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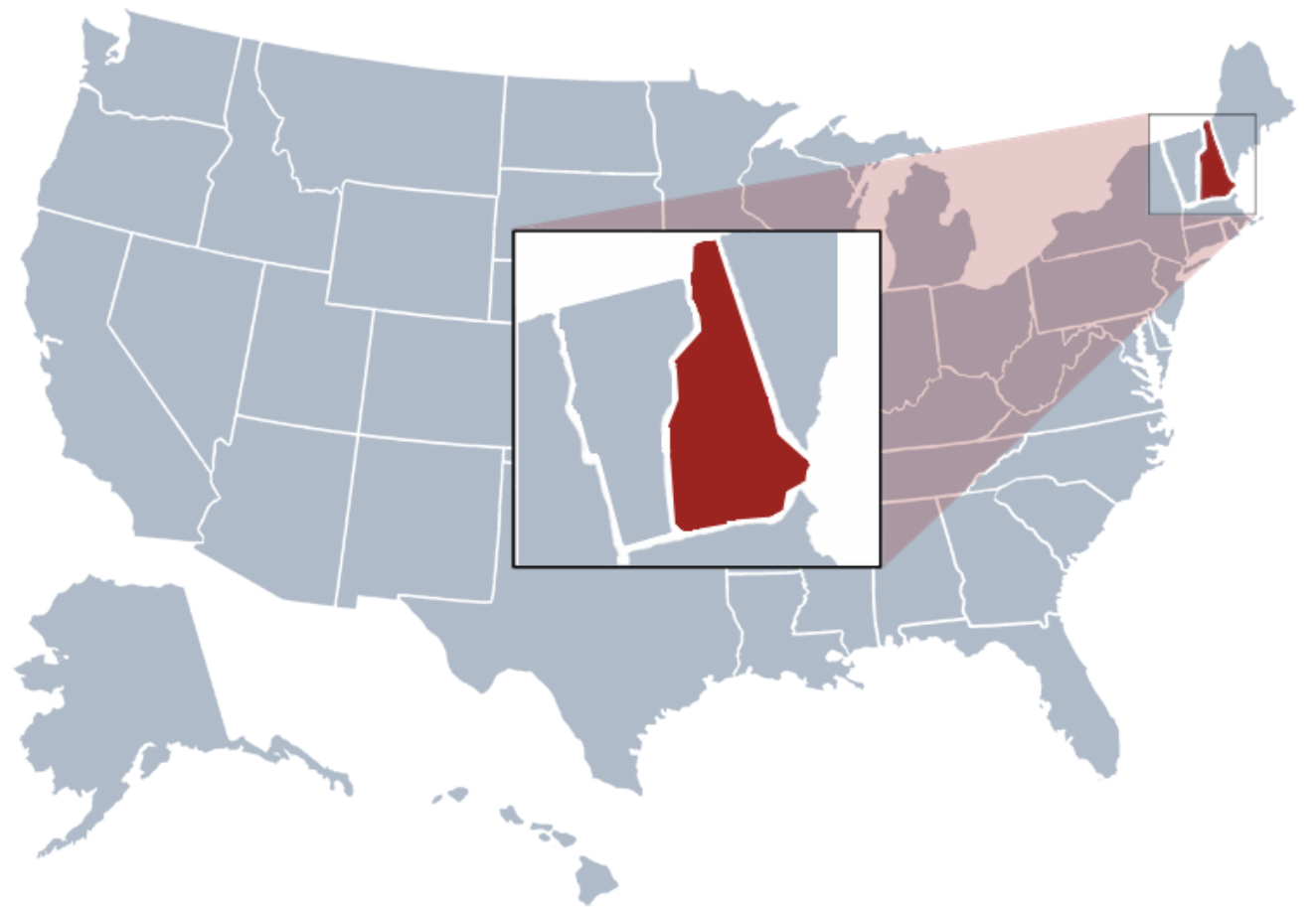
Division of
Public Health

NH Pediatric Blood Lead Testing Quality Improvement Project with Continued Medical Education Utilizing the ECHO™ Model Overview and Outcomes

December 11, 2024

**Gail Gettens, MS, ECMP, Child Development Specialist and Health Communications Coordinator
Nicole Lang, APRN, Nurse Case Manager**

Healthy Homes and Lead Poisoning Prevention Program



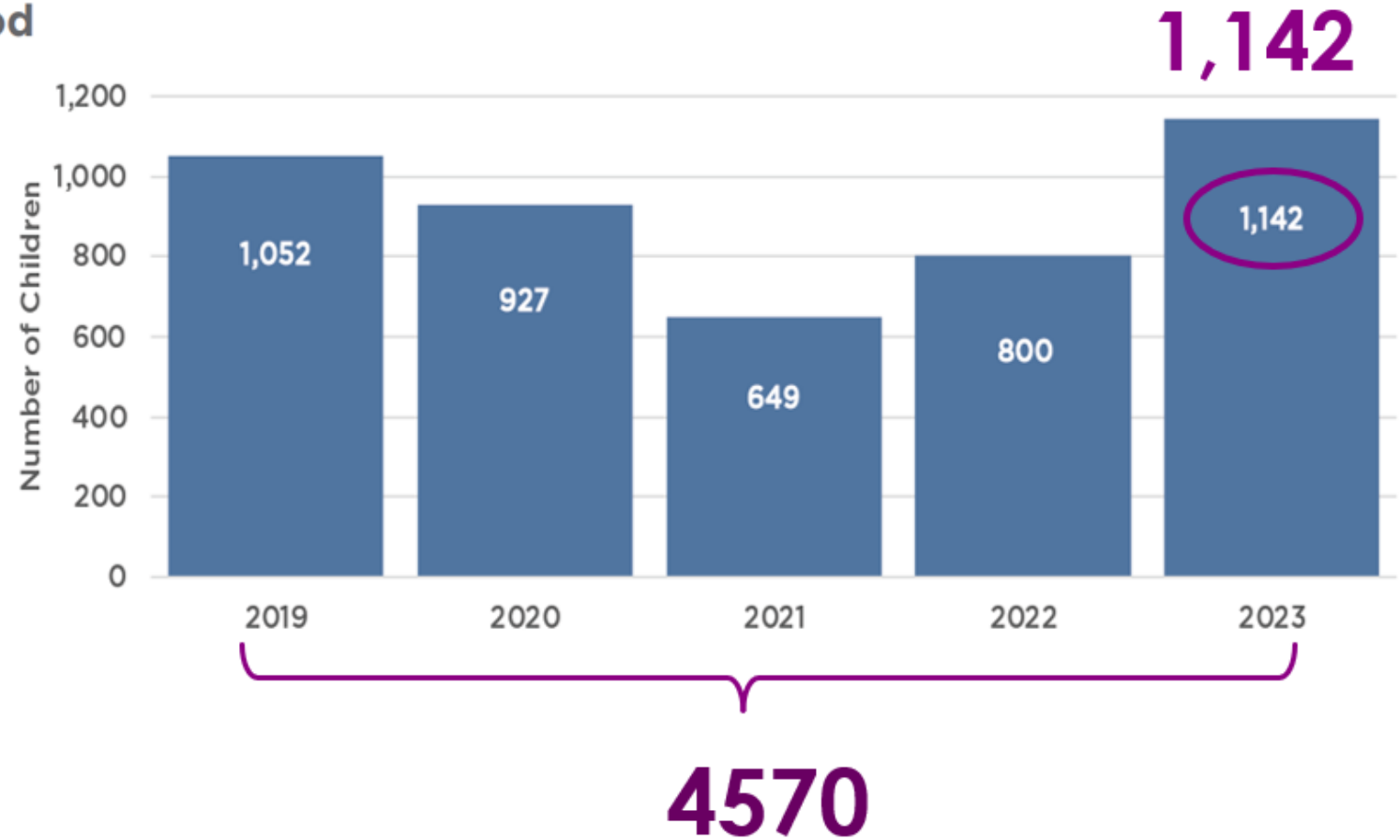
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2023

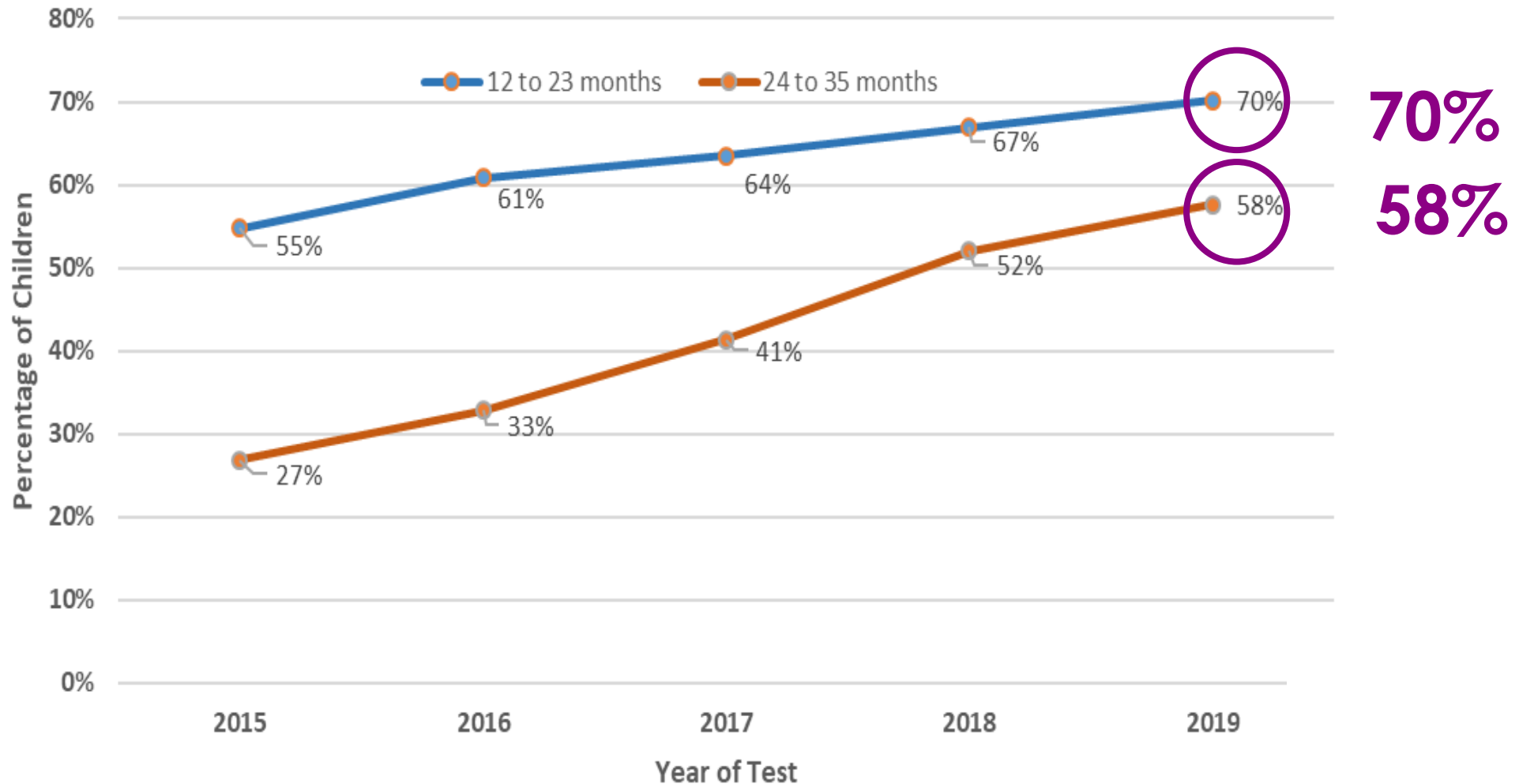
The number of children with elevated blood lead levels has exceeded pandemic levels.

