Lead Screening and Investigations

Clark County Board of Health

September 28th, 2016

Clark County Public Health – Environmental Public Health

Four Main Topics of Lead Discussion

1. Health Effects of Pb and Sources of Exposure
2. Elevated Blood Lead Level (EBLL) Reporting
3. EBLL Environmental Investigations
4. Future Actions

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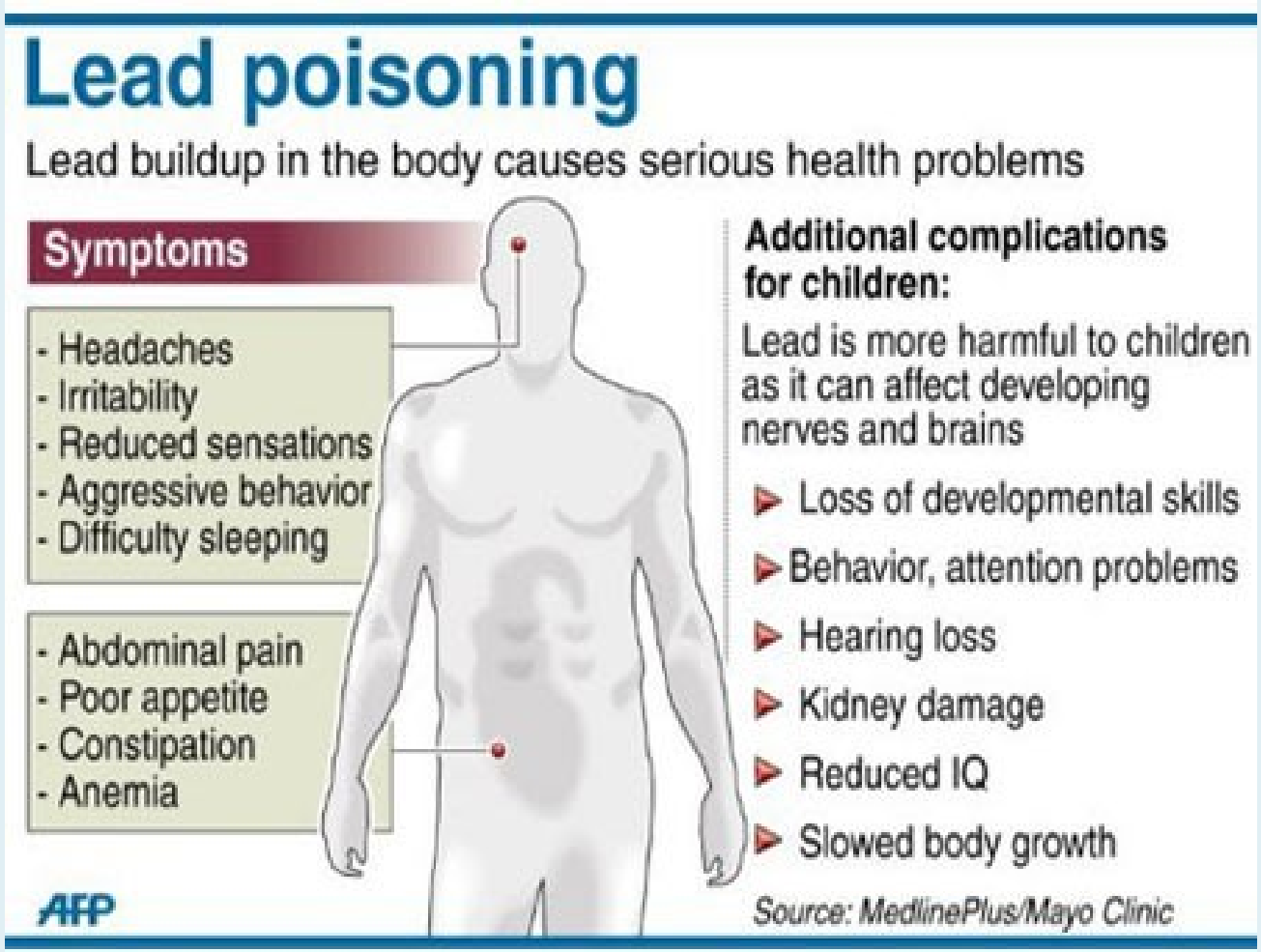
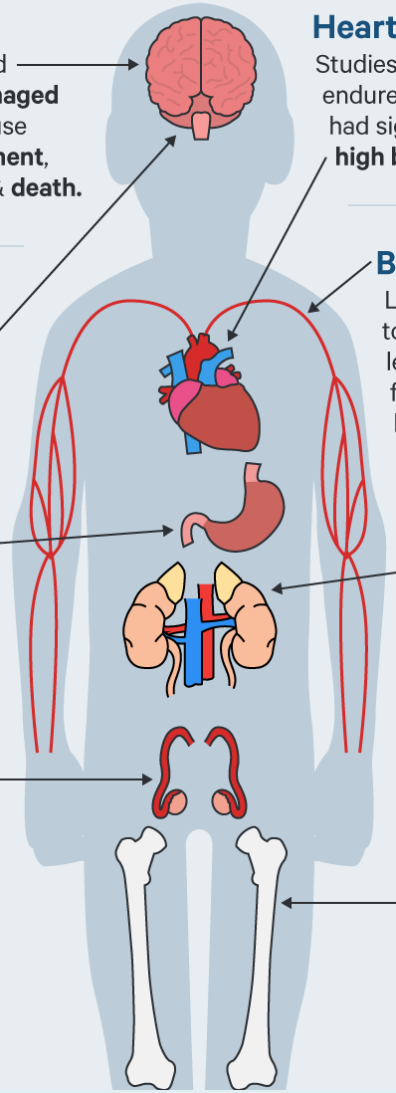
Health Effects of Lead Exposure



