



Ohio Healthy Homes Network
2024 Annual Conference
Breakout Session

Lead Prevention: A Clinician's Perspective

Matthew Tien, MD
The MetroHealth System
(Cleveland, Ohio)

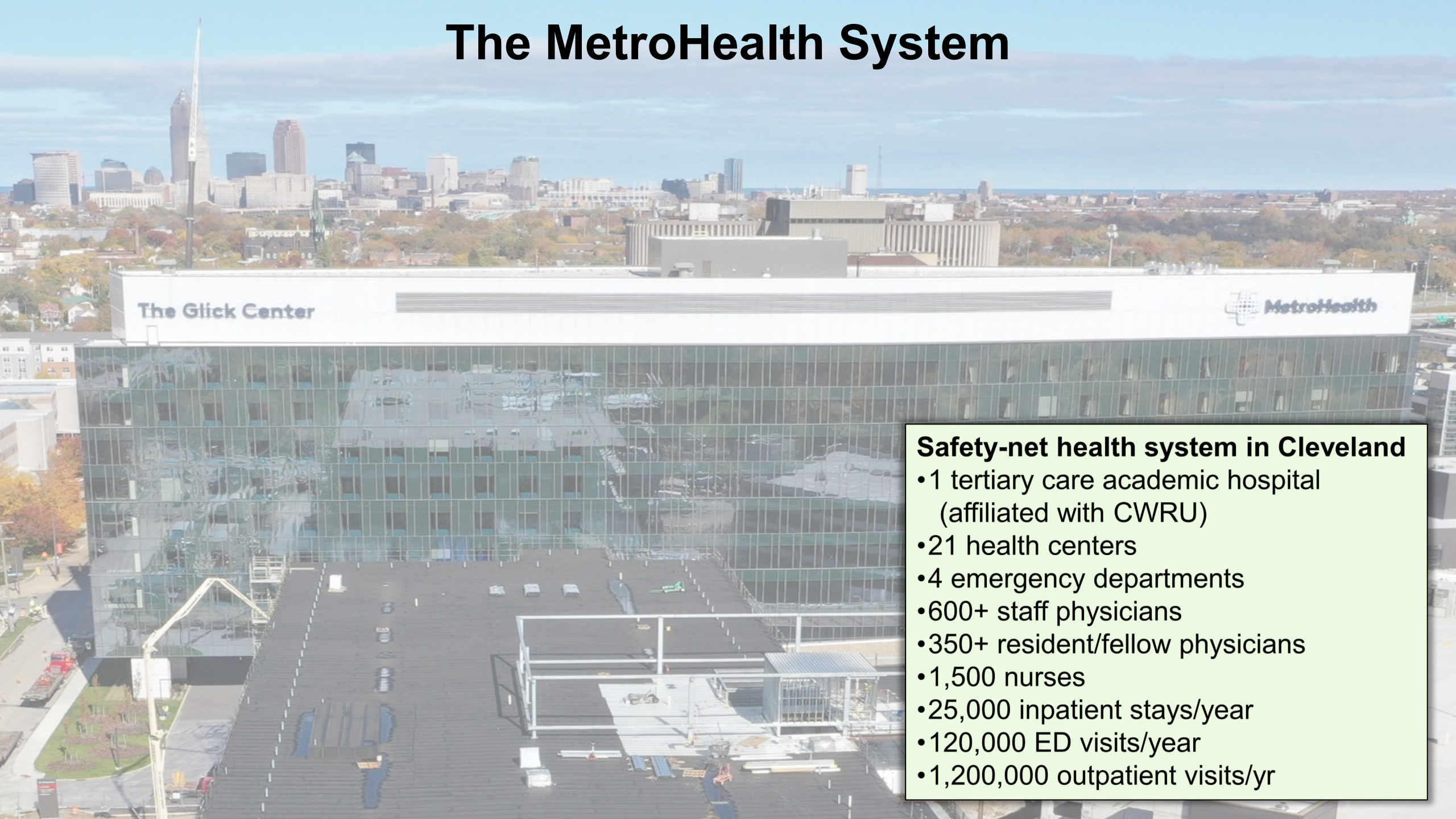
May 10, 2024



Disclosures

- I do not have any personal relevant financial or other relationships with any commercial interests.
- Sherwin-Williams provides grant funding to The MetroHealth System for portions of our pediatric lead prevention work.
- Ohio Department of Health provides grant funding to The MetroHealth System to support our OB Lead Prevention Project.

