

Lead Poisoning in 2023: Where Are We Now? Where Are We Going?

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Uses of Lead

Lead is a naturally occurring element

Lead has been used in hundreds of ways, including:

Pipes/plumbing	Cosmetics
Ammunition	Traditional medicines
Pewter and bronze	Paints and glazes
Leaded glass/crystal	Gasoline antiknock agent
Building material	Radiation shields
Inks and dyes	Car batteries
Sweetener	

Lead has no use in the human body

All forms of lead are TOXIC to people and animals

We've Known About the Harmful Effects of Lead for a Long Time

- Lead is a poison that has no useful role in the human body. It can cause seizures, mental confusion, coma and death if there is significant exposure.
 “Lead makes the mind give way.”
 -- Dioscorides- 2nd Century B.C.
- Exposure in the home environment can be harmful
 A Plea for Painted Railings and Painted Walls of Rooms as the Source of Lead Poisoning Amongst Queensland Children
 --J. Lockhart Gibson, Australasian Medical Gazette April 20, 1904
- The U.S. was very slow to address the lead problem
 Lead paint was outlawed in most European countries in early 1920s after the League of Nations recommended it be banned due to the danger of lead poisoning.
 Lead paint only outlawed in the U.S. in 1978

The Problem Is Still With Us



25
Years
→



1991

2016

Who Is Mostly Affected by Lead?

$\frac{3}{4}$ Lead exposure mostly targets low socioeconomic status inner city minority populations, especially children

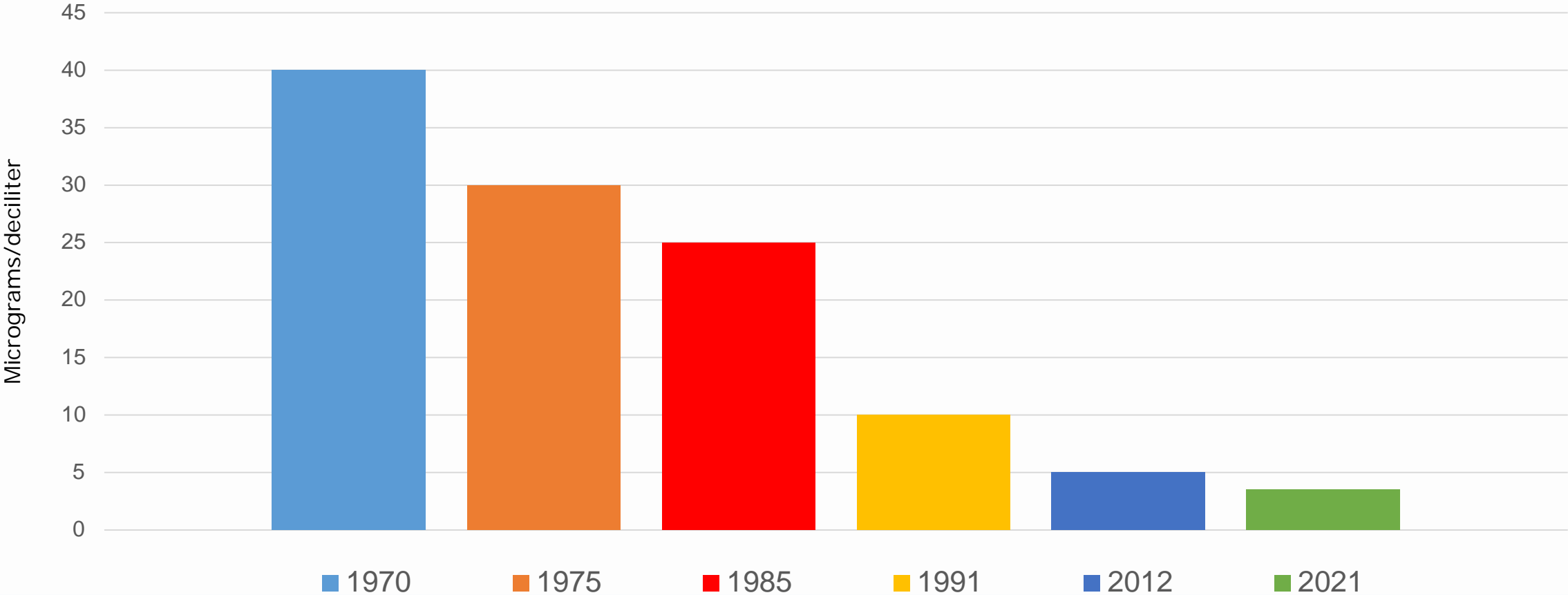
- Their families tend to rent rather than own their own homes
-