How **lead** effects childrens' health



Brain

Any exposure is linked to lowered **IQ**, **ADHD**, **hearing loss**, and **damaged nerves**. Acute exposures can cause convulsions, **loss of body movement**, **coma**, **stupor**, **hyperirritability,** & **death.**

Hormones

Lead disrupts levels of vitamin D, which can **impair cell growth**, maturation, and tooth and bone development.

Stomach

Severe lead exposure can create intense **abdominal pain** and **cramping**.

Reproductive System

A moderate exposure can not only **lower sperm count**, but also **damage them**. Chronic exposures can diminish the concentration, total count, and motility of sperm, though it's unclear how long these effects last after the exposure ends.

Heart

Studies suggest that adults who endured lead poisoning as children had significantly higher risks of **high blood pressure** 50 years later.

Blood

Lead inhibits the body's ability to make hemoglobin, which can lead to anemia. This reduces oxygen flow to organs, causing **fatigue**, **lightheadedness**, **rapid heartbeat**, **dizziness,** & **shortness of breath.**

Kidneys

Chronic exposures can cause chronic inflammation, which can lead to **kidney failure**, **bloody urine**, **fever**, **nausea**, **vomiting**, **drowsiness**, **coma**, **weight gain**, **confusion**, **rash**, and **urinary changes**.

Bones

Lead may impair development and the health of bones, which can **slow growth in children**.

SOURCES: Centers for Disease Control; World Health Organization

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Lead Exposure and Educational Proficiency

Blood Lead Levels	Educational Impact
≤ 3 µg/dL	Lower end of grade test scores
4 µg/dL	Increased likelihood of learning disability in elementary school
≥ 5 µg/dL	30% more likely to fail third grade reading and math tests
≥ 10 µg/dL	Significantly lower academic performance test scores in 4th grade
≥ 25 µg/dL	$0.5 million in annual special education and juvenile justice costs

Source: *Educational Services for Children Affected by Lead Expert Panel. Educational interventions for children affected by lead. Atlanta: U.S. Department of Health and Human Services; 2015.*

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How are People Exposed to Lead?

- **Drinking Water**
- **<u>Lead dust from deteriorated paint in pre- 1978 homes</u>**
  (largest source of exposure for children)
- **Contaminated soil**
- **Occupation**
- **Hobbies/Lead-containing materials**

Drinking Water – Lead Testing in Local Schools

- CCPH is providing school district staff with technical resources for sampling and interpreting results
- Assisting in identifying potential lead sources;
- Assisting and guiding on mitigation measures;
- Working with WA Department of Health to address the Governor's Directive;
- Looking to future School Rule implementation (2018).

Public Health's Responsibility

WAC 246-101-505 states, "Local health officers or the local health department shall review and determine appropriate action for each reported case or suspected case of a **notifiable condition**."

An individual's blood lead level becomes a **notifiable condition** when ≥ 5 µg/dL

= Elevated Blood Lead Level (EBLL)

EBLL Notifications

- DOH receives all lead screening/test results (labs/clinics)
- Result ≥5 µg/dL are notifiable condition & referred to LHJ/CCPH
- CCPH contacts HCP to confirm case information and notifiable condition/test result(s)
- CCPH works with HCP to implement case management protocols based on CDC recommendations
- CCPH contacts case parent/guardian to identify lead exposure
- CCPH offers EBLL Environmental Investigation

EBLL Environmental Investigations

- Compile all data collected from HCP and case parent/guardian
- Research site data where case/child frequently spends time (age of home/building, historical property use, adjacent properties, etc.)
- Visit site location(s) to identify potential sources of lead exposure
- Since 2011, investigations are funded by the Site Hazard Assessment (SHA) grant with Department of Ecology.