The MetroHealth System



Safety-net health system in Cleveland

- 1 tertiary care academic hospital (affiliated with CWRU)
- 21 health centers
- 4 emergency departments
- 600+ staff physicians
- 350+ resident/fellow physicians
- 1,500 nurses
- 25,000 inpatient stays/year
- 120,000 ED visits/year
- 1,200,000 outpatient visits/yr

Me (circa 2021)



The New York Times

Flint Is in the News, but Lead Poisoning Is Even Worse in Cleveland

[Link to 2016 article](#)

% of children <6 yo with blood lead level ≥ 5 $\mu\text{g}/\text{dL}$ (2014)	
Flint	6%
Cleveland	17%

Further reading: [Toxic Neglect: Curing Cleveland's legacy of lead poisoning](#) – investigative series, The Plain Dealer (2015)

Eliminating lead poisoning (a “Big Hairy Audacious Goal”)

No child with blood lead level ≥ 5 mcg/dL by 2028

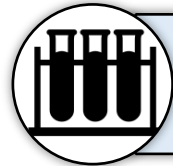
- Lead Safe Cleveland Coalition

The Action Plan for Lead-Free Children by 2030

- Ohio Lead-Free Kids Coalition



Primary
(Safe housing)



Secondary
(Lead testing)



Tertiary
(Treatment)

*The 3 levels
of prevention*

Case: 34-month-old boy “R.G.”

- Feb 19, 2021 — Seen for well child visit at 28-mo-old → **lead level 18 mcg/dL**
- March 19 — Visit to Lead Clinic - education, referral to early intervention services
- July 23 — Follow up visit to Lead Clinic → **lead level 80 mcg/dL**
- Jul 26 – Aug 5 — Admission to MetroHealth for chelation
 - **Lead level 80 → 18**
 - Home inspection → lead found in windows, doors; repairs will take months
 - Discharged to stay with cousin
- August 13 — Follow up visit to Lead Clinic → **lead level 31**
 - Patient is back at grandmother’s house!
 - Referral to Providence House
- Sep 8 — Pre-admission visit for Providence House → **lead level 67**
- Sep 9 - 15 — Re-admission to MetroHealth for chelation again
 - **Lead level 67 → 34**
 - Discharge to Providence House

Secondary prevention (lead testing): Challenges

Ohio law

Test all children at age 1 and 2 years old who are on Medicaid or live in a high-risk zip code

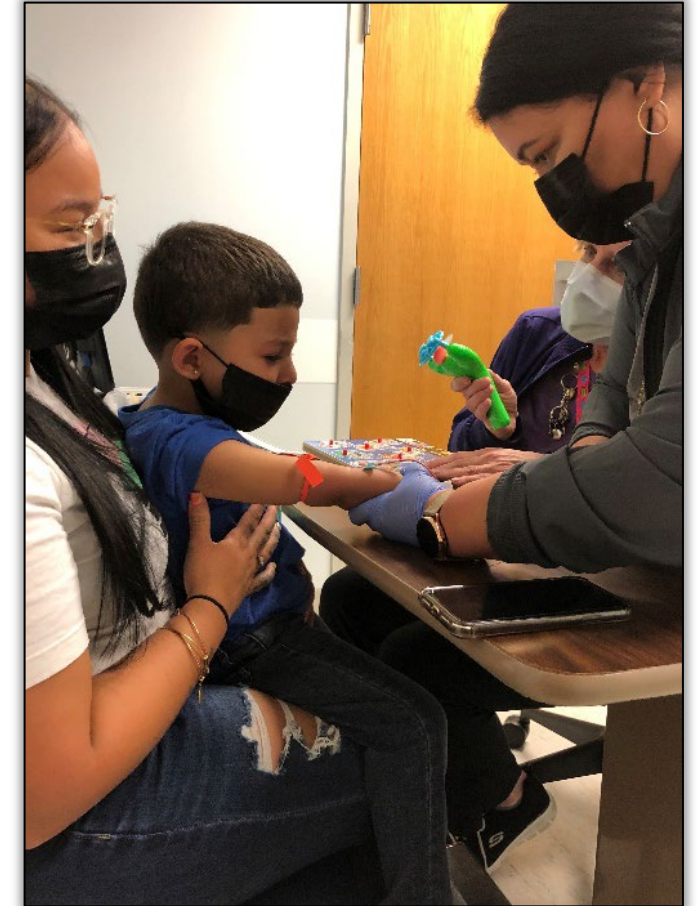
Q: Does this happen?

Patients with at least one lead test by 2nd birthday:

56% (MetroHealth data, as of May 2021)

45% (preliminary 2022 data for the other health systems in Better Health Partnership Cleveland)

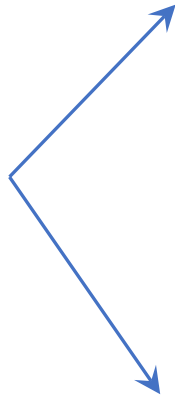
A: NO! Many children are not getting tested on time!