MEDICINE AT THE HIGHEST ORDER

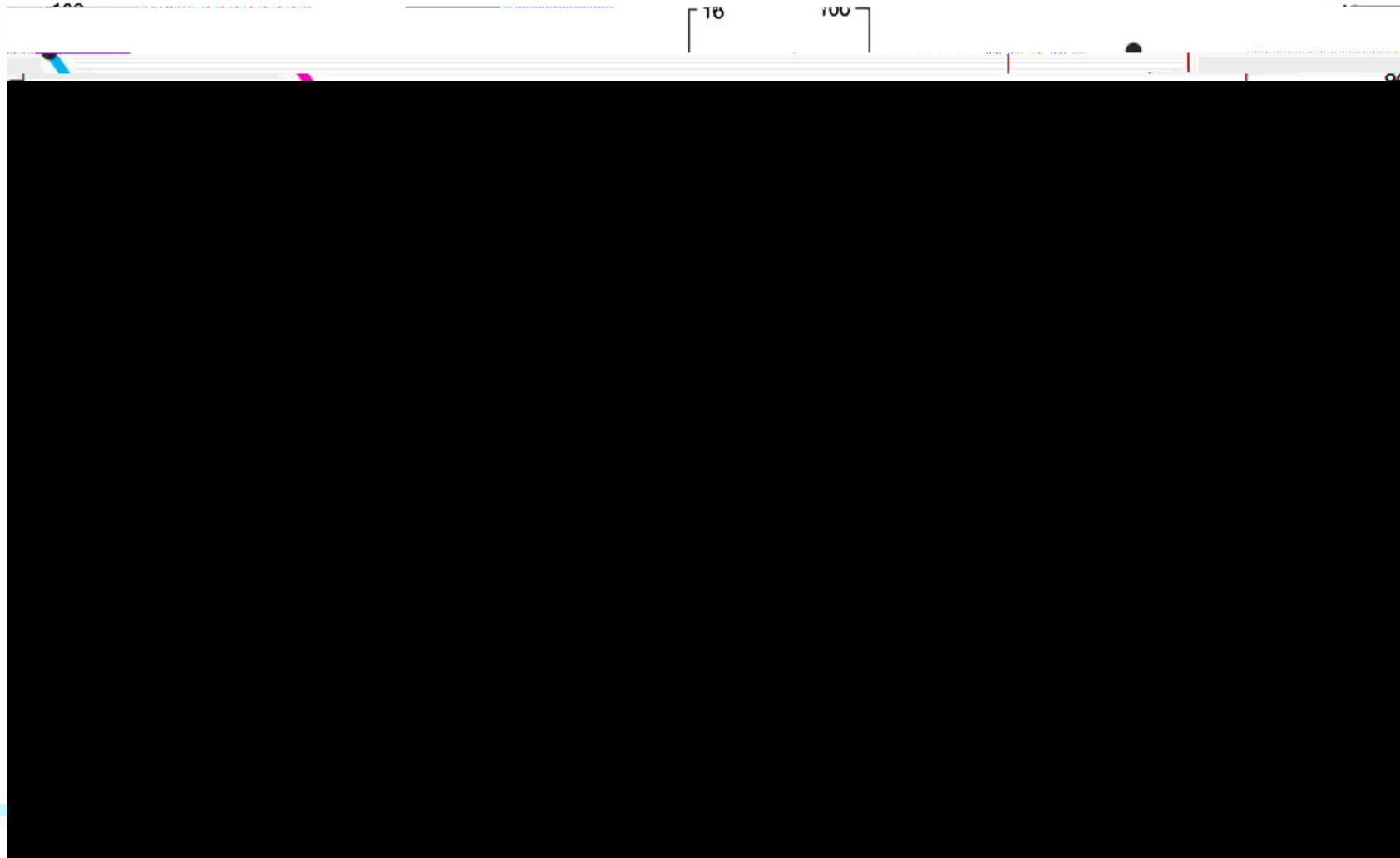


What Is Considered An Elevated Blood Lead Level?