Figure 1: NH is seeing a steadily increasing number of children, 72 months and younger, with new capillary and venous blood lead levels of 3.5 micrograms per deciliter (ug/dL) or higher. At this level, the CDC now recommends medical case management for the child and an environmental investigation to determine where the lead hazards are in the home.



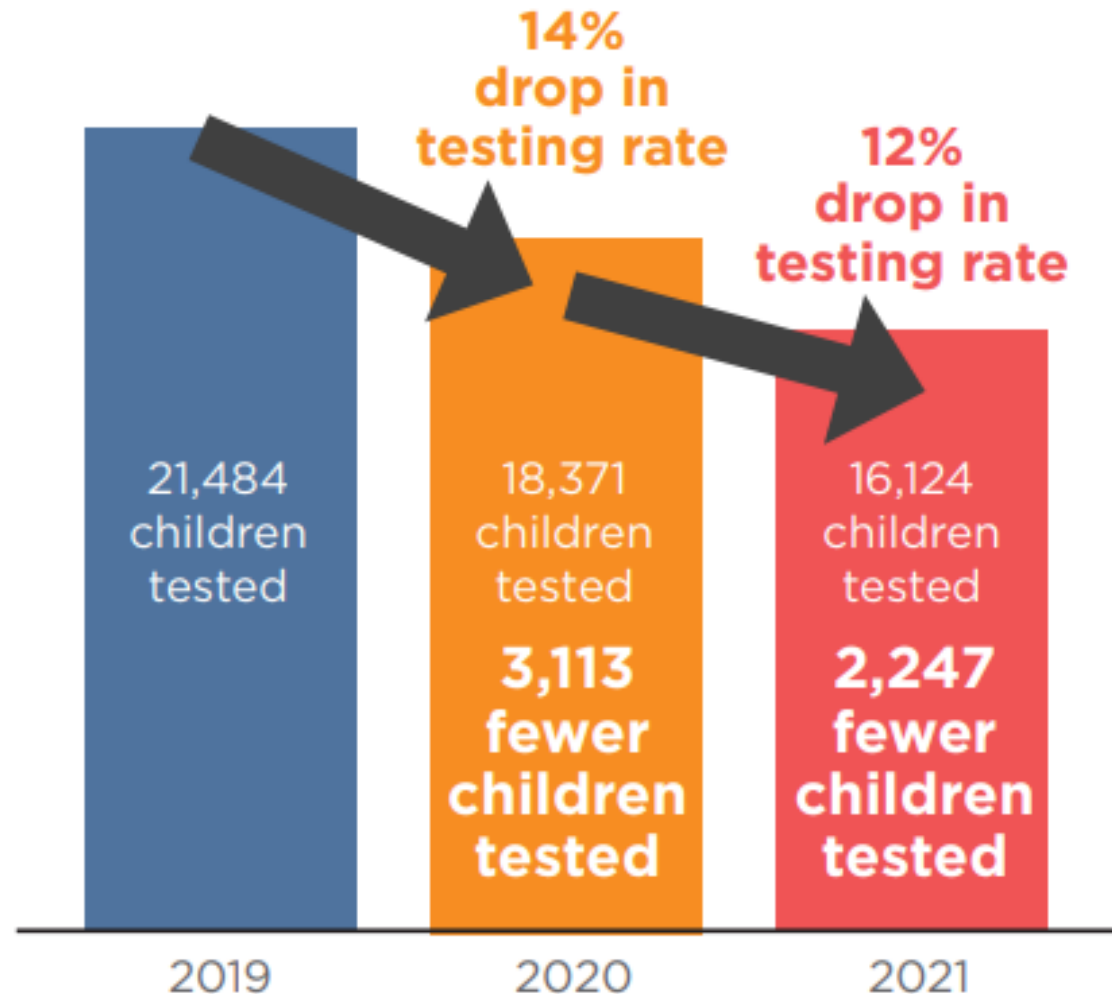
2015 -2019 Data Trends Testing Rates for NH Children

Percentage of 1- and 2-Year-Olds Tested for Blood Lead



25% DROP

in the number of children tested
over two years from 2019 to 2021.
5,360 fewer children were tested.



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NH Statewide Clinical Lead Advisory Committee

► August 2022 Meeting

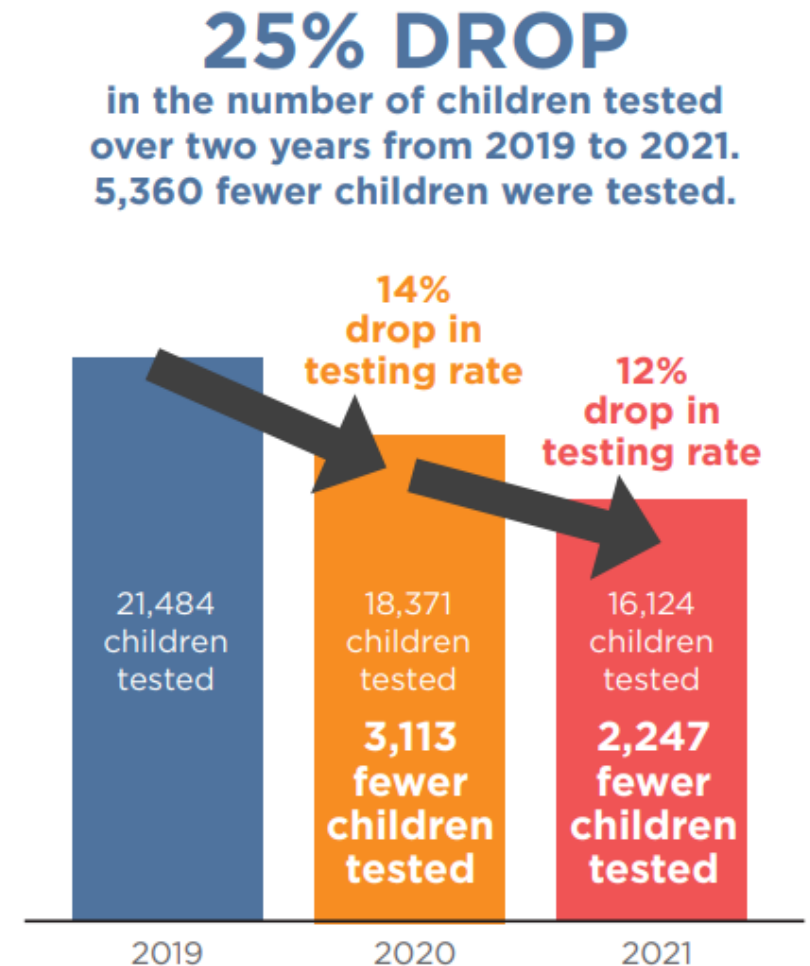
Alan Woolf, MD, MPH
Medical Director R1: PEHSU
Boston Children's Hospital

► December 2022 Meeting

Liz Harris, MD
Pediatrician
Intermountain Health, Utah

► 2023

Learning more and identifying partners



What is Project ECHO®?

(Extension for Community Healthcare Outcomes)



Requires an ECHO Hub and ECHO trained facilitators to sponsor a training.

Project ECHO® (Extension for Community Healthcare Outcomes) developed at the University of New Mexico, is a lifelong learning and guided practice model **that revolutionizes medical education and exponentially increases workforce capacity to provide best-practice specialty care and reduce health disparities.** The heart of the ECHO model™ is its hub-and-spoke knowledge-sharing networks, led by expert teams who use multi-point videoconferencing to conduct virtual clinics with community providers. In this way, primary care doctors, nurses, and other clinicians learn to provide excellent specialty care to patients in their own communities.

NH Lead Quality Improvement Project *combined with ECHO™*

Collaborative Partnership



New Hampshire Chapter

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®



Quality Improvement Consultant
Ruth Gubernick, PhD, MPH

► **November 2023**
Individual practice on-boarding

► **January - June 2024**
Six monthly sessions

► **July 2024**
Last of seven monthly required data submissions

25 MOC-4
POINTS
AWARDED

NEW HAMPSHIRE Lead QI Project ECHO®

In a collaborative effort to improve patient care through increased childhood lead screening rates, AmeriHealth Caritas New Hampshire, the NH Division of Public Health Services and the NH Chapter of the AAP are seeking pediatric and primary care practice teams to join the NH Lead QI Project ECHO.

