

CLPPP NOTES for BLL Testing

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Lead Program Team



Childhood Lead Poisoning Prevention Program
Blood Lead Levels

Lead Poisoning:

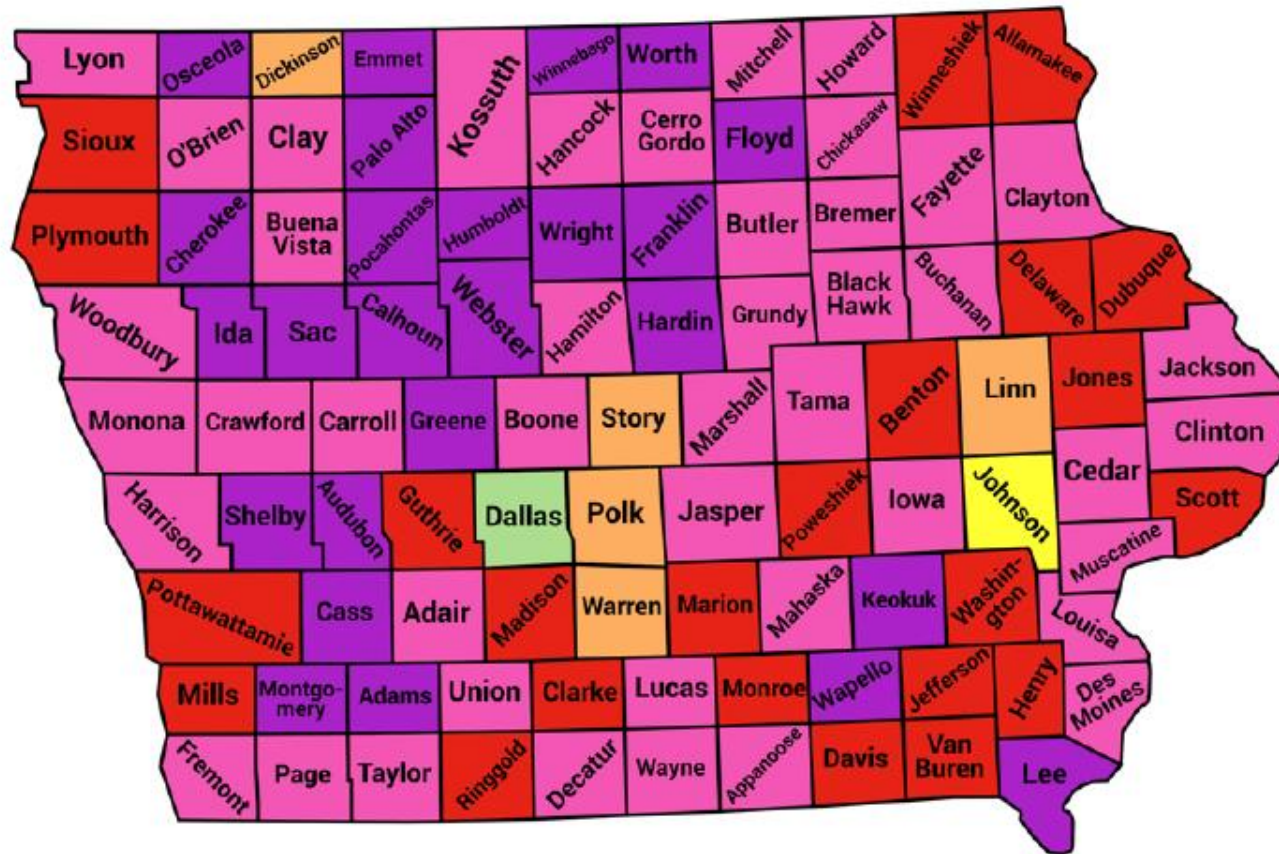
**If you don't test,
you don't diagnose.**

**If you don't diagnose,
you can't intervene.**

When should children be tested?

- Requirements - Medicaid, EPSDT
 - Minimum: test at 1 & 2
 - Evaluate need for additional testing
- Recommendations – AAP, Bright Futures
 - Minimum: test at 1 & 2
 - Evaluate need for additional testing
- Iowa Mandatory Testing Rule
 - Children must have at least one blood lead test before starting kindergarten
 - No age when test needs to be done specified in IAC