Cut-Offs Delineating Elevated Blood Lead Levels per CDC



National Progress in Reducing Lead Exposure

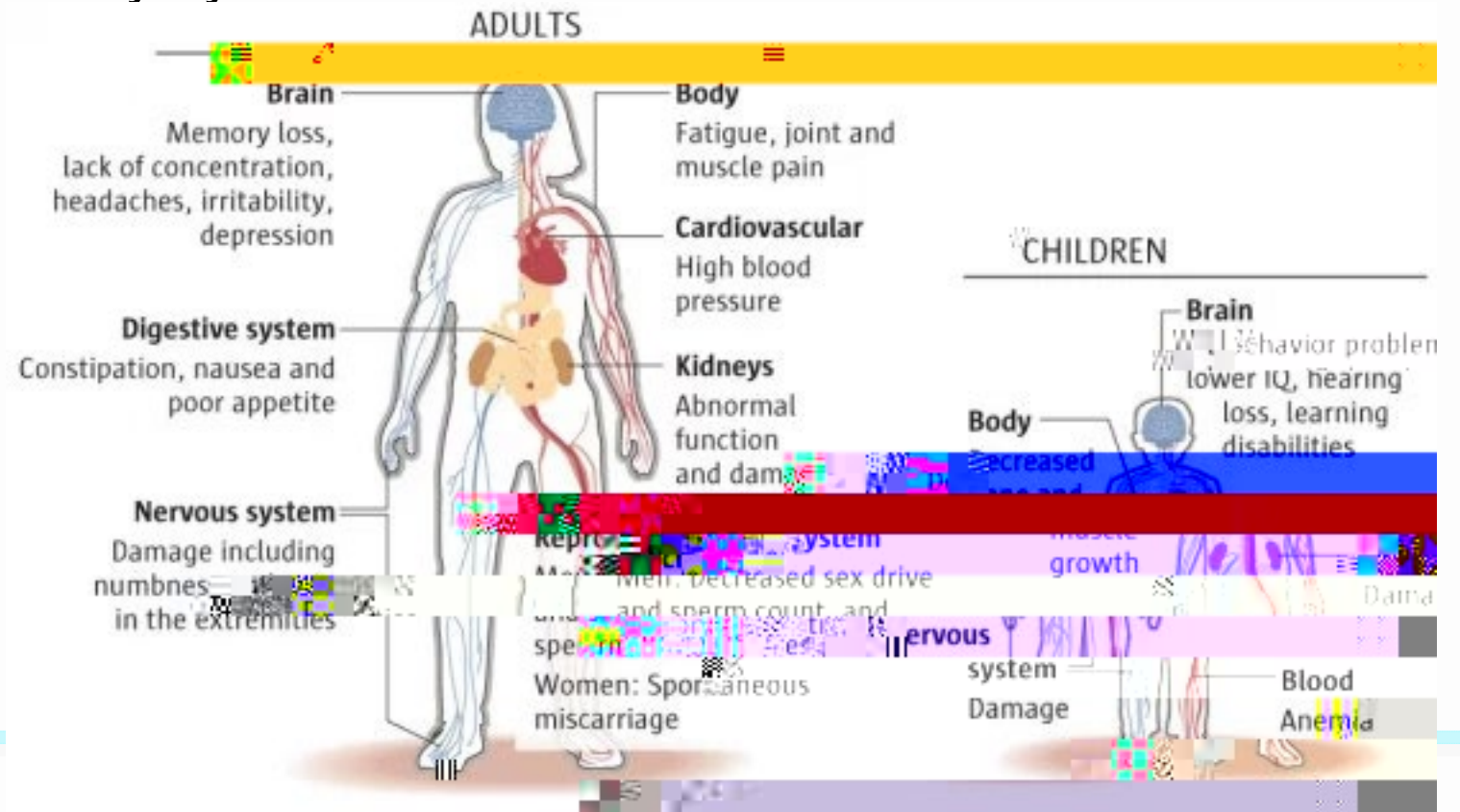


Health Effects of Lead

At very high levels, lead can cause encephalopathy, seizures, coma or death.

Lead can also affect many body systems:

- Renal (hypertension)
- Hematologic
- Endocrine
- Gastrointestinal
- Reproductive
- Cardiovascular
- Skeletal
- Neurologic
- Auditory

