	6,301	6,648	-40%	6%

Source: Delaware Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

The COVID-19 pandemic negatively impacted childhood blood lead testing numbers during CY2020 and CY2021 for ages 0 – 72 months of age. The monthly comparison in testing for CY2019 and CY2020 indicates a reduction in testing ranging from 9% to 88%, respectively (Figure 6). During CY2020 to CY2021, testing increased in most months; however, overall testing was still below the pre-COVID year of 2019. April 2020 marked the pandemic's first year and was the lowest point for the number of children getting a blood lead level test because that so most medical practices had stopped scheduling routine or annual medical checkups.

Figure 6. Number of blood lead tests performed by month and year for children 0-72 months of age, Delaware, 2019-2021



Source: Delaware Department of Health and Social Services, Division of Public Health, Health Systems Protection, Office of Healthy Environments, Lead Poisoning Prevention Program, May 2022

Known Geographic Areas of Risk

There are potential health hazards to people living in older homes with lead-based paint. This is particularly true for young children. Children who breathe in or ingest dust particles contaminated with lead can have reduced IQs, learning disabilities, behavior problems, anemia, kidney damage, and damage to their central nervous system. Many of these health problems are permanent.

In 1978, the federal government banned the use of lead paint in residential properties. However, many older homes in Delaware still contain lead-based paint. Fifty-seven percent of all homes in Delaware were built before 1979, and 17% were built before 1950. The rental housing inventory is oldest in New Castle County, where 68% of rental homes were built before 1979 and 20% were constructed before 1950. Several lead hazard "hot spots" exist in areas with older housing inventory and lower income families. As is the case nationally, lead poisoning in Delaware disproportionally (but not exclusively) and negatively impacts low-income families with limited resources. These families often cannot afford to move to better housing or to remediate the contaminated housing on their own.

The U.S. Department of Housing and Urban Development's Office of Lead Hazard Control and Healthy Homes released findings on lead levels in American housing in the October 2021 report, *American Healthy Homes Survey II Lead Findings*. That report revealed that 34.6 million homes nationwide (29.4% of all housing units) contain lead-based paint. The survey found that 18.2 million U.S. homes (15.4% of all housing units) have significantly deteriorated lead-based paint, 21.9 million homes (18.6%) have dust lead hazards, and 2.4 million homes (2.0%) have soil lead hazards. Addressing these hazards is critical to ensuring that Americans, especially children, can have healthy, productive lives.

Each year, Delaware's Lead Poisoning Prevention Program identifies communities with a higher risk of childhood lead poisoning to better target resources and to reduce health inequities associated with lead exposure in those communities. DPH determines risk by examining rates of elevated blood lead levels from first tests, the age of housing, and income levels for each of the state's cities and towns. The Program compiled the reported data from 2016 to 2021 and identified 34 out of 60 ZIP Codes in Delaware with the highest numbers of children with elevated blood lead levels of 3.5 µg/dL or higher (Table 4). The top 10 ZIP Codes with highest risk of childhood lead poisoning are in Wilmington (19805, 19802, 19801), Dover (19901, 19904), Newark (19702), New Castle (19720), Bear (19701), Seaford (19973), and Georgetown (19947).

Sixty-five percent of identified cases of Delaware children with high blood lead levels live in high-risk communities. This inequity in prevalence has persisted despite overall reductions. However, between 2016 and 2020, data show this disparity shrank as the rates of elevated blood lead levels in children living in high-risk communities consistently decreased. The pandemic reversed this trend, with elevated blood lead level prevalence increasing in 2020 and 2021 among children living in high-risk communities.

Table 4. ZIP Codes with Highest Numbers of Child Cases (ages 0-72 months) with Elevated Blood Lead Levels Cases (≥ 3.5 ug/dL), Delaware, 2016-2021

CITY	ZIP CODE	Total Number of Cases in Six-Year Period (2016-2021)
Wilmington	19802	194
Wilmington	19805	175
Seaford	19973	119
Wilmington	19801	108
Newark	19702	97
New Castle	19720	87
Bear	19701	70
Dover	19904	70
Georgetown	19947	68
Dover	19901	66
Laurel	19956	63
Milford	19963	62
Newark	19713	52
Claymont	19703	51
Lewes	19958	50
Millsboro	19966	49
Middletown	19709	42
Wilmington	19808	39
Smyrna	19977	37
Wilmington	19804	36
Wilmington	19810	35
Wilmington	19809	31
Newark	19711	29
Felton	19943	28
Harrington	19952	25
Bridgeville	19933	24
Magnolia	19962	23
Wilmington	19806	21
Milton	19968	21
Frankford	19945	20
Lincoln	19960	18

Note: ZIP Codes with less than 10 children with high lead levels are not included in this dataset. The Delaware Division of Public Health follows CDC guidelines for suppressing counts less than 10 to avoid the risk of identification.
Source: Delaware Department of Health and Social Services, Division of Public Health, Lead Poisoning Prevention Program, May 2022

Surveillance

In October 2015, the Program transitioned to using the CDC-supported Healthy Homes and Lead Poisoning Surveillance System (HHLPSS). Each year since 2015, DPH upgraded the HHLPSS system several times to the latest version released by the CDC. HHLPSS allows the Program to track screening rates, identify children with lead toxicity, confirm and medically manage cases, and investigate lead hazards. HHLPSS has also contributed to improvements in these tracking, confirmation, and investigative measures.