% housing built in 1979 or earlier

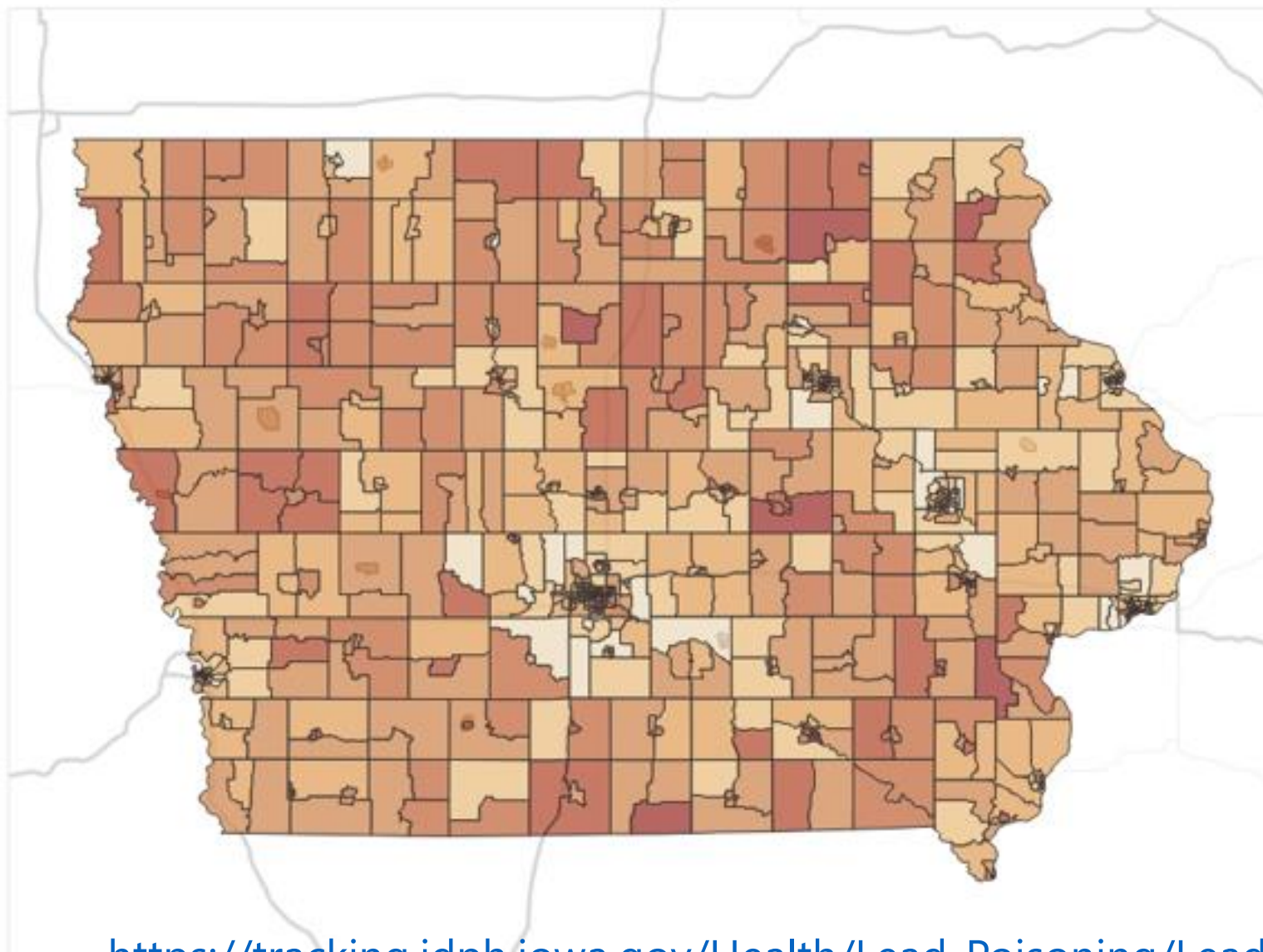


Created with mapchart.net ©

The biggest risk of lead exposure for Iowa children is lead-contaminated dust and paint commonly found in pre-1978 housing.

Iowa: percentage of housing built in 1979 or earlier by county

Lead Risk Model by Census Tract

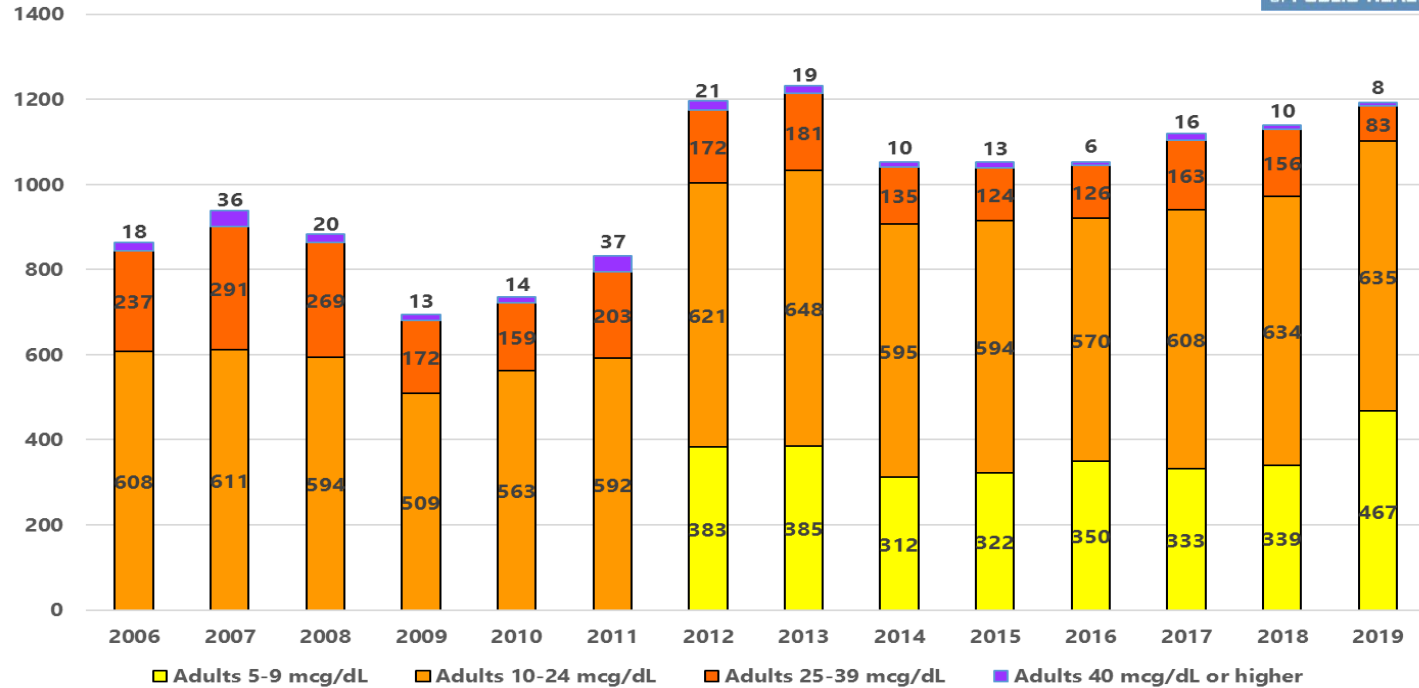


**Iowa
Public
Health
Tracking**

**Lead Risk
Model**

<https://tracking.idph.iowa.gov/Health/Lead-Poisoning/Lead-Exposure-Risk-Model>

Iowa Department of Public Health ABLES Surveillance
 Annual Number of Iowa Adults Tested
 by Highest Blood Lead Level in Calendar Year, 2006-2019
 Number of adults with results <5 mcg/dL not shown



Many Iowa adults are exposed to lead at work and during hobbies.