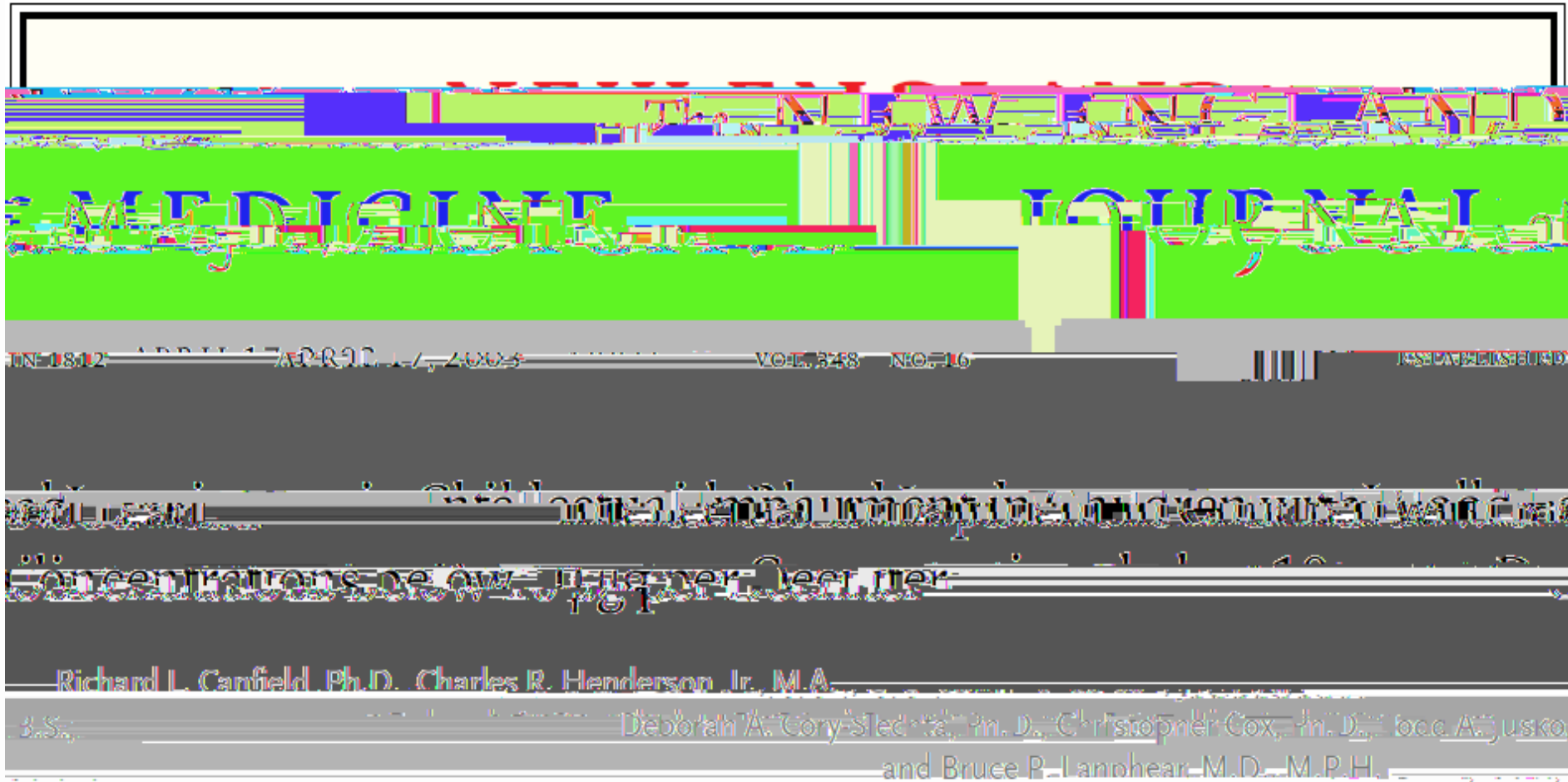


The Long -Term Effects of Lead Exposure in Early Childhood on the Brain

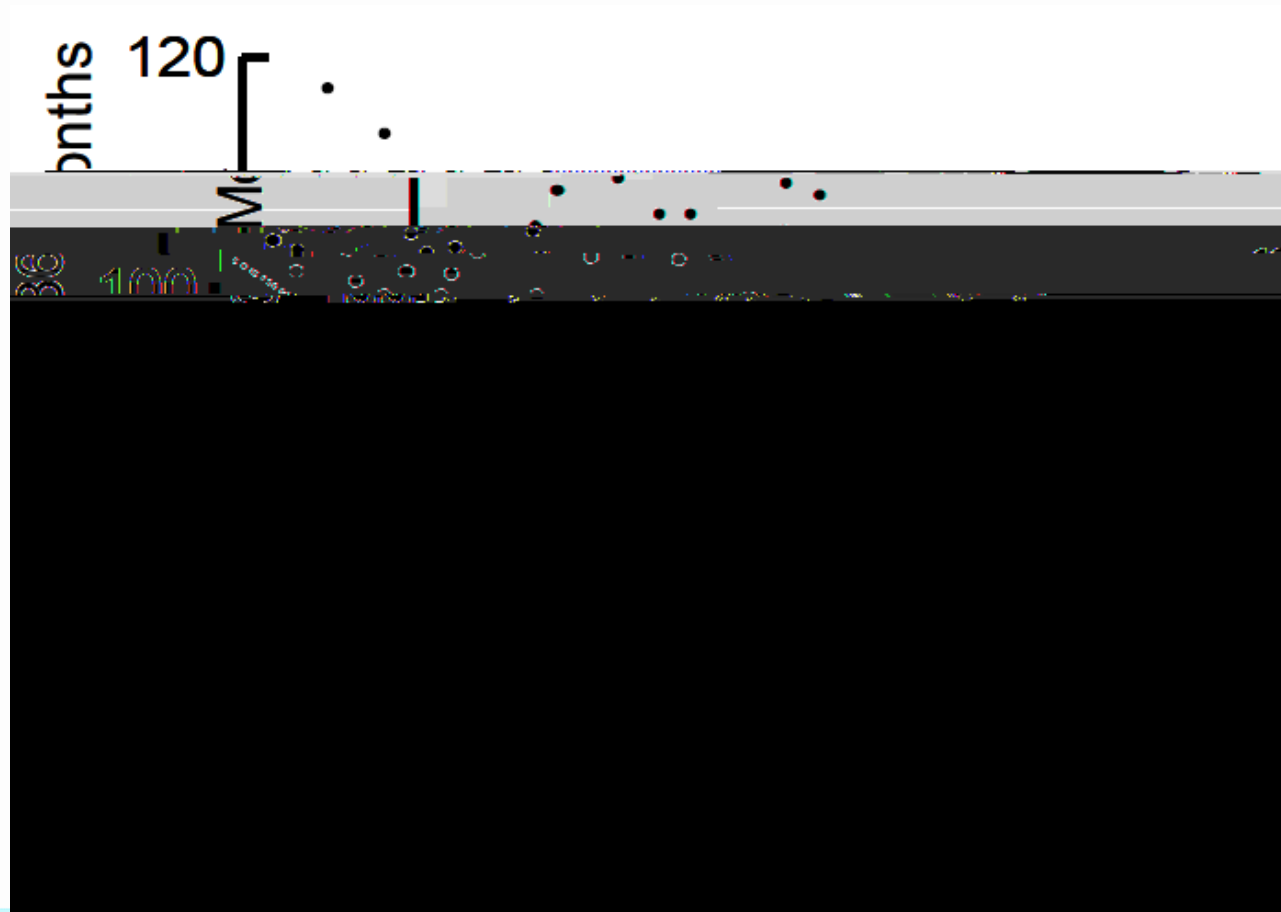
Later neurological effects of low levels of lead exposure in childhood include:

- Irreversible loss of IQ
- Auditory processing difficulty
- Attention problems & distractibility (ADHD)
- Poor control of emotions, lack of impulse control
- Aggressive behavior and conduct problems
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Lead's Effects on IQ



The Effects of Low Level Lead Exposure on IQ in Young Children



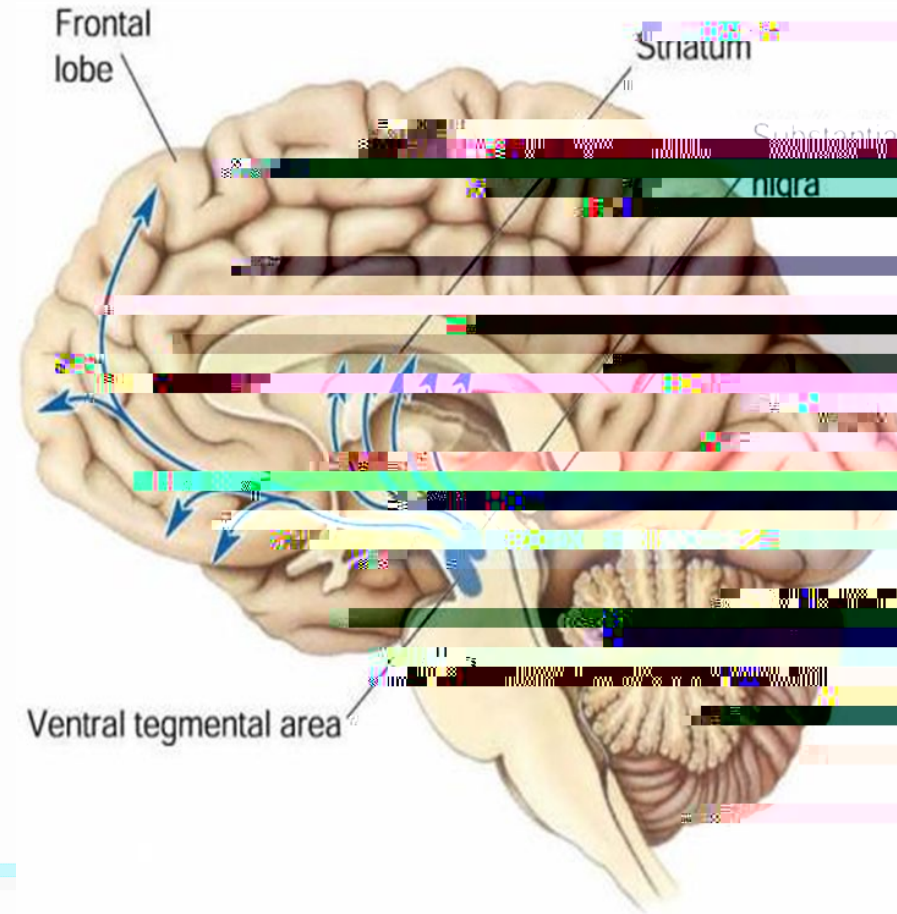
Canfield RL, Henderson CR, Cory-Slechta DA, Cox C, Jusko TA, Lanphear BP. NEJM. 2003;348:1517-1526