Field Screening & Testing Methods

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Field Screening & Testing Methods

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2010 Target Shooting Club Range Investigation

- Initially received 3 EBLL notifications linked to club
- 42 hobby shooters tested for Pb (32 children & 10 adults)
- Investigation findings = inadequate air flow inside facility
- Result = club upgraded ventilation system for a safer recreational environment

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Recreational Lead Hazards

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Lead Hazards of Household Items

Lead Hazards of Household Items

Most Common Lead Hazards in Household

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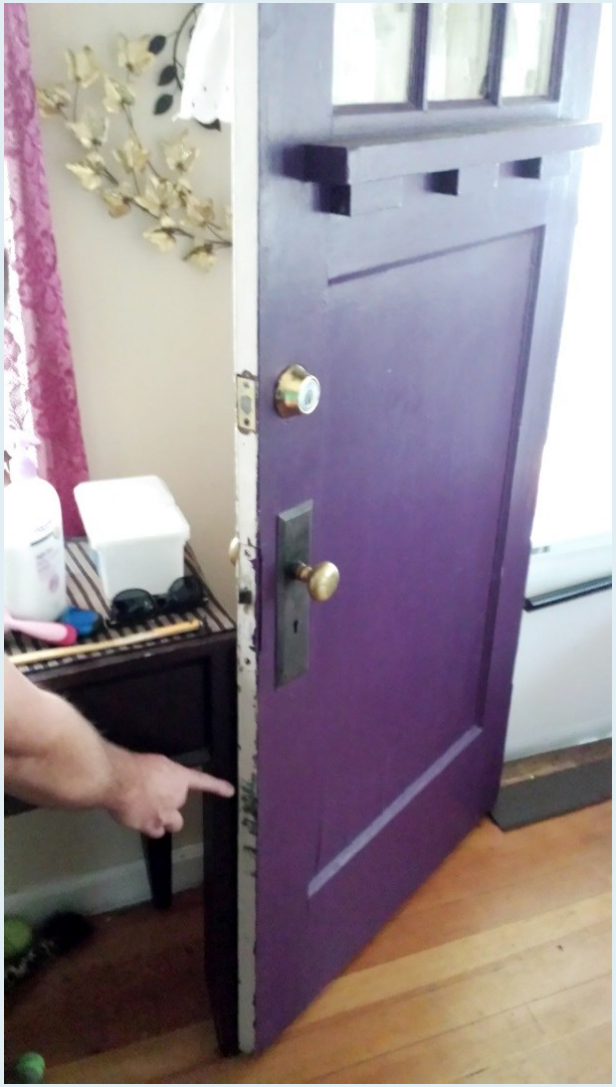

Estimated # of Housing Units with Lead Hazards by Housing Age in WA State

Age of Housing	Lead-Based Paint	Lead Paint Hazards	# Housing Units with Lead-Based Paint in WA State	# Housing Units with Lead Paint Hazards in WA State
All Housing	40%	25%	2,451,075	472,035
Pre-1940	87%	68%	307,078	208,813
1940-1959	69%	43%	414,555	178,259
1960-1977	24%	8%	661,598	52,928

Source: *Washington State Department of Ecology Lead Chemical Action Plan, 2009.*