BENEFITS OF PARTICIPATION:



Access to a multidisciplinary team of childhood lead screening experts



Connect with a network of professionals



25 MOC Part 4 credits (Physician and Physician Assistant)



Continuing education credits (CME, CNE) (For NP, RN, MA)

(CME, CNE Applications Pending)



Expert QI technical assistance and training

TOPICS WILL INCLUDE:

- Overview of Childhood Lead Exposure in NH (January 16, 2024)
- Neurological Impact of Childhood Lead Exposure (February 20, 2024)
- Assessment and Testing (March 19, 2024)
- An Elevated Blood Lead Level Test Result (April 16, 2024)
- Services for Children with Elevated Blood Lead Levels (May 21, 2024)
- Universal Testing and the Importance of Testing (June 18, 2024)

ELIGIBILITY:

- Practice teams located in New Hampshire
- Commit to engaging in QI planning and implementing discussions or coaching sessions.
- Ability to develop a multidisciplinary team of individuals (2-5 staff) that work together in a practice setting, must include a physician or physician assistant champion.
- Availability of team to attend a one-hour ECHO session every third Tuesday of the month for six months, January 2024-June 2024.

Participation as a Practice Team

- ▶ **Minimum** of 1 physician and 1 clinical team member
- ▶ **8** Pediatric Practices
- ▶ **15** Pediatricians
- ▶ **38** Clinical Participants



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Federally Qualified Health Center
(rural)

Health System Affiliate Practice
(largest city, largest employer in state)

Faith-Based Hospital Affiliate
Practice (330 beds) - largest city

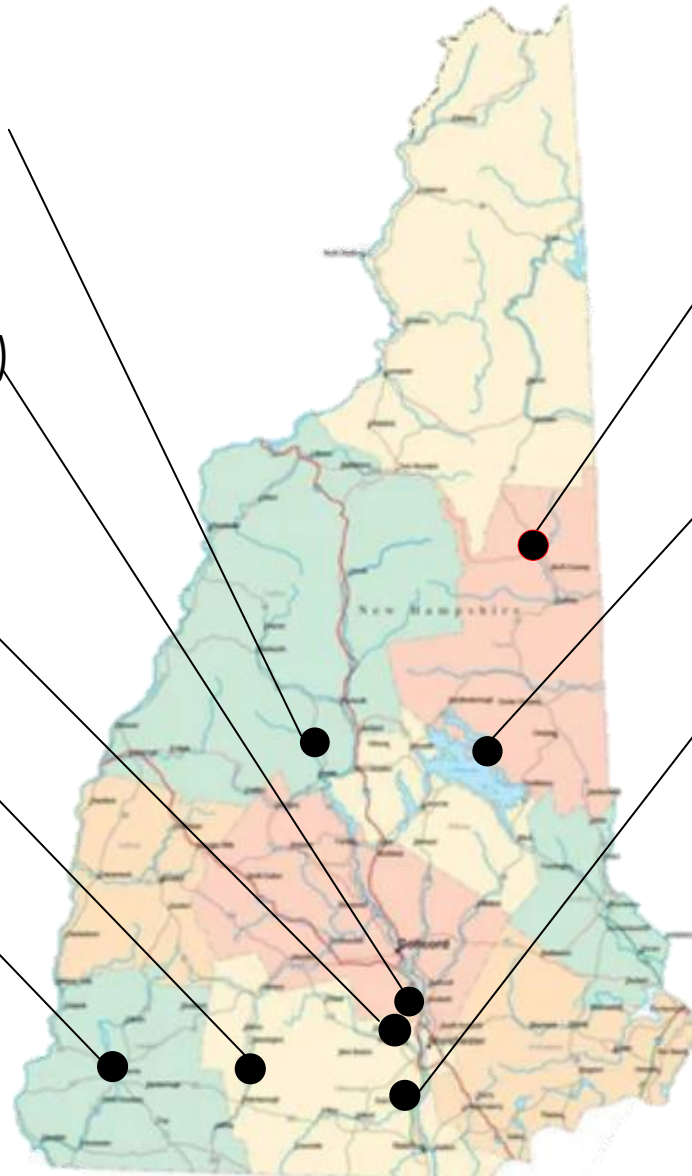
Rural Hospital Affiliate Practice
(25 beds)

Health System Affiliate Practice
Located within a rural hospital
(150 beds)

Independent Practice
Rural Health Center

Rural Hospital Affiliate
Practice (25 beds)

Hospital Affiliated
(188 beds) - 60 affiliated
practices



8 Diverse Practice Teams Participated

A Significant Commitment

6

One-hour sessions with
cameras on

1

Individual practice
team meeting with QI
Coach (minimum)

1

Case study submitted
for presentation

7

Monthly data
submissions

Individual practice
team on-boarding
session

Individual and practice
MOU

25

MOC-4 points awarded
with CMEs and CNEs

American Academy of Pediatrics (AAP) Quality Improvement Data Aggregator (QIDA)

► Established **performance measures**

► Developed **data portal**

Source	Definition (Aggregate Chart Entry)	Measure Association	Measure Calculation (via chart tool)	Numerator/Denominator	Goal
ALL	Total number of charts entering data from	N/A	N/A	N/A	N/A
3A*	Of those children who attended a 12-month well visit, how many have documentation of a blood lead level (BLL) test RESULT from the test ordered at this visit?	% of patients who have documentation of a blood lead level test result from a test ordered at their 12-month well-child visit	Value(3A) / Value(1A)	# patients that attended a 12-month well child visit with documentation of a blood lead level test result from a test ordered at this visit is the numerator (x) in the equation; All patients that attended a 12-month well-child visit is the denominator (y)	90.00
2A*	Of all children who attended a 12-month Well Child visit this month, how many have documentation of an order made at this visit for a blood lead level (BLL) test?				
1A*	How many children attended a 12-month Well Child visit this month?				
3C-A*	How many had an initial elevated blood lead level ≥ 5 ug/dL from a venous specimen?	% of patients who have documentation of an INITIAL elevated venous BLL (≥ 5 ug/dL) result from a test ordered at their 12-month well-child visit	Value(3C-A) / Value(3A-A)	# patients that attended a 12-month well child visit with documentation of an INITIAL elevated venous BLL (≥ 5 ug/dL) result is the numerator (x) in the equation; All patients that attended a 12-month well-child visit who have documentation of an INITIAL venous blood lead level result from a test ordered at this visit is the denominator (y)	90.00
3A-A*	How many children had an INITIAL venous blood lead level result from the test ordered at this visit? ("initial" indicates the child did not have capillary BLL testing as part of this visit.)				
3B-A*	How many children had a capillary blood lead level result from the test ordered at this visit?				
3D-A*	How many children had initial elevated blood lead level (BLL) ≥ 5 ug/dL test results from a capillary specimen?	% of patients who have documentation of an elevated CAPILLARY BLL (≥ 5 ug/dL) result from a test ordered at their 12-month well-child visit	Value(3D-A) / Value(3B-A)	# patients that attended a 12-month well child visit with documentation of an elevated CAPILLARY BLL (≥ 5 ug/dL) result is the numerator (x) in the equation; All patients that attended a 12-month well-child visit who have documentation of a CAPILLARY blood lead level result from a test ordered at this visit is the denominator (y)	90.00
3E-A*	How many children with elevated capillary blood lead level (BLL) ≥ 5 ug/dL test result had a subsequent confirmatory venous blood test? (Confirmatory refers to a venous blood test to confirm the accuracy of a capillary lead test previously obtained.)				
3D-A*	How many children had initial elevated blood lead level (BLL) ≥ 5 ug/dL test results from a capillary specimen?				
3F-A*	How many children had an elevated CONFIRMATORY venous blood lead level (BLL) ≥ 5 ug/dL?	% of patients with elevated BLL (≥ 5 ug/dL) from a capillary specimen at their 12-month well child visit who have documentation in chart that a confirmatory venous blood test was performed	Value(3F-A) / Value(3E-A)	# patients that attended a 12-month well child visit with elevated BLL (≥ 5 ug/dL) noted from a capillary specimen with documentation in chart that a confirmatory venous blood test was performed is the numerator (x) in the equation; # patients that attended a 12-month well child visit with elevated BLL (≥ 5 ug/dL) noted from a capillary specimen is the denominator (y)	90.00
3D-A*	How many children had initial elevated blood lead level (BLL) ≥ 5 ug/dL test results from a capillary specimen?				
3E-A*	How many children with elevated capillary blood lead level (BLL) ≥ 5 ug/dL test result had a subsequent confirmatory venous blood test? (Confirmatory refers to a venous blood test to confirm the accuracy of a capillary lead test previously obtained.)				
3G-A*	How many of those with INITIAL or CONFIRMATORY venous blood lead levels ≥ 5 ug/dL have documentation of a follow-up order for a venous blood lead level test in 1-3 months' time?	% of patients with elevated BLL (≥ 5 ug/dL) from an INITIAL or CONFIRMATORY venous specimen at their 12-month well child visit who have documentation in chart that follow-up venous BLL test was ordered	Value(3G-A) / Value(3C-A) + Value(3F-A)	# patients that attended a 12 month well child visit with elevated BLL (≥ 5 ug/dL) from an INITIAL or CONFIRMATORY venous specimen with documentation in chart that follow-up venous BLL test was ordered is the numerator (x) in the equation; # patients that attended a 12 month well child visit with elevated BLL (≥ 5 ug/dL) from an INITIAL or CONFIRMATORY venous specimen is the denominator (y)	90.00
3F-A*	How many children had an elevated CONFIRMATORY venous blood lead level (BLL) ≥ 5 ug/dL?				
3C-A*	How many had an initial elevated blood lead level ≥ 5 ug/dL from a venous specimen?				
5A*	Of those children with initial venous (number noted in question 3C) and capillary (number noted in question 3D) with BLL ≥ 5 ug/dL test result, how many have documentation that the patient/parent/caregiver received counseling regarding lead exposure health risks, management, and resources? (Note: Counseling may include a number of lead sources such as: in home assessments, test/retest, washing with...	% of patients with initial elevated BLL (≥ 5 ug/dL) from a venous or capillary lead test at their 12-month well child visit with documentation in chart that the patient/parent/caregiver received counseling is the numerator (x) in the equation; # patients that attended a 12-month well	Value(5A) / Value(3C-A) + Value(3D-A)	# patients that attended a 12-month well child visit with initial elevated BLL (≥ 5 ug/dL) noted from a venous or capillary test with documentation in chart that the patient/parent/caregiver received counseling is the numerator (x) in the equation; # patients that attended a 12-month well	90.00

Data Entry Portal In QIDA

(Interface established for each practice team.)