Neurobiological Mechanisms: the Mesocorticolimbic Dopamine System as a Target of Lead

Mesocorticolimbic system:

- Š Learning
- Š Executive Function
- Š Attention
- Š Decisionmaking
- Š Reward
- Š Addiction
- Š Impulse control

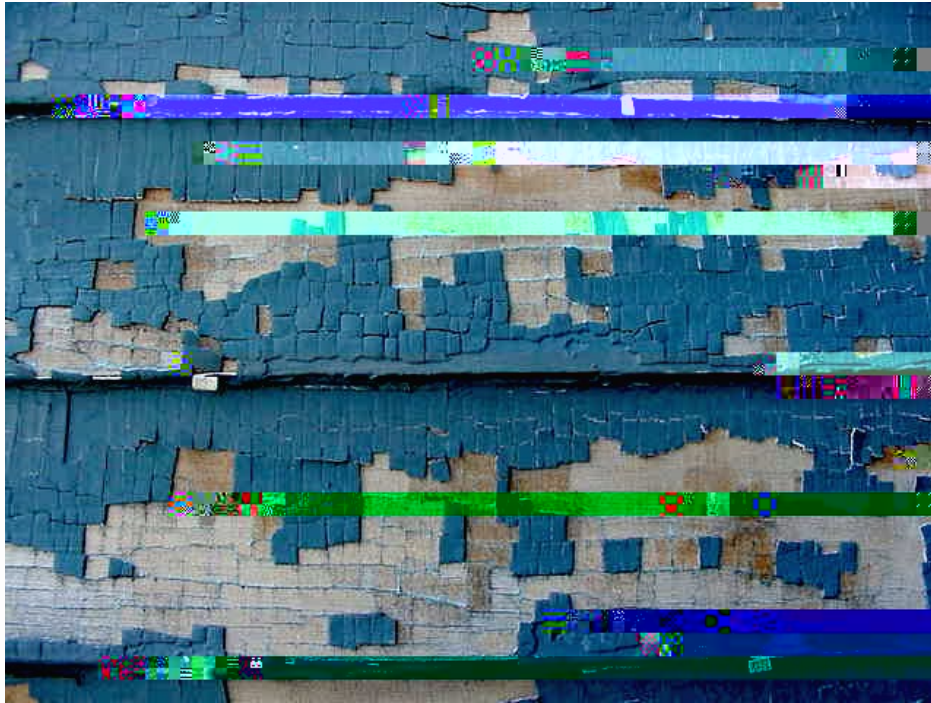
Dopamine neurotransmitters in the mesocorticolimbic system are highly sensitive to lead



Air Lead Emissions and Aggravated Assault

Sources of Lead Exposure Today: Housing

Peeling or Chipping Paint or Lead-Containing Dust



Other Common Sources of Lead Exposure Today

*f*Lead-containing dust tracked or blown into homes or from friction caused by opening and closing windows