Secondary prevention (lead testing): Challenges

Interventions

Children missing lead tests



Came for a visit

- Not ordered
- Not drawn

- Best practice: Draw lead in clinic, don't send to lab!
- Train nursing staff on blood draws
- Automated monthly reports

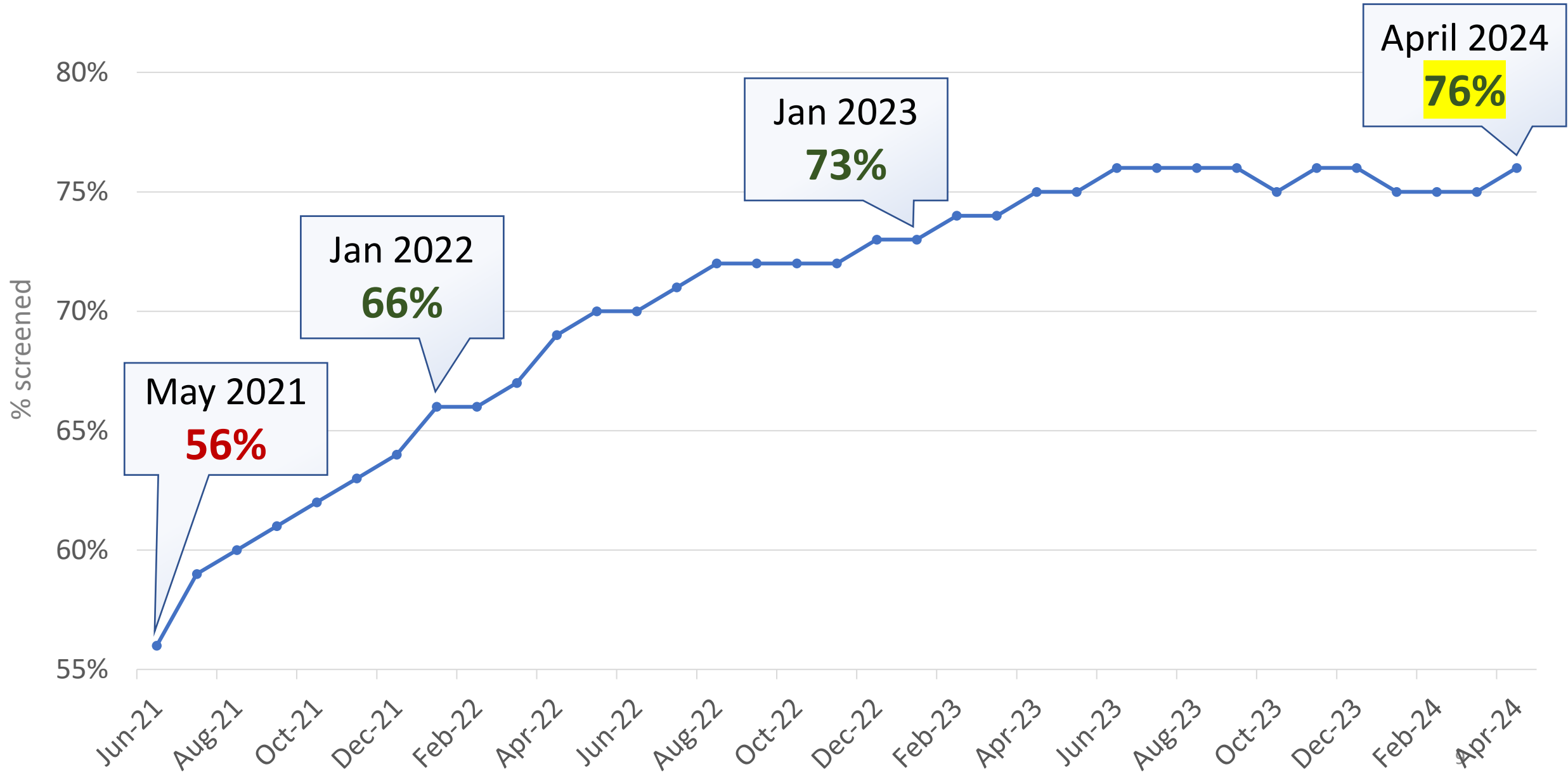


Haven't come in

- Barriers to care
- No longer sees us

- Dedicated Pediatric Lead Community Health Worker
- Automated text message reminders
- Look up outside results
- Work with insurance plans on rewards
- Do testing out in the community!

Results: We have improved lead testing rates!



What are our next steps?