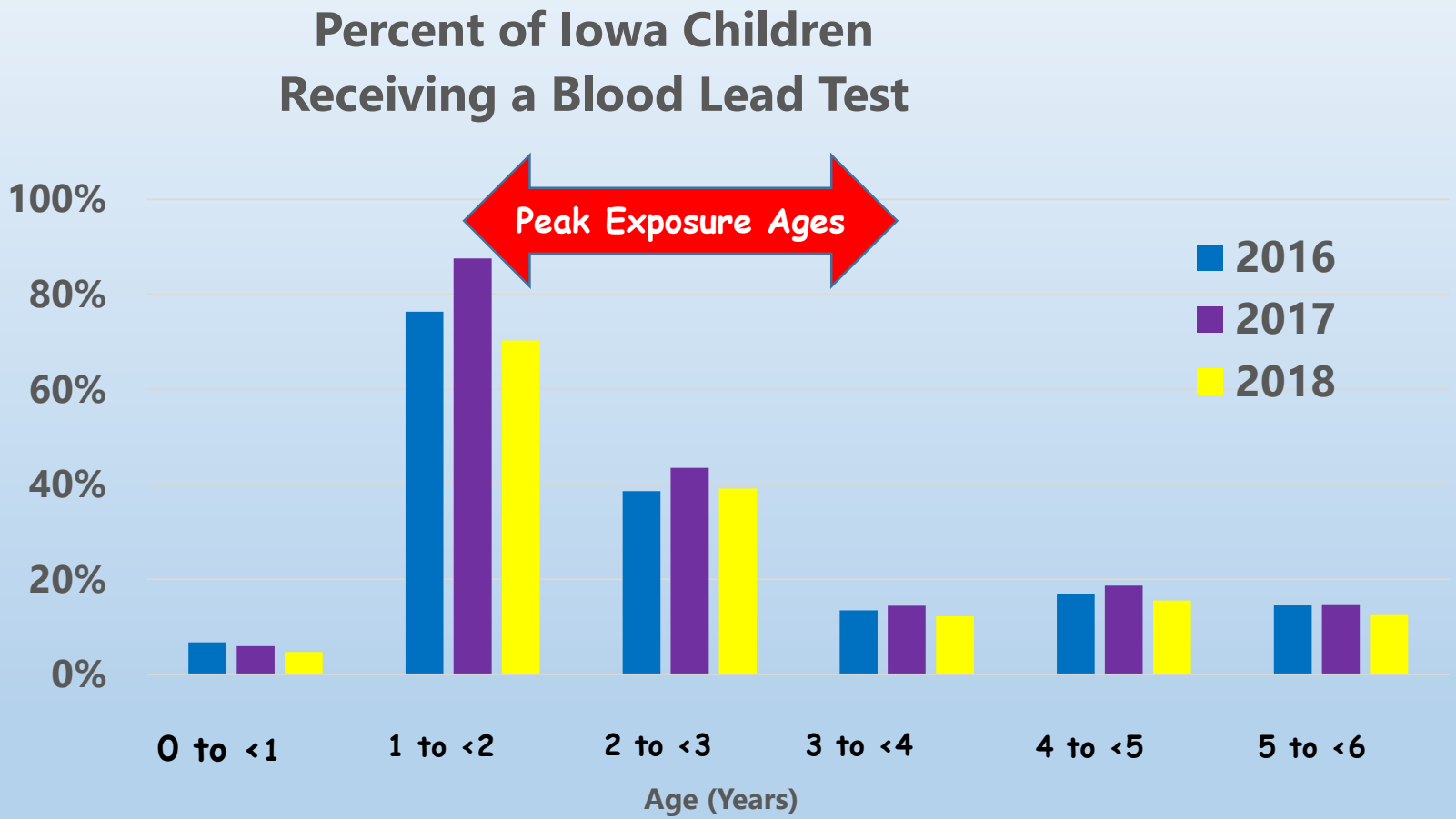
Take-home lead exposure happens when adults transfer lead dust home from the job on their skin, hair, clothing, shoes or tools, contaminating their vehicles and homes or exposing children through direct contact.

Secondary Lead Exposure Risks for Workers' Families



Children change. So does their risk of lead exposure!

Testing only at 12 months of age is not enough.



AAP: "Blood lead concentrations of children who live in lead contaminated environments typically increase rapidly between 6 and 12 months of age, **peak between 18 and 36 months of age**, and then gradually decrease."

IDPH Recommends Blood Lead Testing for Children 12, 24 and 36 Months of Age:

- Do a blood lead test every year, especially in the first three years of life
- Assess a child's need for a test at every visit, not just annual well child checks – also, are they overdue for a test or have a prior elevated test?
- Assume that if you don't have a blood lead test result in the child's chart for the past year, the child should be tested at the visit
- If possible, collect the blood specimen in your office rather than referring the family to an off-site location
- Set up reminders in the child's medical chart or electronic medical record

<https://idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention/Providers-Labs-and-Schools/Childhood-Blood-Lead-Testing>

Consider Blood Lead Testing for Children 36 to 72 Months of Age if the Child...

- Had a prior elevated blood lead level
- Has a sibling or playmate with an elevated BLL
- Lives or spends time in older rental properties or moves often
- Lives in a house with recent or ongoing renovation, repair or painting
- Qualifies as low income or is on Medicaid
- Recently entered the United States from another country
- Has a special needs diagnosis linked to increased or prolonged mouthing
- Has parents/guardians who are exposed to lead at work or as a hobby
- Has no record of a prior blood lead test in the chart/medical record

<https://idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention/Providers-Labs-and-Schools/Childhood-Blood-Lead-Testing>



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

MISSION UNLEADED







How to test children for lead with maximum accuracy.