Enter Data

Cycle 3 [Change Cycle](#) ▼

Annotate Cycle

Close Cycle

Status	Charts Entered	Started
Open	0	12/1/2023

Chart # 1 ±

Questions Skipped Based on Selection

1. Please indicate the age of the patient at the time of the office visit (6-24 months):

Months

2. Is there documentation that lead risk assessment questions, in accordance with Bright Futures guidelines, were asked at the visit?

☐ Yes

☐ No

3. Is there documentation that the board book, *Happy, Healthy, Lead Free Me!* (anticipatory guidance) was provided at the time of this office visit?

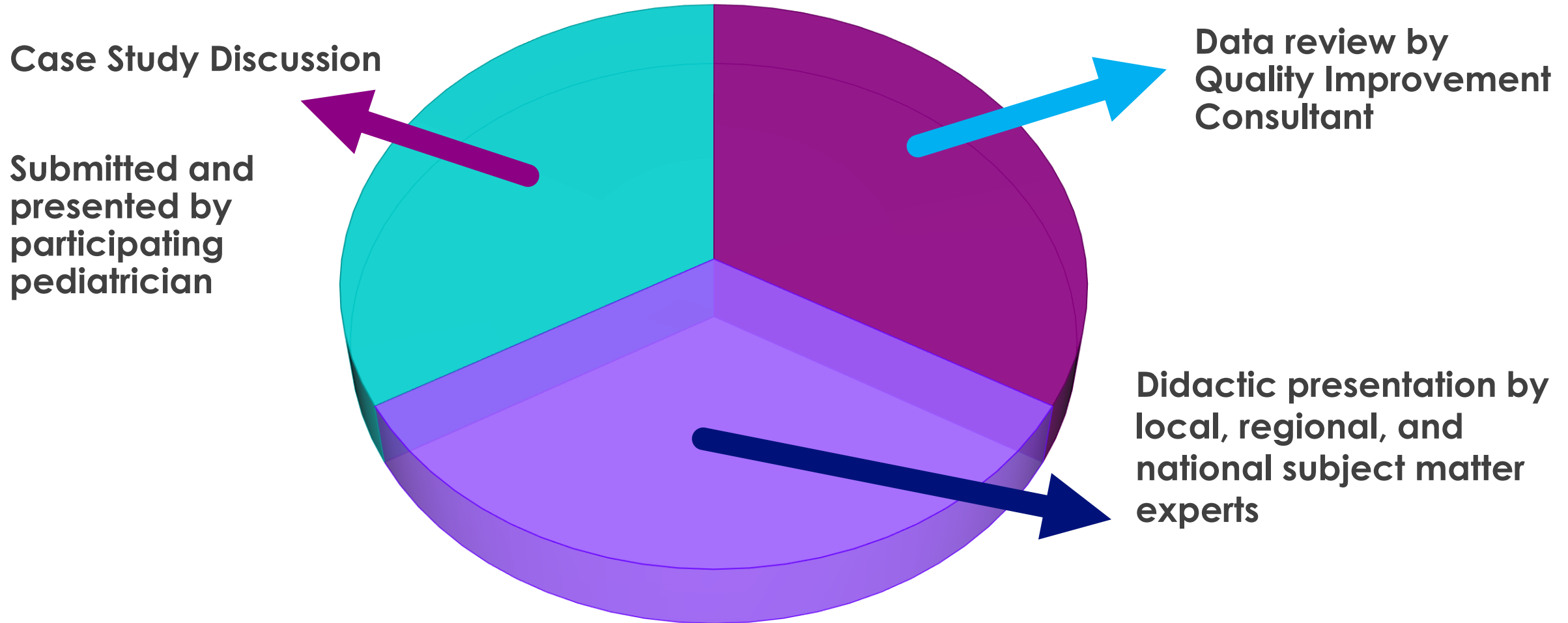
☐ Yes

☐ No

Monthly Data Submission

Cycle	Data	Due Date
Cycle 1 (Baseline) November	Patients seen in November 2023	Due January 31, 2024
Cycle 2 January	Patients seen in January 2024	Due February 29, 2024
Cycle 3 February	Patients seen in February 2024	Due March 31, 2024
Cycle 4 March	Patients seen in March 2024	Due April 30, 2024
Cycle 5 April	Patients seen in April 2024	Due May 31, 2024
Cycle 6 May	Patients seen in May 2024	Due June 30, 2024
Cycle 7 June	Patients seen in June 2024	Due July 31, 2024

Components of Six Monthly 1-Hour Sessions



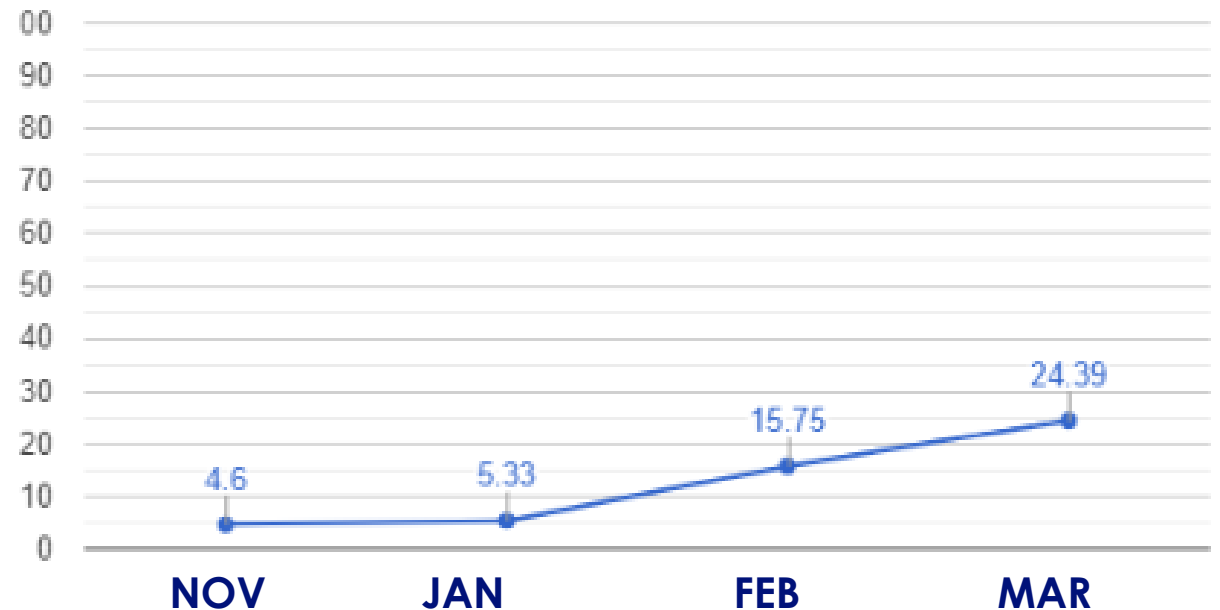
What makes this ECHO™ different?

- ▶ Aggregate data run charts reviewed during each session.
- ▶ Review and discussion facilitated by QI consultant.
- ▶ Practice teams required to meet, at least once, with QI consultant to review practice-level data.

All Measures: Tool 1: Single Chart Entry (Practice)

5/13/24

Age-Appropriate Anticipatory Guidance



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Measurable Outcome Improvements

- ▶ Increase in **Lead Risk Assessments** at Well Child Visits (WCV)
- ▶ Increase in **Anticipatory Guidance** on lead exposures at WCV
- ▶ Increase in **Blood Lead Testing at 12- and 24-month** WCV
- ▶ Increase in **'Catch-Up' Blood Lead Testing** - 30-mon., 4yo, 5yo, WCV

Each child and family is unique; therefore, these Recommendations for Preventive Pediatric Health Care are designed for the care of children who are receiving nurturing parenting, have no manifestations of any important health problems, and are growing and developing in a satisfactory fashion. Developmental, psychosocial, and chronic disease issues for children and adolescents may require more frequent counseling and treatment visits separate from preventive care visits. Additional visits also may become necessary if circumstances suggest concerns.

These recommendations represent a consensus by the American Academy of Pediatrics (AAP) and Bright Futures. The AAP continues to emphasize the great importance of continuity of care in comprehensive health supervision and the need to avoid fragmentation of care.

Refer to the specific guidance by age as listed in the *Bright Futures Guidelines* (Hagan JF, Shaw JS, Duncan PM, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*. 4th ed. American Academy of Pediatrics; 2017).

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

The Bright Futures/American Academy of Pediatrics Recommendations for Preventive Pediatric Health Care are updated annually.