Capillary filter paper
lead testing



Universal testing
at age 1 & 2 years

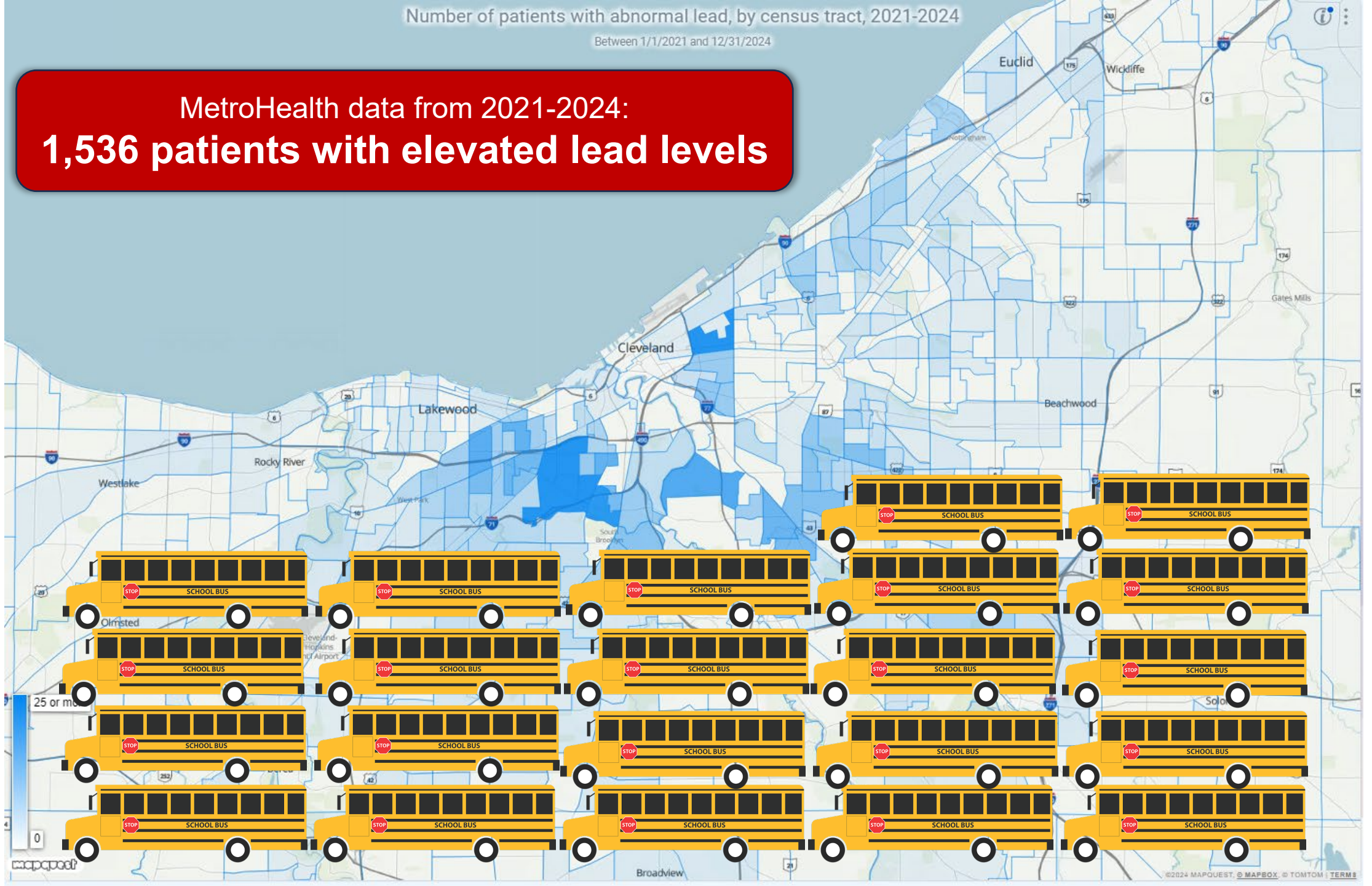
We've set ourselves our own B.H.A.G.:
By 2026, test **100%** of our patients by 2nd birthday!