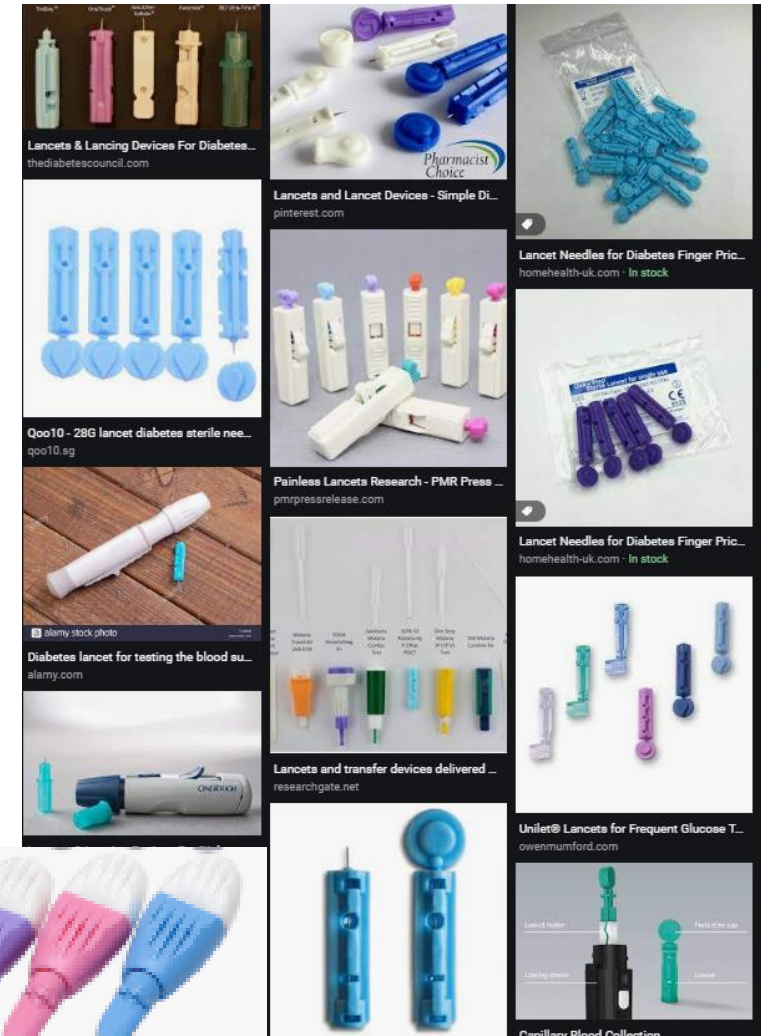
2018 CDC 18 min YouTube Video

[Mission Unleaded: How to test children for lead with maximum accuracy](https://www.youtube.com/watch?v=g2p2qREch9g)

<https://www.youtube.com/watch?v=g2p2qREch9g>

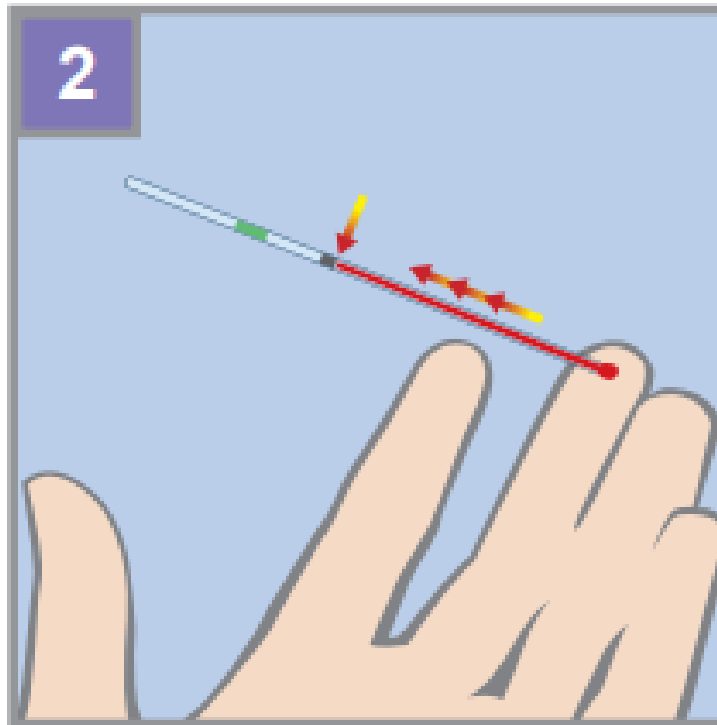
Use a lancet that allows for easy collection of the amount of blood needed

Colour	Code #	Type	Depth	Blood Flow (approx)
	SLN100	Surgi Lance Needle	1.0 mm	5-10µl
	SLN200	Surgi Lance Needle	1.8 mm	10-20µl
	SLN240	Surgi Lance Needle	2.2 mm	20-40µl
	SLN300	Surgi Lance Needle	2.8 mm	40-60µl
	SLB200	Surgi Lance Blade	1.8 mm	75-100µl
	SLB250	Surgi Lance Blade	2.3 mm	150-200µl

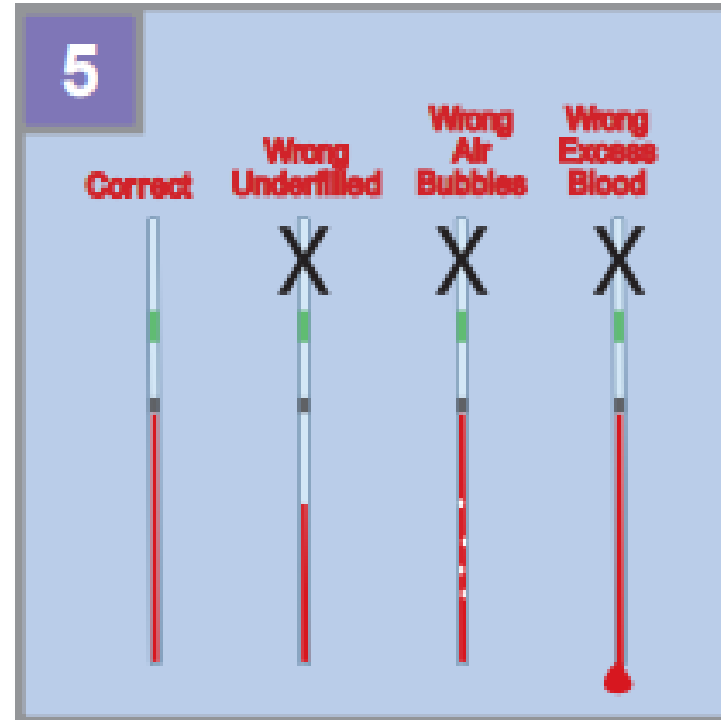


LeadCare II sample size (minimum): 50 µL (microliters)
HemoCue hemoglobin sample size: 10 µL
Glucometer sample size: 0.3 – 3.0 µL