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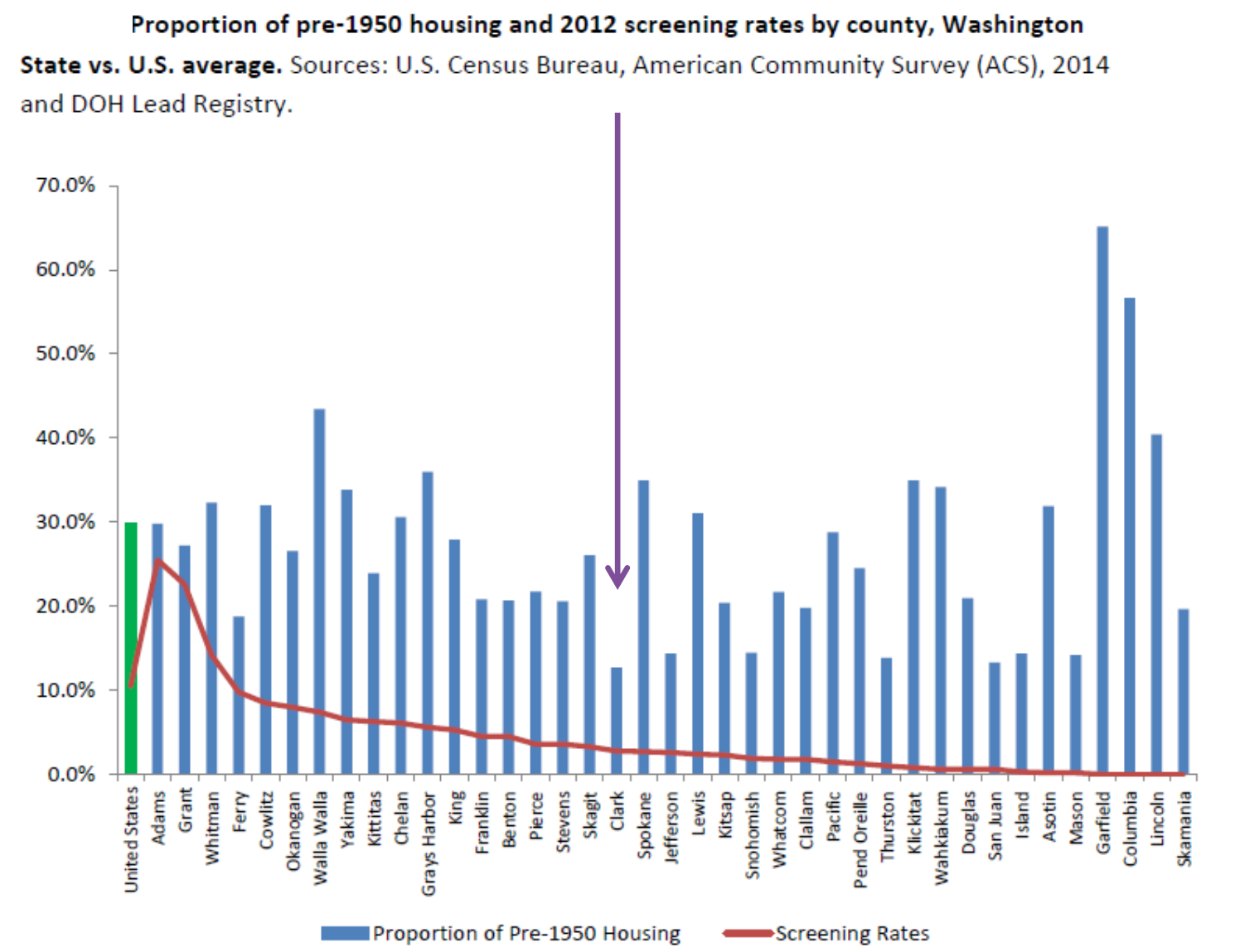
WA State Pre-1950 Homes & Blood Screening



Clark County Lead Screening & EBLL Notifications

Estimate # of children 0-6 yrs in Clark County	35,894
# of children 0-6 yrs lead screened in Clark County (6/30/16)	530
Estimate # of children 0-6 yrs to be lead screened in 2016	1,060 (< 3%)
# of EBLL notifications reported to CCPH (9/15/16)	15

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Pb Screening in WA State for Children <6 years old

Year	Estimated % of WA children screened	Estimated % of U.S. children screened	Proportion of WA tests ≥10 µg/dL	Proportion of U.S. tests ≥10 µg/dL	Proportion of WA tests ≥5 µg/dL	Proportion of U.S. tests ≥5 µg/dL
2007	1.3%	15.9%	0.48%	0.94%	*	*
2008	2.4%	17.1%	0.31%	0.72%	*	*
2009	3.0%	17.2%	0.28%	0.61%	*	*
2010	3.5%	16.7%	0.23%	0.60%	3.02%	6.64%
2011	3.1%	15.2%	0.15%	0.56%	2.40%	5.81%
2012	3.4%	10.5%	0.10%	0.62%	2.60%	5.42%

*Prior to 2010 tests ≤10.0 µg/dL were not considered elevated

Source: *CDC National Lead Poisoning Surveillance Data (1997-2013).*

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Future Actions by CCPH

1. Work with Health Care Providers – reporting and follow-up with patients
2. Increase County-wide awareness on Pb hazards
3. Expand outreach to identify resources County residents can use to address lead-based paint hazards.
4. Work with Ecology to ensure future support of EBLL Investigations
5. Collaborate with Community Partners (example – Community Services Housing Rehabilitation)
6. Seek out Grants

Questions and Contacts?

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