Number of patients with abnormal lead, by census tract, 2021-2024

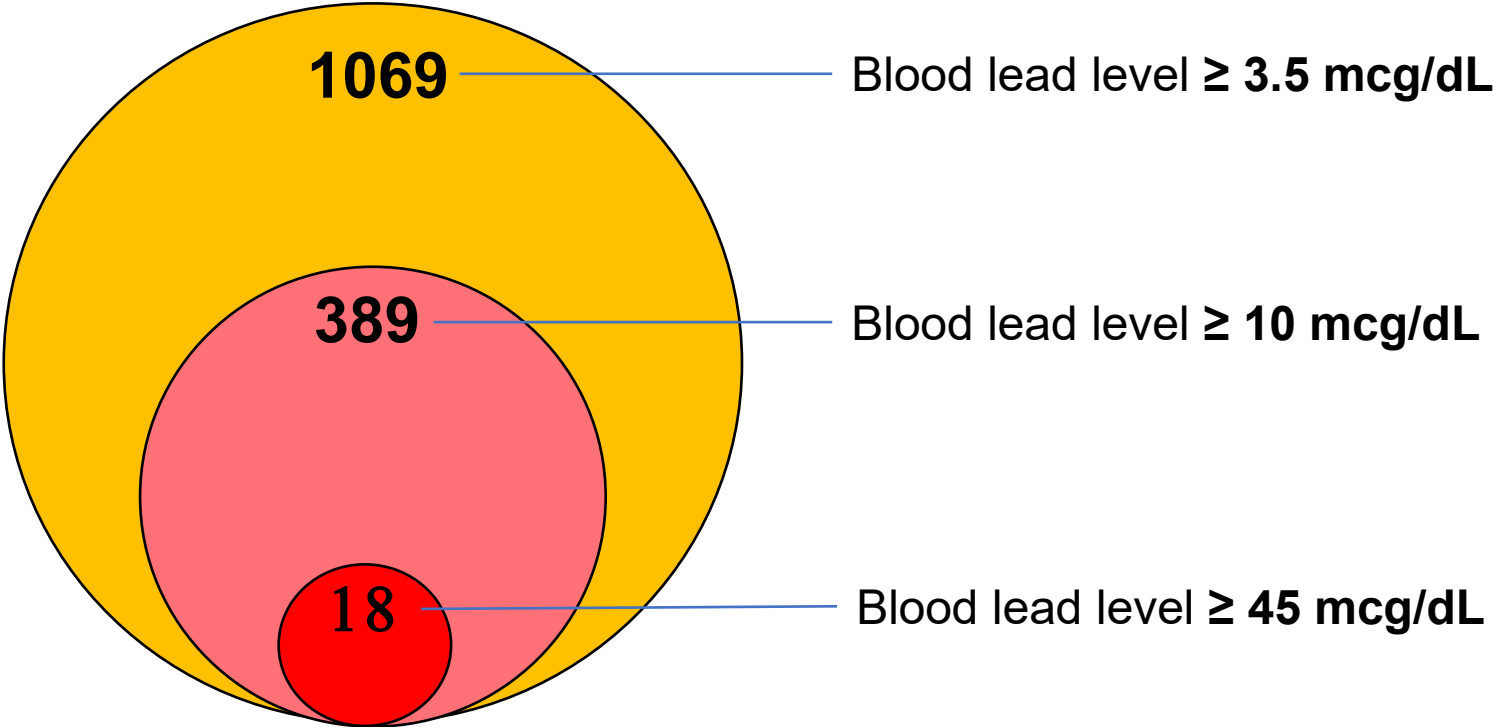
Between 1/1/2021 and 12/31/2024

MetroHealth data from 2021-2024:
1,536 patients with elevated lead levels



Tertiary prevention (treatment): Challenges

MetroHealth patients, 2021 - 2024



In 2020, Cuyahoga County had 270 patients with lead level ≥ 10 mcg/dL; Our MetroHealth records show we had 104 (39%) of those patients

Standardizing management, supporting PCP's

All elevated lead levels go to a central In Basket

Monitored by Pediatric Lead Nurse

- Enrolled into our Childhood Lead Program for tracking
- “Elevated lead level” added to Problem List
- Q3 month lead health maintenance alert
- FYI sent to PCP

Lead levels 3.5 - 9 mcg/dL

PCP's manage these patients

- SmartSet
 - Tools to notify and education family
 - Links to ODH guidelines
 - Rx for multivitamin
- Referral to Help Me Grow if <3 yo
- CHW will remind PCP if patient becomes overdue for a follow-up lead level
- If levels not decreasing, our team is available for consultation

Wraparound care for patients with higher lead levels

Lead levels ≥ 10 mcg/dL

Pediatric Lead Clinic manages these patients

- Weekly at our main campus
- But services also available at our satellites

Idalia (Lory) Rosa, LPN
Pediatric Lead Nurse



Jacquelyn Tanis, ARNP
Clinician, Ped Lead Clinic



Coordination
with health
departments

Medical-legal
partnership



Pediatric
neuropsychology
evaluation

Home visits



Case reviews for
challenging cases

Expert
consultation:
PEHSU



Long-term consequences of lead poisoning



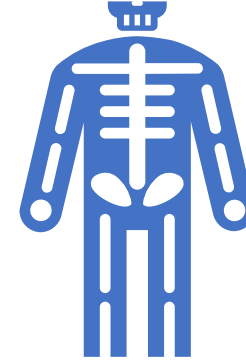
Neurological*

- Lower IQ
- Decreased school performance
- Attention and behavior problems
- Hearing and speech problems