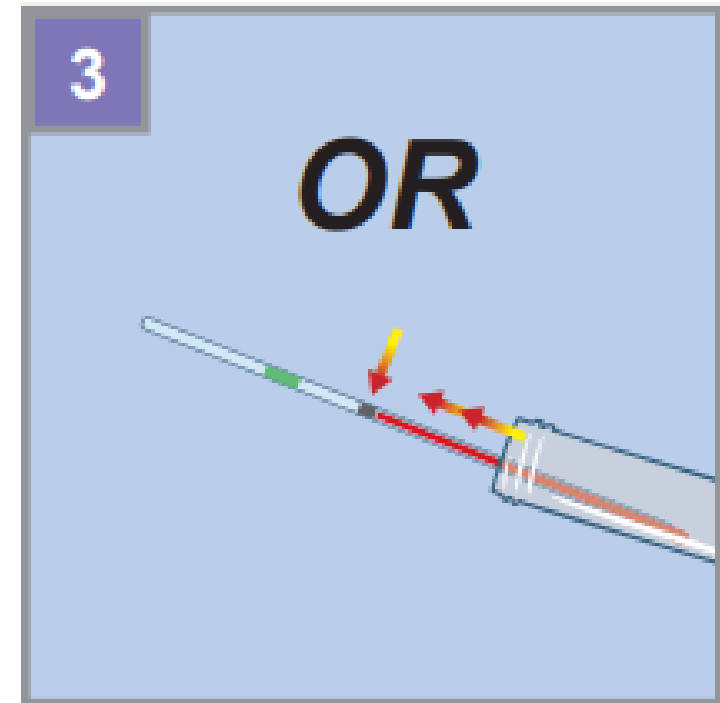
Point of Care Testing using capillary collection tube provided with LeadCare II



2
Holding the capillary tube almost horizontally with the green band on top, fill the capillary to the 50 μ L black line.



5
Inspect the capillary tube for proper filling. Make sure there are no gaps, air bubbles, or any excess blood on the outside of the capillary.



3
OR
If using blood from a microcollection tube, make sure the blood is well mixed by inverting the tube 8 to 10 times before sampling.

Hold the capillary tube almost horizontally with the green band on top, fill the tube to the 50 μ L black line.

Do NOT use venous blood samples.

Options for collecting specimens to send out to another test site – check with the testing lab

BD – very common but utilizes a scoop



I prefer microtainers with capillary tubes such as the Sarstedt or Ram brands:

- Blood samples are drawn into the microtube through capillary action, reducing hemolysis, tissue contamination, and re-draws; No "scooping" or "milking" required
- Capillary straw and microtube are coated with anticoagulant to prevent clotting



FYI: This microtainer allows direct collection as well as the attachment of a luer needle or butterfly hub for venous draws

Interpreting Patient Test Results - LeadCare II instructions

The analyzer's display window shows the blood lead result. The result is in micrograms (μg) of lead per deciliter (dL) of whole blood. No calculation is needed.

Results are displayed to one decimal place. The reportable range of the test is 3.3 to 65 $\mu\text{g}/\text{dL}$.

“Low” in the display window indicates a blood lead test result less than 3.3 $\mu\text{g}/\text{dL}$. When this occurs, report the blood lead result as less than (<) 3.3 $\mu\text{g}/\text{dL}$.

“High” in the display windows indicates a blood lead test result greater than 65 $\mu\text{g}/\text{dL}$. When this occurs, report the blood lead result as greater than (>) 65 $\mu\text{g}/\text{dL}$. **“High” results on LeadCare II should be followed up immediately as an emergency laboratory test.**

https://www.magellandx.com/uploads/2017/10/70-6552_LeadCare-II-Quick-Start-Guide.pdf

- If test is >65 and patient still present, repeat capillary test immediately on new capillary specimen
- If patient is not present or the repeat test is still >65, a venous blood lead test needs to be drawn as soon as possible (within 24 hours) and tested by a CLIA certified lab using instrumentation other than a Magellan LeadCare II
- See IDPH Guidelines for Treatment and Follow Up on Childhood Blood Lead Levels at

<https://idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention/Providers-Labs-and-Schools/What-To-Do-At-Each-Level>

What does the result mean?

The current CDC
child and adult
reference level for
blood lead testing is
5 micrograms per
deciliter

5 $\mu\text{g}/\text{dL}$

*Capillary tests are considered screening tests
Venous tests are needed to confirm lead exposure*



Guidelines for Treatment and Follow Up on Childhood Blood Lead Levels

The recommended services can be provided or offered by any of the entities marked by an "X". Providers are always the first line of care for their patients and should provide initial services and information to families.

Blood Lead Levels	Services	Provider*	Case Manager**	Local Public Health	Child Health Service Agencies
For ALL blood lead levels	<1> Inform family of blood lead result and meaning	X	X		
	<2> Provide information to family regarding lead poisoning.	X	X	X	X
	<3> Educate family on importance of cleanliness (hygiene), proper nutrition and housekeeping.	X	X	X	X
	<4> Schedule follow up test	X			
<10 mcg/dL (capillary or venous)	- Continue routine blood lead testing. See Iowa Basic Lead Testing Chart.	X			
10-14 mcg/dL	- Test for iron deficiency.	X			
	- If venous, follow-up blood lead test in 12 weeks. If capillary, order venous confirmatory test.	X			
15-19 mcg/dL	- Home nursing visit.		X	X	
	- Nutrition assessment.	X	X	X	X
	- Test for iron deficiency.	X			
	- If venous, follow-up blood lead test in 12 weeks. If capillary, order venous confirmatory test.	X			
	- After two venous levels of 15-19, environmental investigation or assessment of lead hazards.		X	X	
20-44 mcg/dL	- Chelation is NOT recommended.				
	- Medical evaluation by a physician. Test for iron deficiency. Abdominal x-ray for paint chips or objects.	X			
	- Home nursing visit.		X	X	
	- Nutrition assessment.	X	X	X	X
	- If venous, follow-up blood lead test in 4-6 weeks. If capillary, order venous confirmatory test.	X			
	- Developmental assessment.				X
	- Environmental investigation or assessment to identify lead hazards.		X	X	