*f*Contaminated soil

*f*Water contaminated by degrading lead pipes or lead solder

*f*Imported foods and cosmetics

*f*Jewelry containing lead

*f*Toys containing lead

*f*Stationary industrial sources and airports

MEDICINE AT THE HIGHEST ORDER

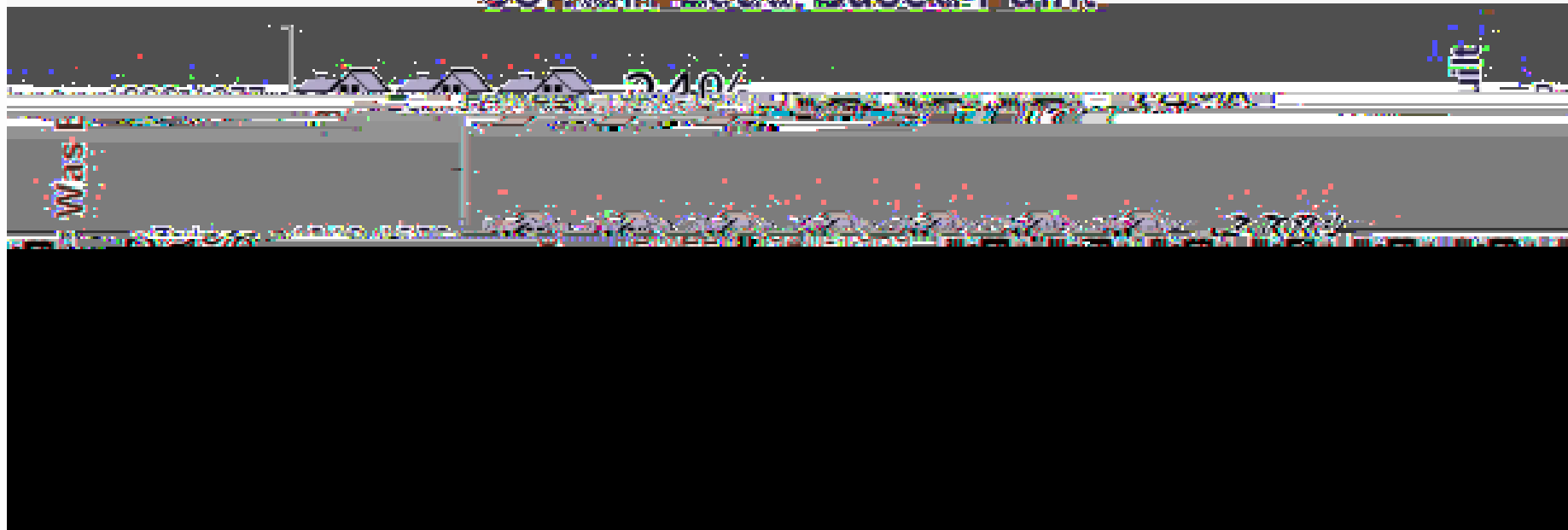


The Older the Home, the Greater the Chance of It Having Surfaces Containing Lead Paint

More likely to

contain lead-based paint

Older homes are more likely to contain lead-based paint



NYS Housing

New York State has the largest percentage of older housing in the U.S

75% built before 1978
45% rental units



US Census 2018 American Community Survey 5 year estimates
(<https://data.census.gov/>)

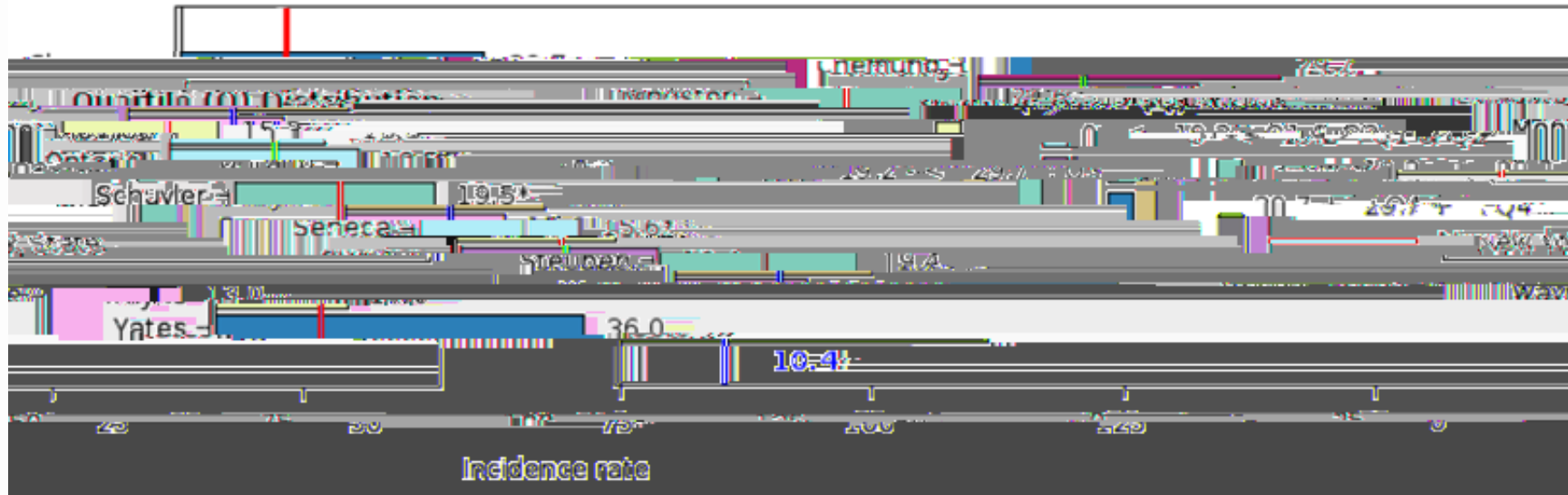
Childhood Blood Lead Testing Rates in NYS and Finger Lakes for Children Born in 2017

Children born in 2017	9-17 Months Old Tested, %	18-35 Months Olds Tested, %	Tested \geq 2x by 36 Months, %
Finger Lakes (8 Counties)	60.0	66.4	46.9
Monroe County	77.5	77.4	64.1
New York State	75.6	75.3	62.4

Source: NYS Community Health Indicator Reports
www.health.ny.gov/statistics/chac/indicators

Elevated Blood Lead Levels in Finger Lakes Region

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Rate per 1,000 tested children aged <72 months, 2020

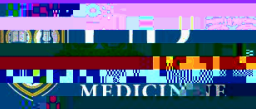


*Fewer than 10 events in the numerator, therefore the rate/percentage is unstable