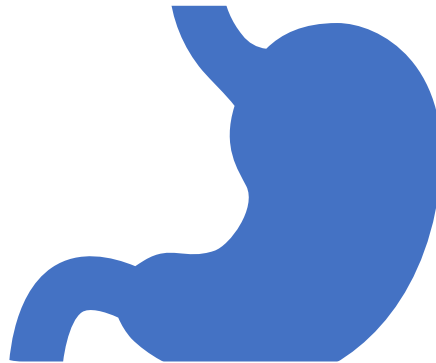
Hematologic

Microcytic anemia



Growth/reproductive

Delayed growth, puberty
Miscarriage, prematurity/LBW



GI

Abdominal pain
Constipation

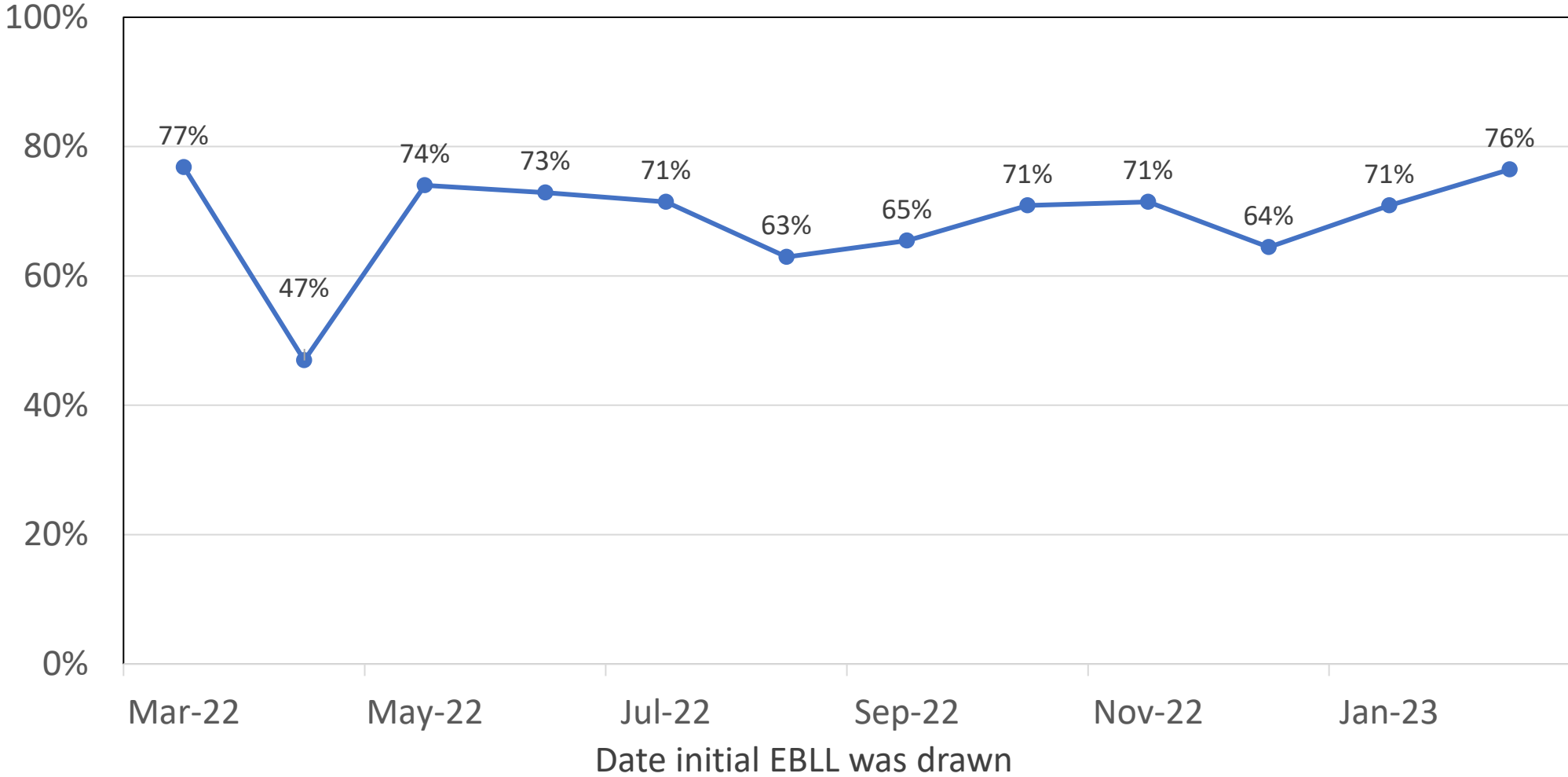


Cardiovascular/renal

Hypertension
Decreased kidney function (teens)

Quality metric for follow-up of elevated lead patients?

% of EBLL children that had a timely repeat lead level (within 6 months)



Primary prevention: A physician's role



Source: Ideastream Public Media ([article](#))

Does advice about cleaning, hand washing, taking off shoes, etc. work?

What about advice about safe housing?

How/when to give this guidance?

How can we best amplify all the hard work being done by others to provide lead-safe homes for children?



OB Lead Prevention Project

Bring your new baby into a lead safe home

- All new OB patients asked screening questions
 - If screen positive, follow up call from CHW
 - Lead home inspection offered
 - Education, home cleaning kit provided
- Lead awareness flyer sent out as part of 1st trimester educational materials
 - 1-2 minute video being produced now also



What are other ways physicians can contribute?