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20-44 mcg/dL	- Chelation is NOT recommended.				
	- Medical evaluation by a physician. Test for iron deficiency. Abdominal x-ray for paint chips or objects.	X			
	- Home nursing visit.		X	X	
	- Nutrition assessment.	X	X	X	X
	- If venous, follow-up blood lead test in 4-6 weeks. If capillary, order venous confirmatory test.	X			
	- Developmental assessment.				X
	- Environmental investigation or assessment to identify lead hazards.		X	X	
45-69 mcg/dL	If capillary, confirm immediately with venous test.	X		X	
	- Chelation (Consult with the Iowa Poison Control Center, 800-421-4692).	X			
	- Medical evaluation by a physician. Test for iron deficiency. Abdominal x-ray for paint chips or objects.	X			
	- Home nursing visit.		X	X	
	- Nutrition assessment.		X		X
	- Inpatient or outpatient chelation. Venous retest before chelation, at end of chelation, and 7 days after chelation.	X			
	- Developmental assessment.				X
- Environmental investigation and lead hazard remediation recommendations.		X	X		
≥70 mcg/dL	If capillary, confirm immediately with venous test.	X		X	
	- Medical evaluation by a physician. Test for iron deficiency. Abdominal x-ray for paint chips or objects.	X			
	- Home nursing visit.		X	X	X
	- Nutrition assessment.		X		X
	- Developmental assessment.				X
	- Environmental investigation and lead hazard remediation recommendations.		X	X	

* Provider (Physicians, nurses, clinicians)

** Case Manager (clinical or environmental)

Child Health Service Agencies include AEA, Early Access, WIC and other agencies providing services to lead poisoned children and families.

For additional guidance, contact the Iowa Childhood Lead Poisoning Prevention Program at 800-972-2026.

Revised: August 2020

<https://idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention/Providers-Labs-and-Schools/What-To-Do-At-Each-Level>

In Iowa, all blood lead tests must be reported to IDPH

How to report all blood lead tests to IDPH

- **Testing onsite using Point of Care (Magellan LeadCare II™):**
 - Complimentary software available from the company for reporting
 - www.magellandx.com/leadcare-products/leadcare-ii/support/reporting-solutions/
 - Contact Janet Lemmermann prior to submitting any reports to IDPH
 - Janet.lemmermann@idph.iowa.gov or 800-972-2026
- **Established laboratories capable of using Electronic Laboratory Reporting:**
 - See the information and contacts found at <http://idph.iowa.gov/cade/idss>
 - General ELR contact: John Satre, 515-229-0417
- **Other Reporting Options: contact Janet at IDPH to discuss**

<https://idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention/Providers-Labs-and-Schools/Mandatory-Reporting>