Source: NYS Community Health Indicator Reports www.health.ny.gov/statistics/chac/indicators

Elevated Blood Lead Levels in Finger Lakes Region

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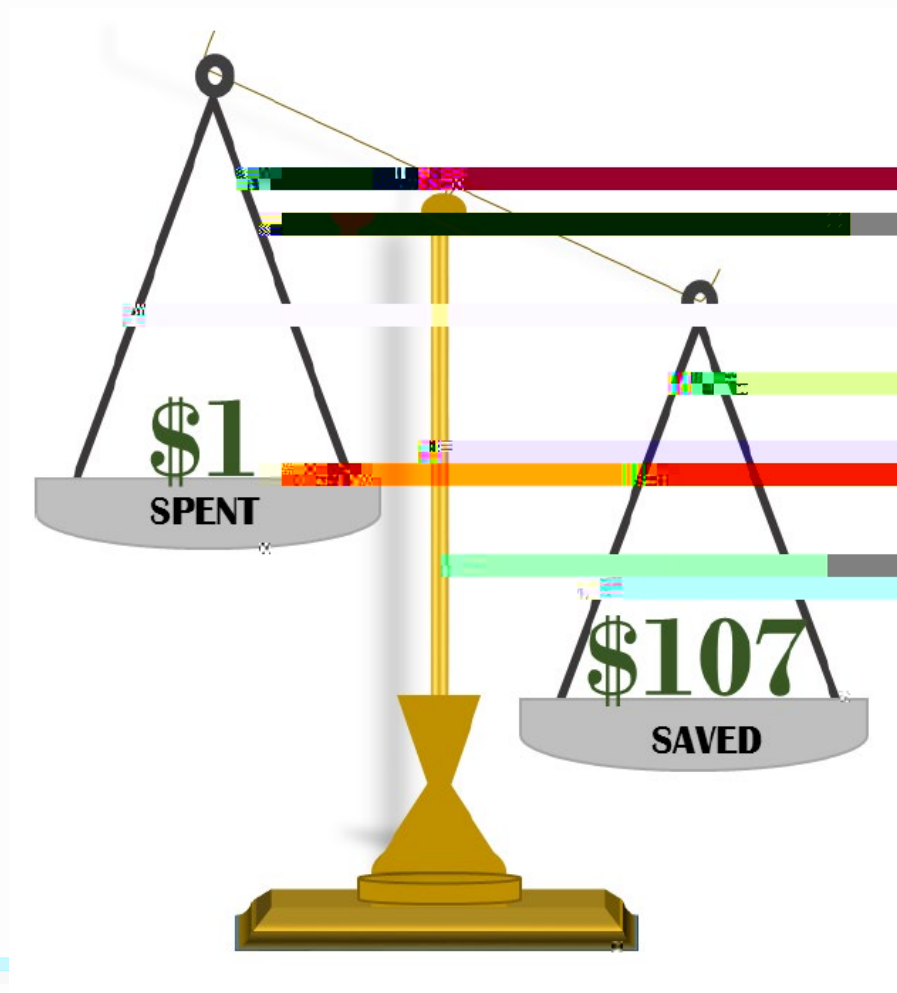


At blood lead levels < 45 ug/dL, there is no treatment is to reduce exposure, so medical providers must collaborate with and rely heavily on public health interventions.

As of October 1, 2019, Local Health Departments in New York are required to provide care coordination and environmental management

Prevention is Key
But is Both Costly and Cost - Effective

Potential Savings of Getting Rid of Lead



Addressing Lead Means Overcoming the Silo Effect

Since lead poisoning is a problem that crosses disciplines affecting health, education, the environment, housing and the criminal justice system, it is not someone else's problem; it's everyone's problem.

Importance of Collaboration

Assemble key players and re-establish a functioning lead coalition:

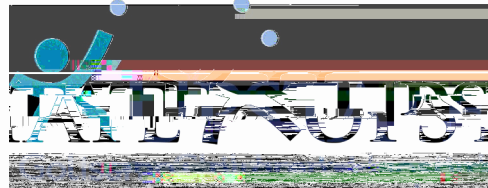
- City and/or County Government
 - Health Department
 - Housing Department
 - Water Department
 - Code Enforcement
 - City Council members
- Educators
 - School Districts
 - Preschool and Head Start Programs



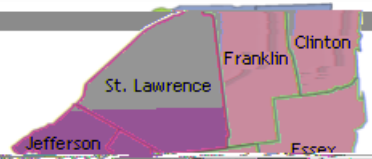
Key Factors







in Syracuse



in Buffalo



in the Bronx



Western New York Lead Poisoning Resource Center's Rochester Office

¾ Serving nine counties in the
Finger Lakes region

¾ Funded by NYSDOH since 1994

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Questions?

Our Common Goal