Physician advocacy

- Patient/family education
- Court testimony
- Hospital system
 - Quality improvement
 - Resource allocation
- Community Partnerships
- Philanthropy
- Legislative advocacy
 - Community coalitions
 - Testimony
- Media education campaign

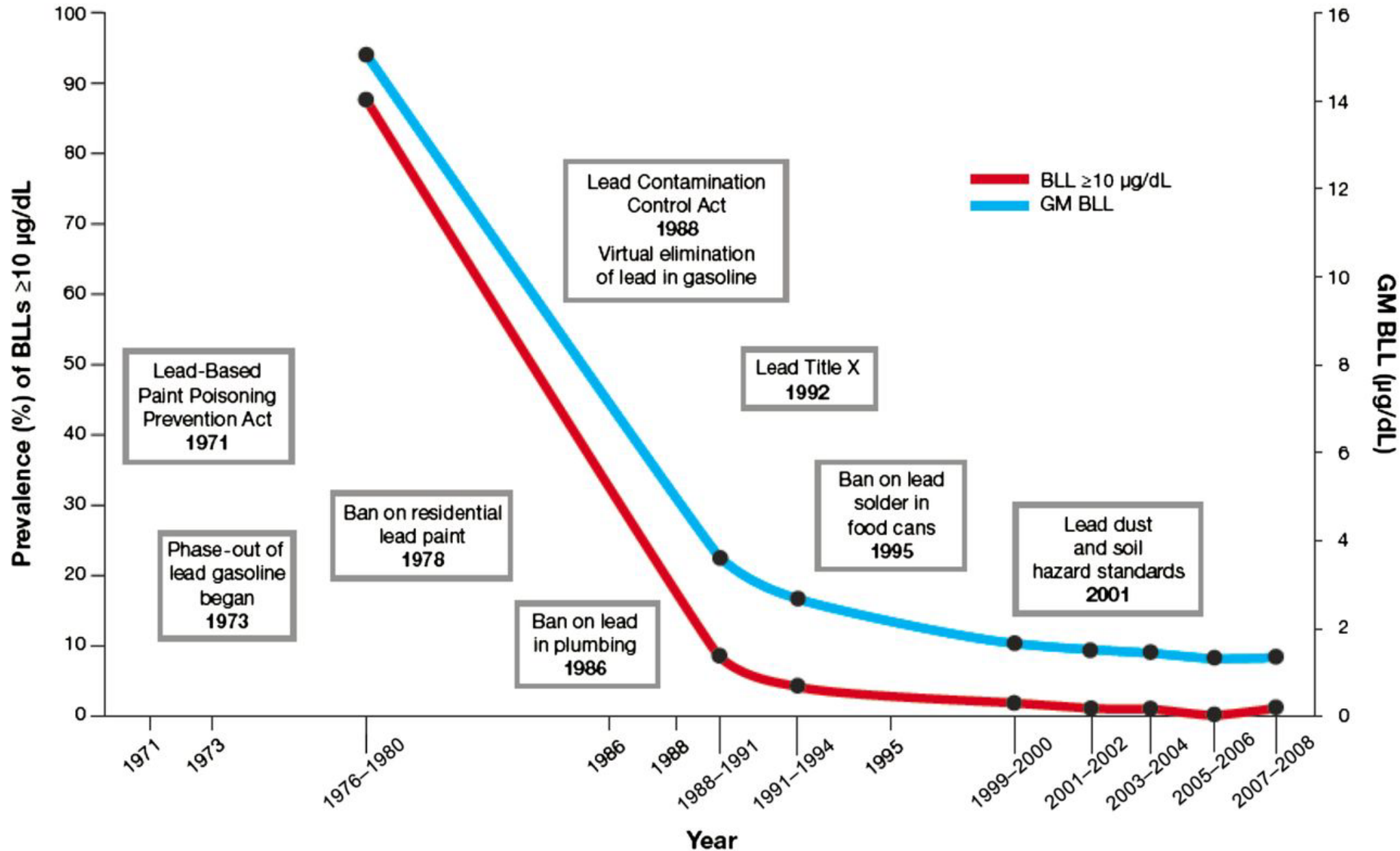
Some specific ideas...

**Northeast Ohio
Lead Testing
Quality Improvement
Collaborative**

**The Northeast Ohio
Annual Lead Summit**



Almost done...first, let's take a step back, for perspective



Source:
Council on Environmental Health, American Academy of Pediatrics, Prevention of Childhood Lead Toxicity, Pediatrics (2016)

Suggested reading:
Lead Wars: The Politics of Science and the Future of America's Children (2014), by G Markowitz and D Rosner

But pediatricians in Cleveland can't relax anytime soon...



In June 2004, their lead coalition pledged to end childhood lead poisoning by 2010.

Their lead ordinance went into effect July 1, 2006

“We have had a lead ordinance in force for 15 years here, yet we continue to have many kids who are found to have elevated blood lead levels. How can that be?”