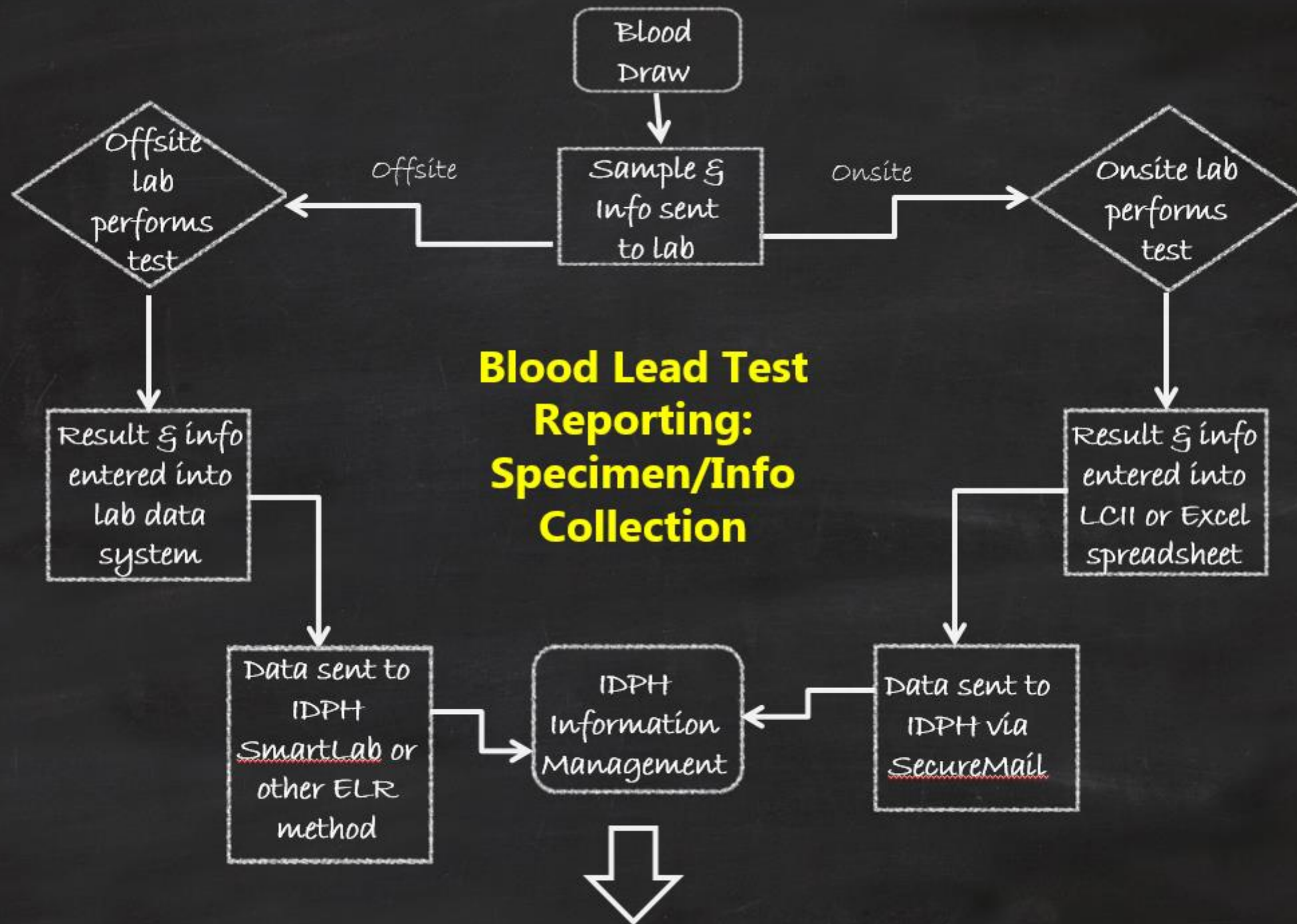
Reporting Requirements – All BLLs



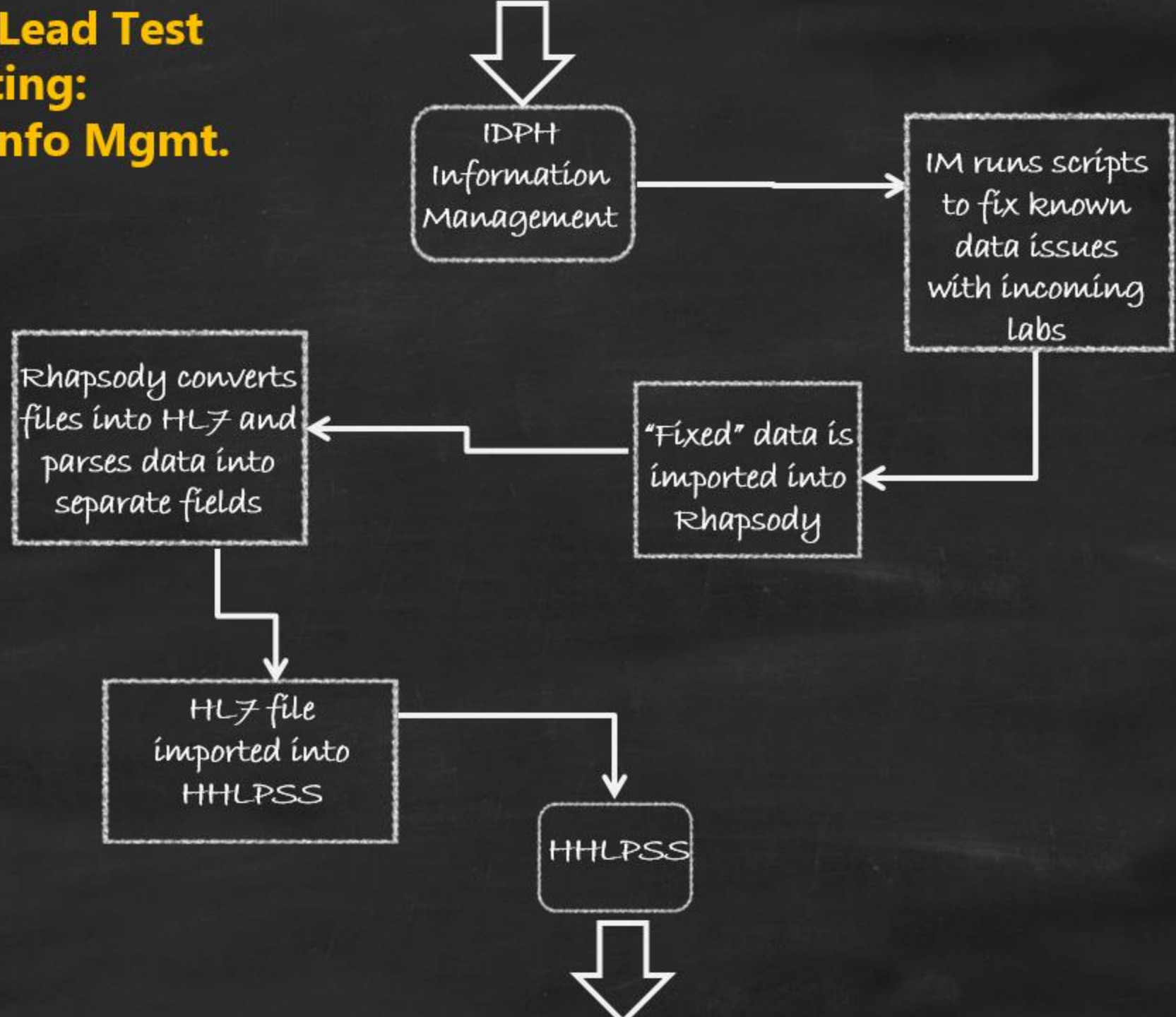
Iowa Admin Code Sec. 641.1(2) specifies the following required data elements:

- **Patient's name**
- **Patient's COMPLETE home address**
- **Patient's date of birth**
- Patient's sex
- Patient's race & ethnicity
- Patient's telephone number
- **Date of collection**
- **Sample type (Capillary or Venous)**
- **Result value**
- Provider's name, address & phone number
- Processing laboratory name & address
- If female, whether patient is pregnant
- For occupational conditions, name of employer