HHLPSS enhances the ability of the Lead Poisoning Prevention Program to utilize data collection tools and reports, import electronic laboratory records in HL7 format, and continue as a state-based data surveillance repository. Using HHLPSS has greatly increased the Program's data analysis and surveillance capabilities, resulting in more accurate and comprehensive identification of high-risk neighborhoods in the state's urban communities. Through GIS mapping, the Program identified "hot spots" of lead poisoning cases. HHLPSS has allowed the Program to more efficiently allocate resources to serve targeted areas in Delaware for outreach, awareness, and further demographic investigation.

In 2019, a full-time Data Management Analyst was added to the staff of the Program. This important CDC grant-funded position greatly increased the Program's capacity to conduct evaluations, perform data analysis, and improve the accuracy of data. The job responsibilities of the Data Management

Delaware successfully transitioned to a fully electronic and automated reporting system by 2021, which increased the efficiency of electronic laboratory test result submissions. Laboratories and medical centers in Delaware now report the mandatory blood lead data electronically for all children who are tested when they are completed.

Children on Medicaid and other government support programs are required by federal law to get a blood lead screening at age 1 and 2 years. A 2020 data sharing agreement between the DHSS Division of Medicaid and Medical Assistance (DMMA) and the Program, finalized standard operating data sharing procedures in 2021 that now allows for seamless and consistent data sharing. The Data Management Analyst in the Program received special training by DMMA on how to access, retrieve, and analyze data from the Medicaid Data Warehouse. A direct portal to the Medicaid database was then created to allow the Data Management Analyst to have full, real-time access to Delaware Medicaid data. This allows the analyst to conduct frequent data comparative analyses of all childhood blood lead level testing data from the HHLPSS lead testing database and DMMA data.

The Program's staff review the screening guidelines, case management standards, and environmental protocols as part of monthly staff meetings. Issues identified are addressed promptly.

Regulations Requiring Electronic Reporting of All Lead Data: As part of the Childhood Lead Poisoning Prevention Act, all State labs are required to submit blood lead test results to DPH as they occur. Regulations include the provision that labs must report all lead test results electronically to DPH when they are completed.

Surveillance System: The HHLPSS lead surveillance system is based on the results of a survey on blood lead screening data, a changing population, and housing data. Data quality control procedures are in place and are monitored weekly.

Electronically Collecting Housing Data: The Program currently collects housing data from the Delaware State Housing Authority to conduct data analysis studies using housing, income, population, and lead data.

Environmental Screening for Non-High-Risk Housing: The Environmental Health Specialist and the Health Program Coordinator in the Program recommend Environmental Inspection on secondary residencies when required. Delaware also works closely with the State Office of Child Care Licensing to review all Environmental Inspection reports on pre-1978 daycare facilities applying for licensure.

Lead Hazard Control Regulations: The Program enforces the lead hazard control regulations in Delaware, which requires all contractors working on older homes to be specially trained and certified as lead abatement and lead-safe renovation contractors. The Program conducts 50 yearly audits of lead-safe contractors, environmental testing firms, and lead-safe training providers.

Delaware's Childhood Lead Poisoning Advisory Committee: As chartered in House Bill 89 of 2019, the Childhood Lead Poisoning Advisory Committee (CLPAC) investigates and reports to the Delaware General Assembly findings and recommendations on reducing lead poisoning in Delaware and improving enforcement of items outlined in Title 16, Chapter 26 of the Delaware Code, the Childhood Lead Poisoning Prevention Act. The CLPAC made considerable progress from its initial meeting on September 12, 2019, and throughout 2020. The CLPAC submitted their Annual Report to the Governor and Legislators in April 2021. Read the CLPAC 2021 Annual Report on the Delaware General Assembly's website.

Public Health's Epidemiology, Health Data, and Informatics: DPH's Epidemiology, Health Data, and Informatics Section is leading the informatics and information technology related activities of this grant in coordination with the Program. Their mission is to improve health outcomes by making accessible and translating epidemiologic data into usable information to guide the development of public health interventions, programs, and policies. This initiative also includes the Delaware Health Statistics Center and Office of Vital Statistics, which is the primary source of demographic and health population data used by the Program to analyze and report data.