- Dr. Stanley Schaffer, M.D.
*Director, WNY Lead Poisoning
Resource Center – Rochester Office
Golisano Children’s Hospital at URM*

Owner-occupied properties, areas outside of the city are not covered

Property passes inspection but deteriorates over time

Lead-safe, not lead-free

Takeaways

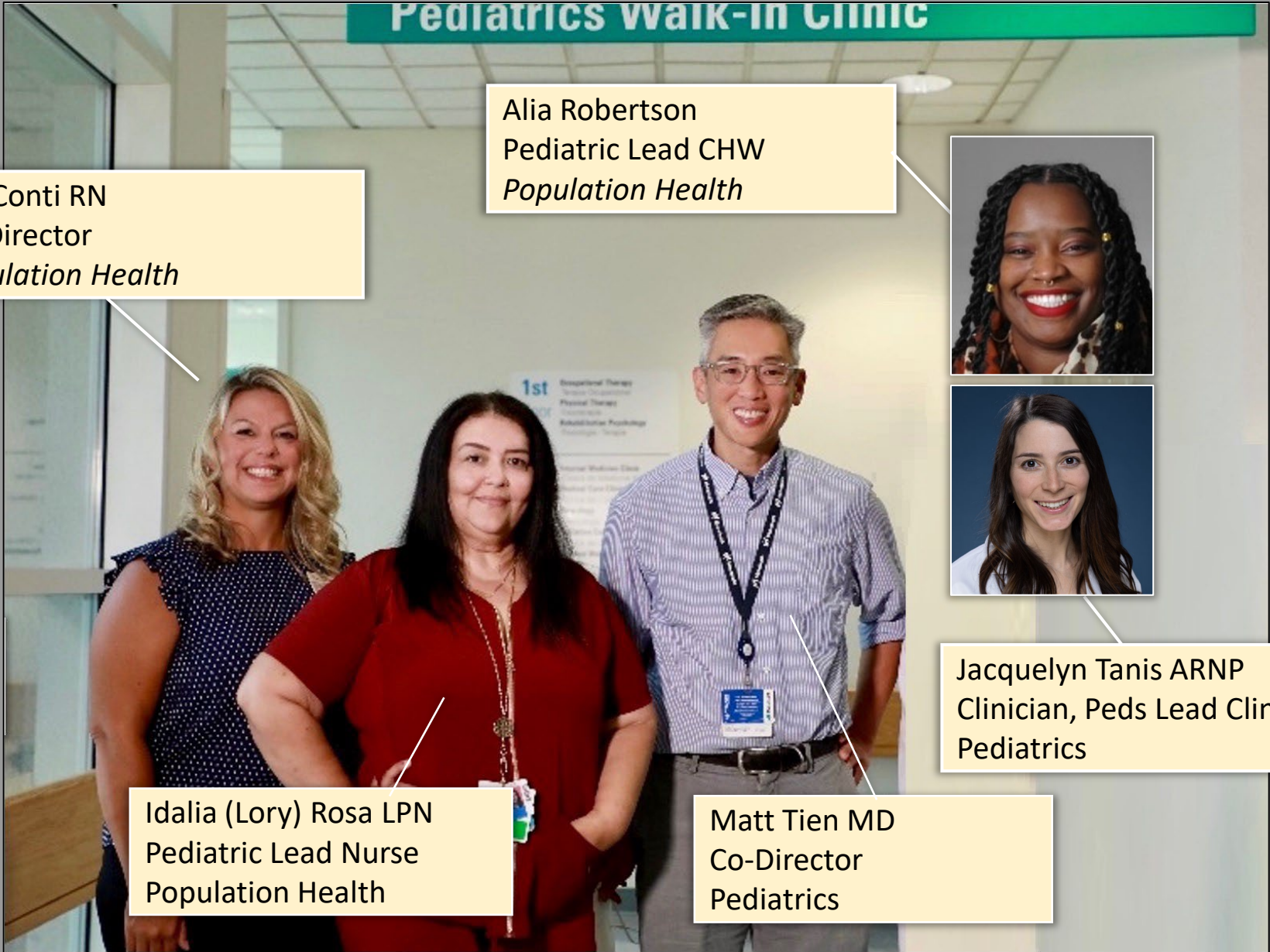
Progress has been made over the decades, but Ohio (especially NE Ohio) is still a hotspot for lead.

Healthcare systems are engaged in quality improvement in lead prevention, especially in the area of lead testing.

Healthcare providers are willing collaborators and advocates.

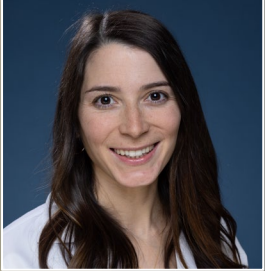
Thank you!

MetroHealth Childhood Lead Prevention Program



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Questions and discussion

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