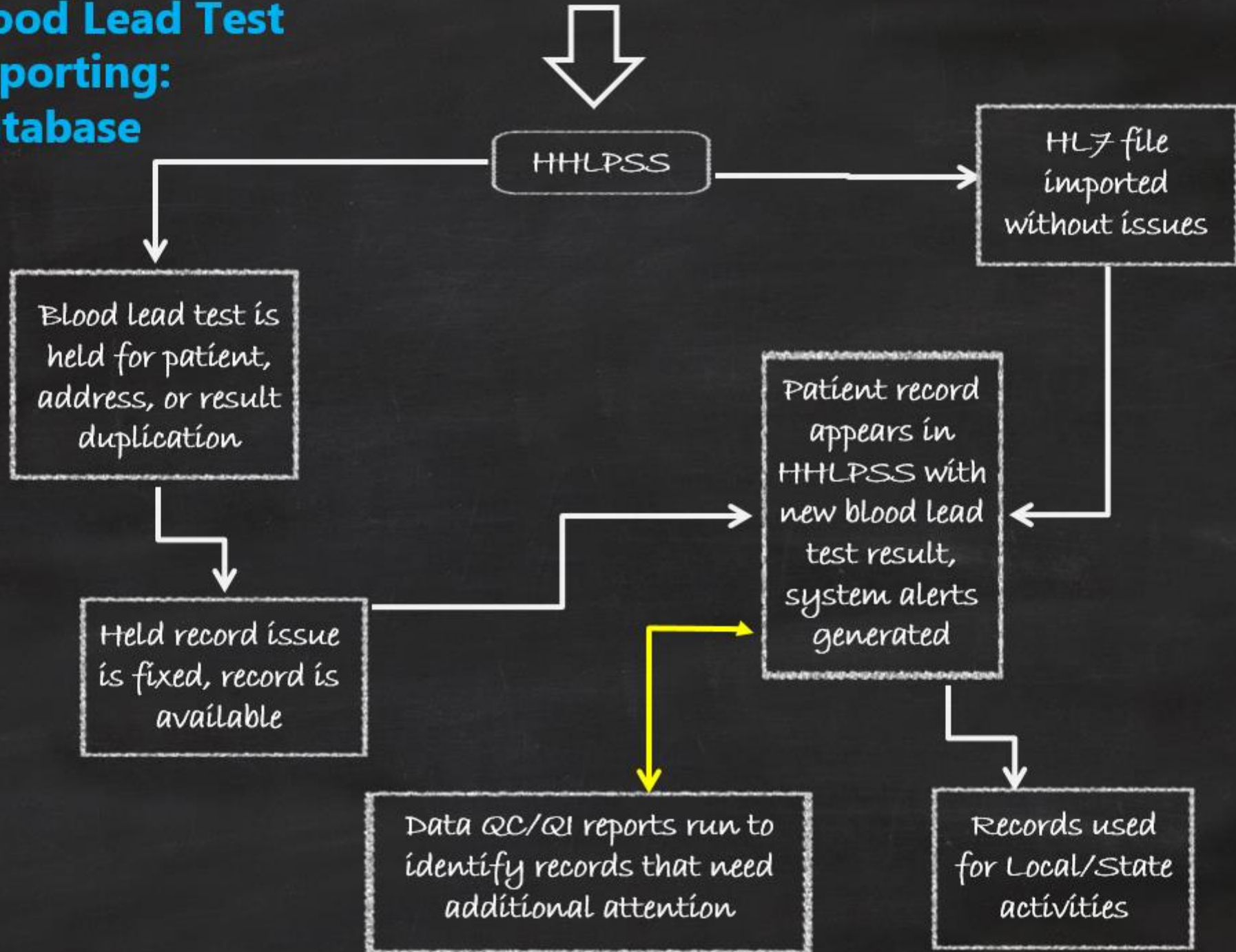
All required by Iowa Code
If **bolded info** incomplete, record imported into database but staff follow up for additional information needed



Blood Lead Test Reporting: IDPH Info Mgmt.



Blood Lead Test Reporting: Database



HHLPSS: Dedicated Blood Lead Data Base

- Developed by CDC
- Iowa HHLPSS maintained by IDPH Information Management and IDPH Lead Program
- Limited Access
 - IDPH lead program team
 - Local Public Health Contracted Childhood Lead Poisoning Prevention Programs

HHLPSS
 Healthy Homes and Lead
 Poisoning Surveillance System

SELECT A PATIENT

Home
Clinical
Environmental
Administrative
Reports

▶

Find Patient

Clinical Letters
 Patient Info
 Patient Address
 Blood Lead Tests
 Case Details
 Case Exposure
 Associated Persons
 Other Blood Tests
 Other Medical
 Chelation
 Notes
 Patient Attachments

Find Patient

HHLPSS ID Local ID Stellar/Migrated ID

Last Name First Name

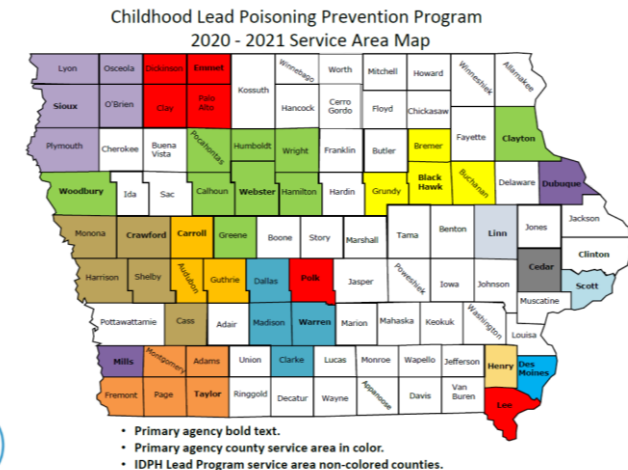
SSN Medicaid ID DOB Jurisdiction

Address For best results, enter *just* the street number or *just* the street name.

City Zip

Phone Case Status

Search



Source: Iowa Department of Public Health, Childhood Lead Poisoning Prevention Program, July 2020



Common Reporting Errors

- No address reported for patient or prior address reported
 - Missing apartment/unit numbers
- Type of blood specimen not reported (capillary or venous)
 - Use correct format for sample type; do not use "whole blood"
- DOB incorrect
 - Ex: 9/20/20 instead of 9/20/19 or DOB same date as draw date
- Reported as Mt not Mount, St not Saint
- No abbreviations: WDM, DSM, C Bluffs
- Race and ethnicity not reported
- Med provider & phone not provided
- No reporting of tests or not reported within a week
- Submitted using incorrect or altered spreadsheet (causes errors when uploaded to database)
- Name spelled wrong, nickname use
- Confuse > with < (greater than, less than)



Questions?

800-972-2026

Kevin Officer – Child Lead

kevin.officer@idph.iowa.gov or **515-242-5902**

Kathy Leinenkugel - Adult Lead

kathy.leinenkugel@idph.iowa.gov or **515-380-0331**

Janet Lemmermann – Blood Lead Data Reporting

janet.lemmermann@idph.iowa.gov – **515-242-5200**



**Search IDPH idph.iow.gov for Child Lead, Adult Lead or Environmental Public Health Tracking
or use one of these direct links:**

idph.iowa.gov/Environmental-Health-Services/Childhood-Lead-Poisoning-Prevention

idph.iowa.gov/Environmental-Health-Services/Occupational-Health-and-Safety-Surveillance/Adult-Blood-Lead-Epidemiology

idph.iowa.gov/Environmental-Health-Services/Environmental-Public-Health-Tracking