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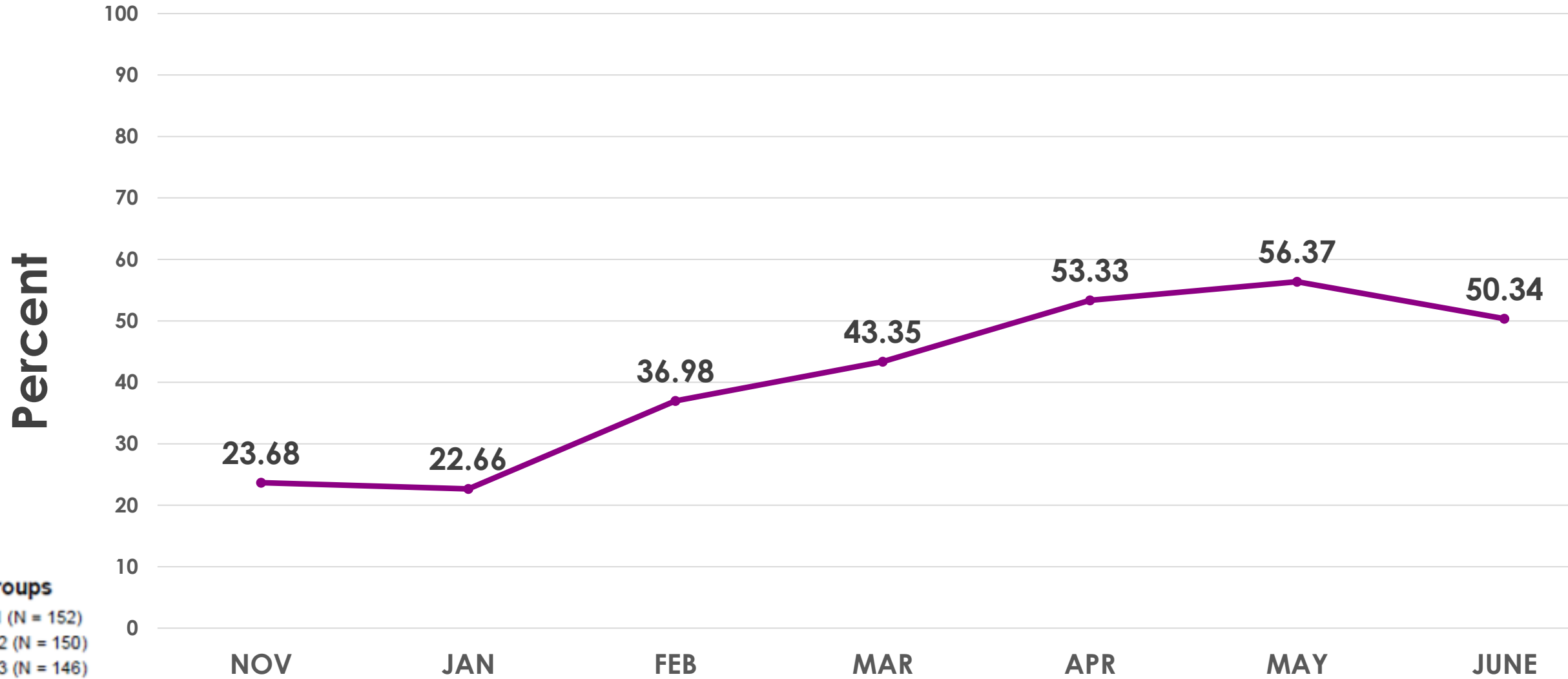
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AGE¹	INFANCY								EARLY CHILDHOOD							MIDDLE CHILDHOOD						ADOLESCENCE										
	Prenatal²	Newborn³	3-5 d⁴	By 1 mo	2 mo	4 mo	6 mo	9 mo	12 mo	15 mo	18 mo	24 mo	30 mo	3 y	4 y	5 y	6 y	7 y	8 y	9 y	10 y	11 y	12 y	13 y	14 y	15 y	16 y	17 y	18 y	19 y	20 y	21 y
HISTORY Initial/Interval	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
MEASUREMENTS																																
Length/Height and Weight		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Head Circumference		●	●	●	●	●	●	●	●	●	●	●																				
Weight for Length		●	●	●	●	●	●	●	●	●	●																					
Body Mass Index³												●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Blood Pressure⁴		★	★	★	★	★	★	★	★	★	★	★	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SENSORY SCREENING																																
Vision⁷		★	★	★	★	★	★	★	★	★	★	★	★	●	●	●	●	★	●	★	●	★	●	★	●	★	●	★	●	★	●	★
Hearing		●⁸	●⁹	→	★	★	★	★	★	★	★	★	★	★	●	●	●	★	●	★	●	★	→	●¹⁰	→	★	→	★	→	★	→	★
DEVELOPMENTAL/SOCIAL/BEHAVIORAL/MENTAL HEALTH																																
Maternal Depression Screening¹¹				●	●	●	●						●																			
Developmental Screening¹²								●			●		●																			
Autism Spectrum Disorder Screening¹³											●	●																				
Developmental Surveillance		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Behavioral/Social/Emotional Screening¹⁴		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tobacco, Alcohol, or Drug Use Assessment¹⁵																						★	★	★	★	★	★	★	★	★	★	★
Depression and Suicide Risk Screening¹⁶																						●	●	●	●	●	●	●	●	●	●	●
PHYSICAL EXAMINATION¹⁷		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PROCEDURES¹⁸																																
Newborn Blood		●¹⁹	●²⁰	→																												
Newborn Bilirubin²¹		●																														
Critical Congenital Heart Defect²²		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Lead²⁵					★		★	★	● OR ★²⁶	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Dyslipidemia				★		★		★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Sexually Transmitted Infections²⁹																	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★
HIV²⁰																						★	★	★	★	★						★
Hepatitis B Virus Infection³¹		★																														
Hepatitis C Virus Infection³²																																
Sudden Cardiac Arrest/Death³³																						★										
Cervical Dysplasia³⁴																																●
ORAL HEALTH³⁵							●³⁶	●³⁶	★		★	★	★	★	★	★	★															
Fluoride Varnish³⁷							→				●					→																
Fluoride Supplementation³⁸							★	★	★		★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
ANTICIPATORY GUIDANCE	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