Case Management Plan

The Program has a dedicated Health Coordinator who conducts ongoing monitoring of case management activities for timeliness and completeness, and is responsible for reviewing surveillance data, identifying children with high lead levels, and making appropriate referrals. DPH field staff provide care coordination with primary care physicians for children with elevated blood lead levels using Case Management Standards, which follow CDC guidelines. The Program's Health Coordinator spends much time communicating with families and medical offices to assure that children at risk for lead poisoning are tested and that children who are identified with elevated results receive appropriate services.

Having real-time access to all lead testing results in the HHLPSS database enables the Data Management Analyst, Health Coordinator, and Investigator to frequently review childhood blood lead level results to ensure that children with elevated levels receive confirmatory testing, investigations, and follow-up care as necessary. The Health Coordinator also works with the Program's Provider Relations Specialist to mail letters and information to families who have children with reported blood lead levels of 3.5µg/dL to 9µg/dL.

In 2018, the protocols and procedures for providing comprehensive case management of children with high lead levels were updated to include any child with a 10µg/dL or higher blood lead level instead of the previous level of 15µg/dL or higher. Case management of elevated children is accomplished through a partnership with DPH's Community Health section, which provides support for the Program's Health Coordinator. Whenever a child with an elevated blood lead level of 10 µg/dL or more is identified, the Health Coordinator obtains parent/guardian signatures for release of information and consent forms for all appropriate referrals. Then the Health Coordinator notifies the child's primary care provider of the new case and follows through with e-mail and direct mailings of educational materials.

The Health Coordinator works with the Program's Principal Investigator, who investigates the possible source of the lead hazard. If the investigation identifies lead paint in the home as the likely source of the lead exposure, the Program arranges a Lead Hazard Risk Assessment of the residence by an environmental testing firm under contract. A Lead Hazard Risk Assessment is an on-site investigation to determine the existence, nature, severity, and location of lead-based paint hazards. Following the assessment, the Principal Investigator contacts the property owner to review the findings and discuss options for what must be done to fix any lead-based paint hazards. The first step is for the property owner to hire a lead-safe certified contractor who is required to follow Delaware regulations when making the repairs.

During a telephone consultation with the parents/guardians, the Health Coordinator uses a Lead Poisoning Case Visual Investigative Home Visit Form to review how to reduce lead dust hazards in the home and to explain medical protocols. The Health Coordinator then mails appropriate materials such as educational materials (English/Spanish), videos, and cleaning supplies and updates medical practices and families on case progress.

Primary Prevention Strategies

During CY2021, the Program conducted these primary prevention strategies:

- Delaware's Childhood Lead Poisoning Prevention Act has been in place since 2001. On June 30, 2021, Governor John Carney signed into law revisions to Title 16. The revisions require universal blood lead level testing of all Delaware children at 12 months of age and again at 24 months of age. To raise awareness of the new universal legislation, DPH issued a press release that appeared in media outlets statewide. In September 2021, program staff mailed and e-mailed a letter to over 300 pediatricians and family physicians. The Medical Society of Delaware and local health care insurance providers sent an e-mail to its members as well.

- The Program worked with the DPH Office of Communications to launch a multi-media campaign in August and September 2021 to raise awareness of the dangers of childhood lead poisoning and the need for all children to get a blood lead level test. The campaign featured new outreach materials including brochures, flyers, billboards, bus signs, television and radio ads, press releases, and web-based public service announcements.

- The Program expanded a previous outreach campaign that contacted landlords to raise awareness of Delaware's regulations that require landlords to hire lead-safe certified contractors to make repairs in older rental properties.

- On October 28, 2021, the CDC lowered its elevated blood lead level reference value from 5.0 to 3.5 µg/dL (micrograms per deciliter) to identify children with blood lead levels that are higher than most children's levels. The Program then updated its protocols to contact parents when their child has an elevated blood lead level above the new reference threshold of 3.5 µg/dL or higher. Lead poisoning prevention information is then mailed to these parents.

- The Program worked with Delaware's Office of Childcare Licensing (OOCL) to update regulations that mandate lead risk assessments for all childcare centers built before 1978. The Program reviews Lead Risk Assessments that childcare providers submit to OOCL. If lead dust hazards are identified, Program staff work with the childcare provider and the contractor to ensure that lead paint hazards are safely remediated.

  The Program expanded its partnership efforts with the Latin American Community Center, a community-based organization serving at-risk families living in Wilmington. The City of Wilmington has the highest rates of childhood lead poisoning in Delaware.

Conclusions

Since the enactment of the regulations and due efforts by DPH and the health care community, the percentages and level of severity of lead-poisoned children has been greatly reduced. However, it is evident that the number of lead-poisoned children in Delaware is underrepresented due to low compliance rates in testing. As efforts to increase the testing percentage continue, along with testing now required at 24 months of age, DPH anticipates that the number of lead-poisoned children identified will increase.

DPH, the health care community, schools, and other stakeholders should look for ways to assist identified lead-poisoned children and their families. Their involvement can improve upon primary prevention, case management, and intervention to reduce the developmental detriments caused by lead exposure.