Lead²⁵

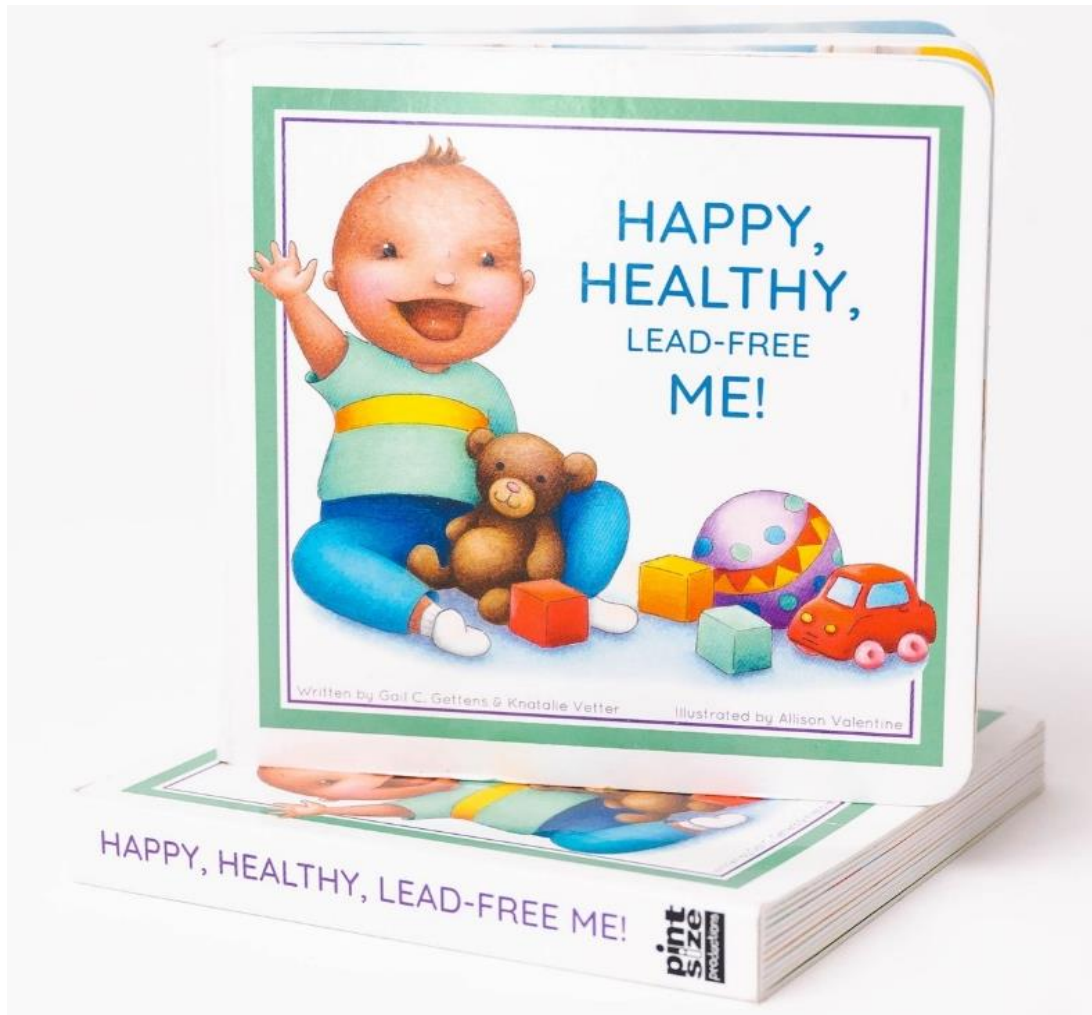
Age Appropriate Risk Assessment



All Groups

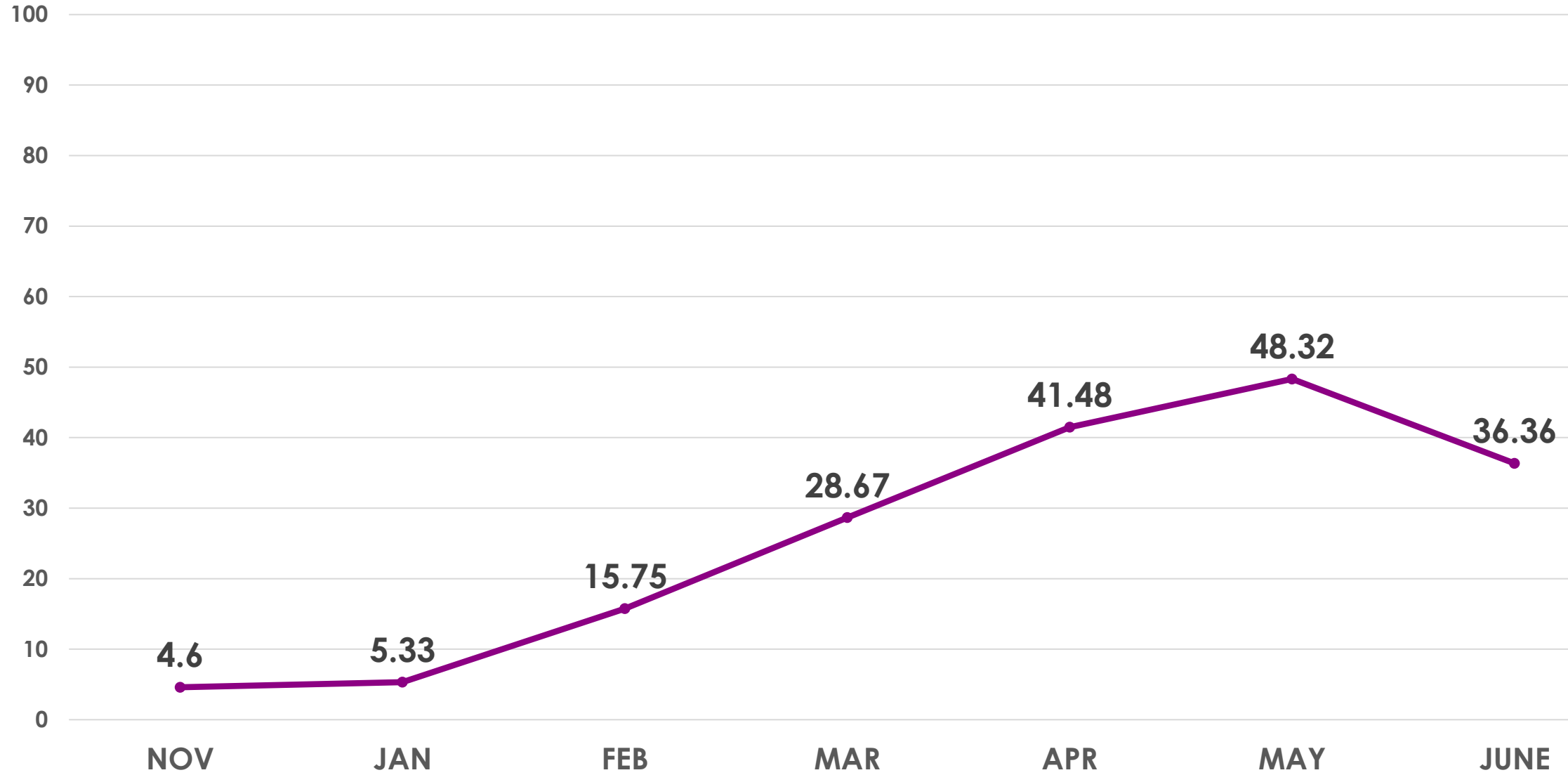
Cycle 1 (N = 152)
Cycle: 2 (N = 150)
Cycle: 3 (N = 146)
Cycle: 4 (N = 143)
Cycle: 5 (N = 135)
Cycle: 6 (N = 149)
Cycle: 7 (N = 143)

Valuable Resource for Clinicians: Supporting Early Literacy and Providing Anticipatory Guidance for the Family



Christine Arsnow, MD
Vice President, NH Chapter of AAP

Age Appropriate Anticipatory Guidance



All Groups

Cycle 1 (N = 152)

Cycle: 2 (N = 150)

Cycle: 3 (N = 146)

Cycle: 4 (N = 143)

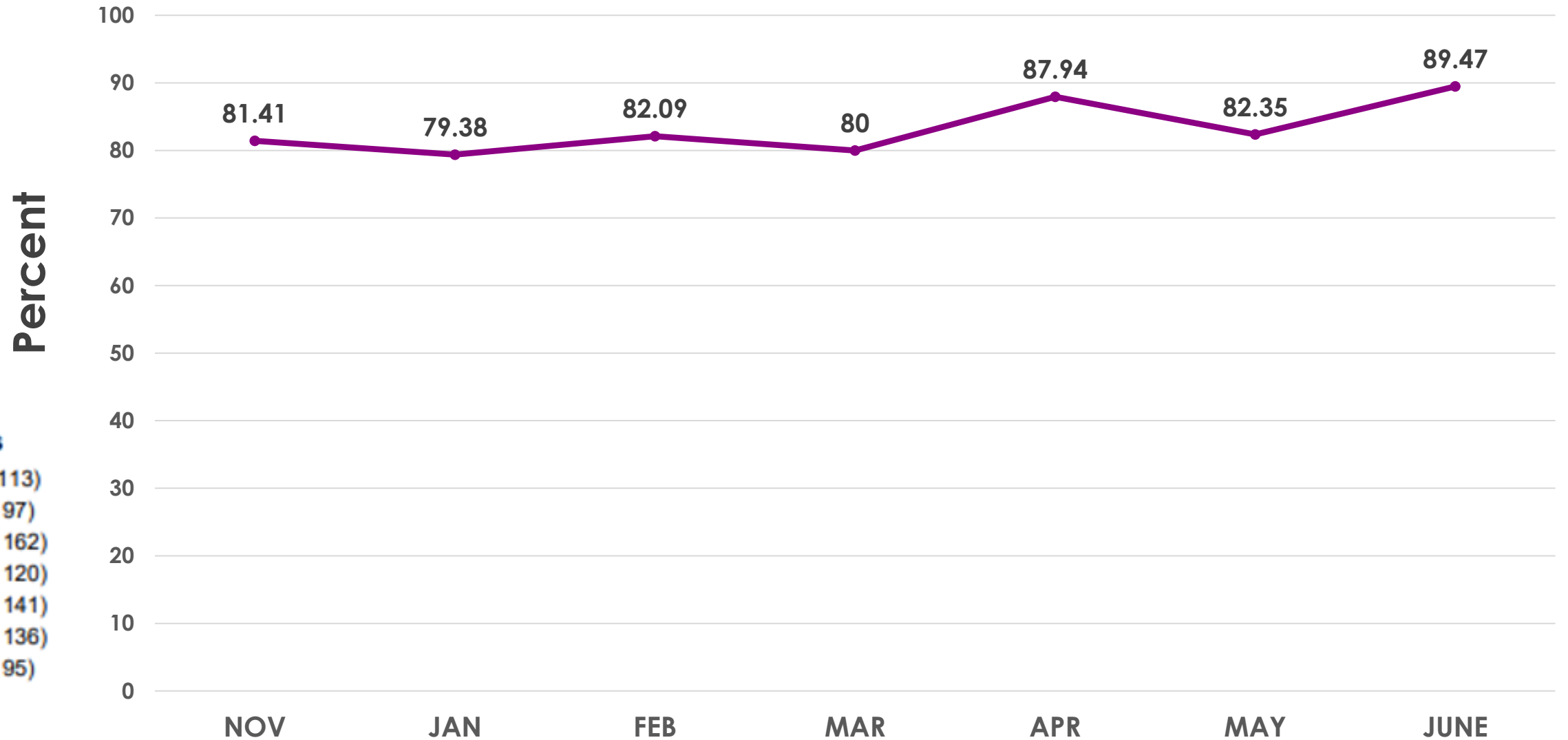
Cycle: 5 (N = 135)

Cycle: 6 (N = 149)

Cycle: 7 (N = 143)

Age Appropriate Lead Testing

All Results 12-Mos.



All Groups

Cycle 1 (N = 113)

Cycle: 2 (N = 97)

Cycle: 3 (N = 162)

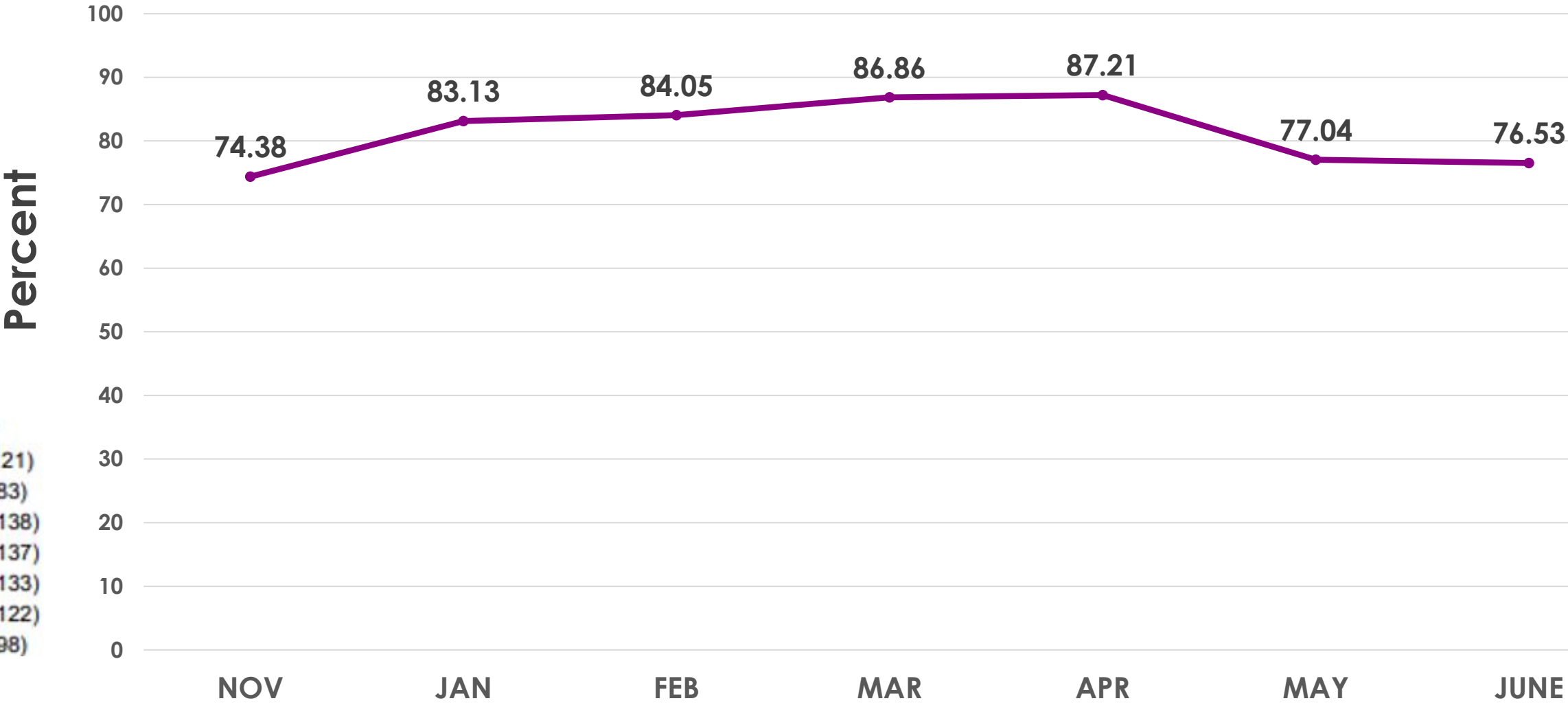
Cycle: 4 (N = 120)

Cycle: 5 (N = 141)

Cycle: 6 (N = 136)

Cycle: 7 (N = 95)

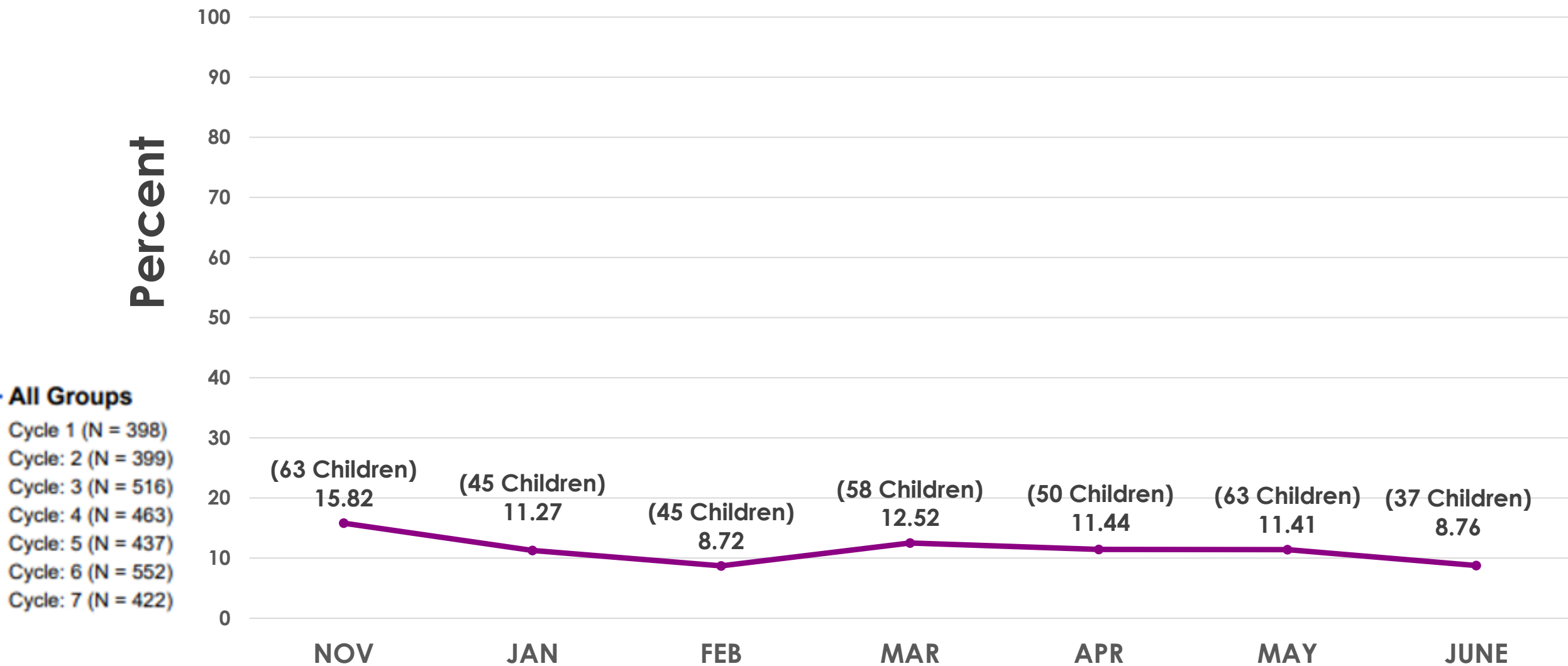
Age Appropriate Lead Testing All Results 24-Mos.



All Groups

- Cycle 1 (N = 121)
- Cycle: 2 (N = 83)
- Cycle: 3 (N = 138)
- Cycle: 4 (N = 137)
- Cycle: 5 (N = 133)
- Cycle: 6 (N = 122)
- Cycle: 7 (N = 98)

Children with NO Previous Blood Lead Level Test Result Documented Prior to 30-Mos. of Age 'Catch Up Testing'



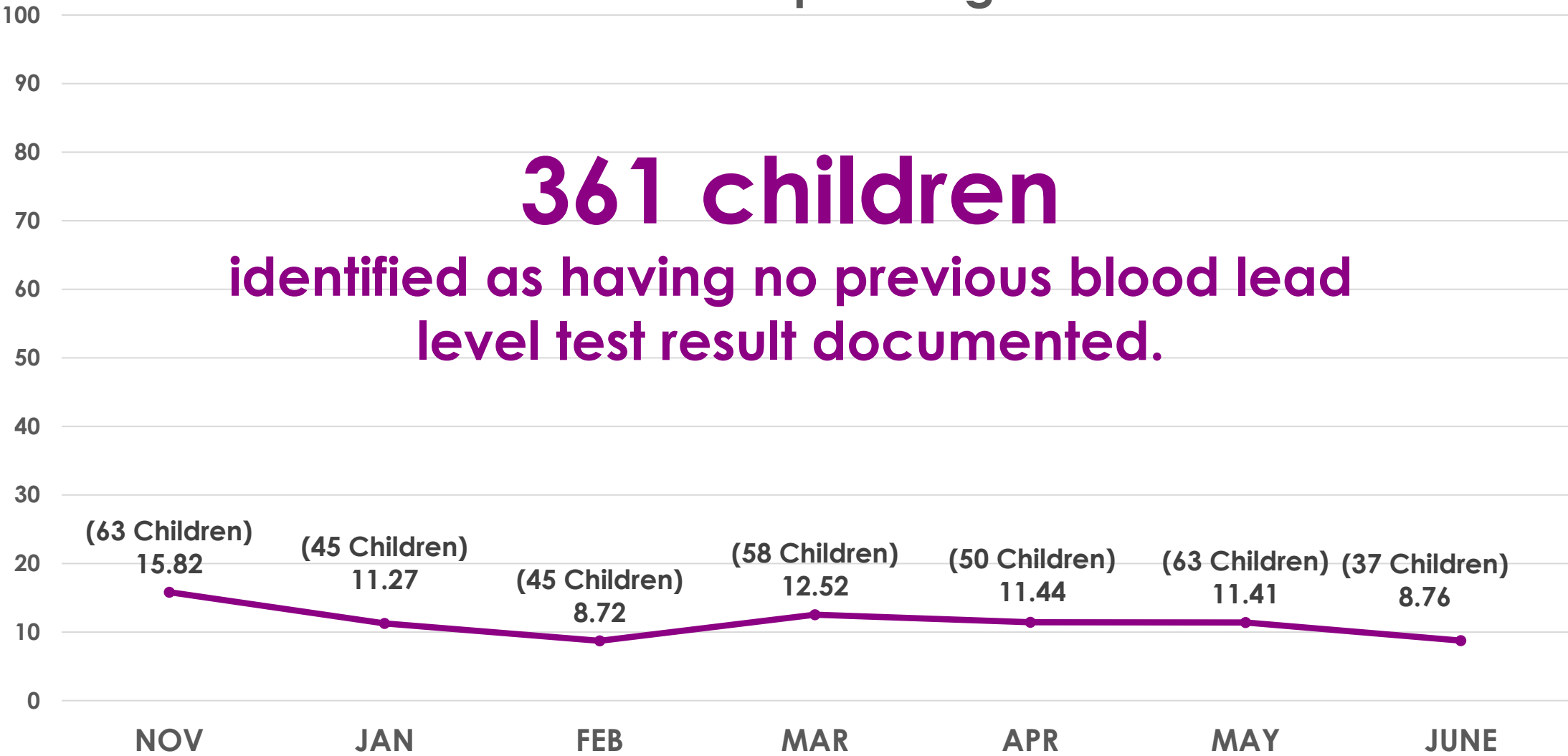
Children with NO Previous Blood Lead Level Test Result Documented Prior to 30-Mos. of Age
'Catch Up Testing'

Percent

361 children

identified as having no previous blood lead level test result documented.

- All Groups
- Cycle 1 (N = 398)
 - Cycle: 2 (N = 399)
 - Cycle: 3 (N = 516)
 - Cycle: 4 (N = 463)
 - Cycle: 5 (N = 437)
 - Cycle: 6 (N = 552)
 - Cycle: 7 (N = 422)



Unexpected and Notable Outcomes

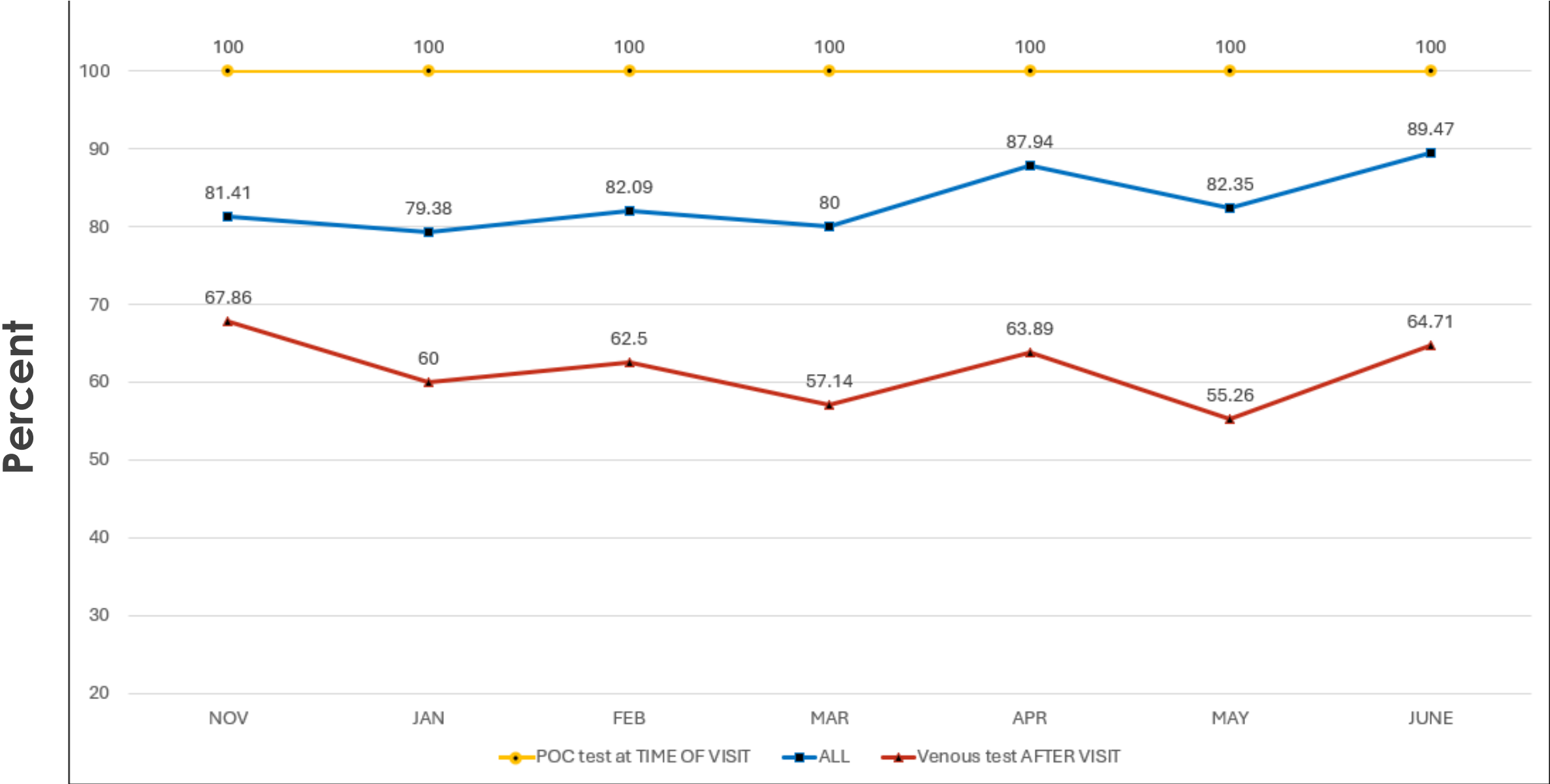
- ▶ Overcoming **knowledge gaps**
- ▶ **Multi-level changes** in all pediatric practices
- ▶ **Connecting** with public health nurses
- ▶ **Point-of-Care** testing success



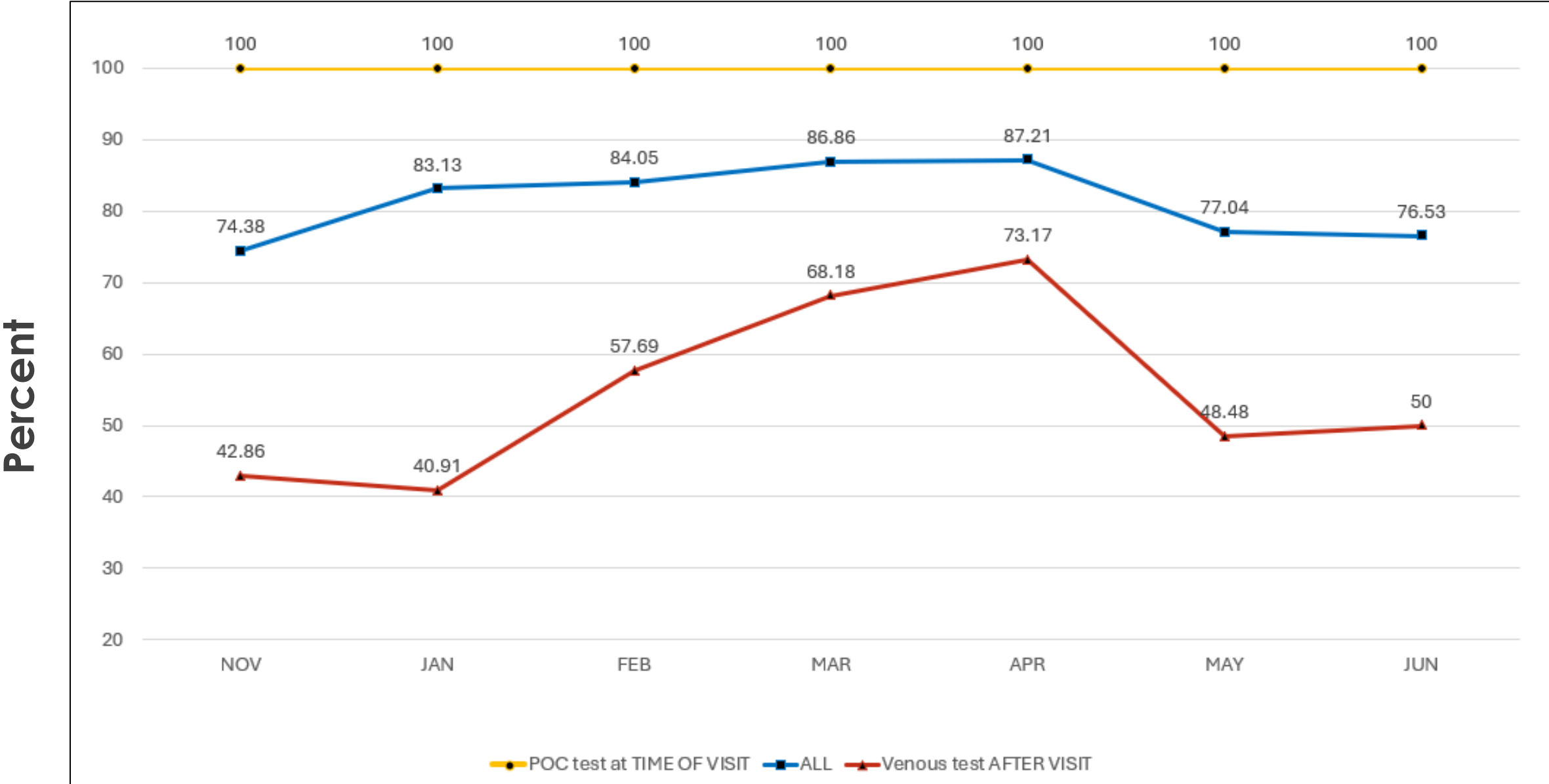
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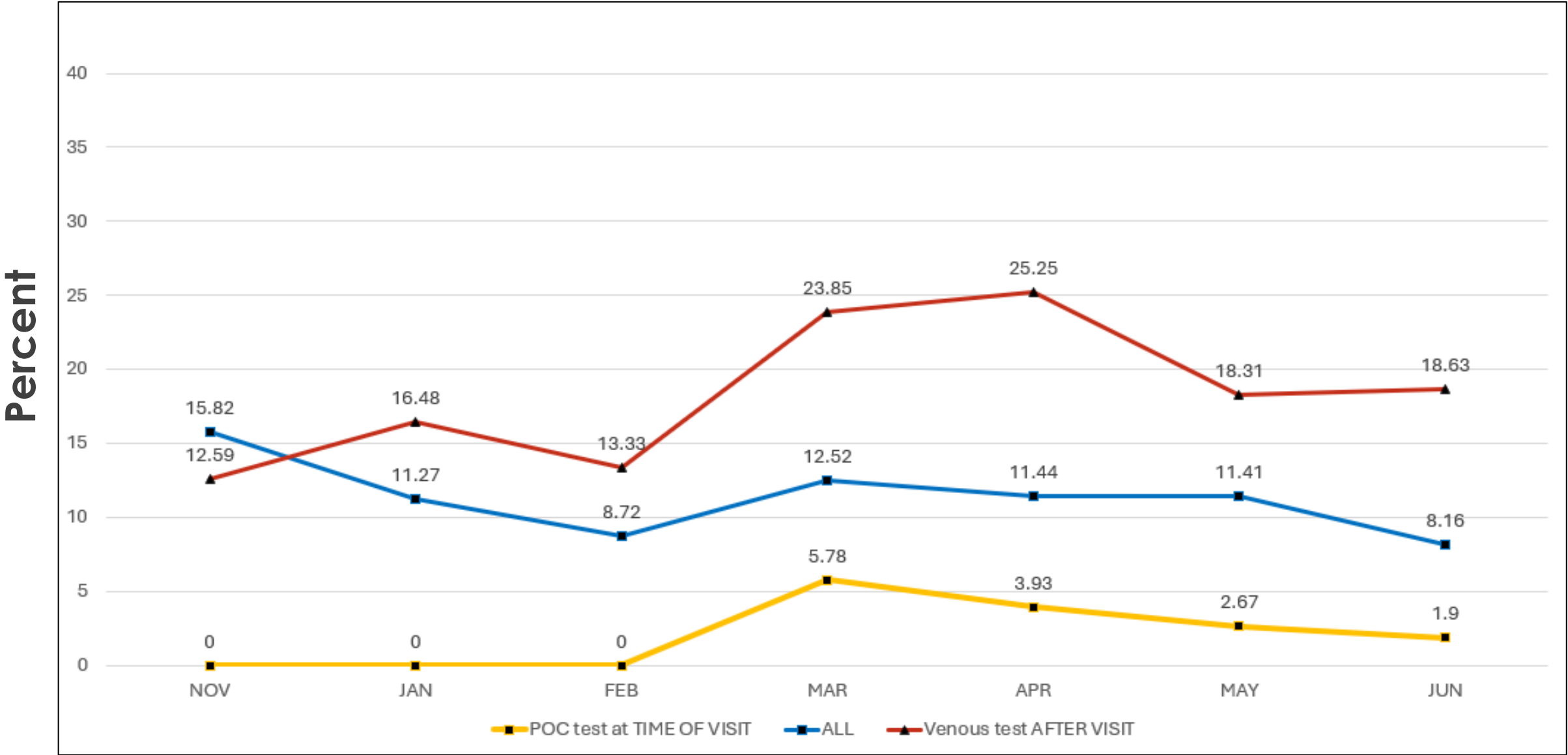
Impact of Testing Method on BLL Testing Rates: 12-mos



Impact of Testing Method on BLL Testing Rates: 24-mos



Impact of Testing Method on Catch-Up Testing Rates



What We Learned

- ▶ Requires **time, funding, and collaboration**. (Worth it!)
- ▶ **Incentive** of MOC-4 Points (Huge!)
- ▶ Effectiveness of **combining QI project** with CME education/ECHO model.
- ▶ High level of practice **team engagement** = multi-level QI changes
- ▶ **POC testing** = higher testing rates (remove barriers!)

SPEAKERS

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Health Communications Coordinator

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