

LEVERAGING IMMUNIZATION INFORMATION DATA TO IMPROVE LEAD SCREENING RATES IN PHILADELPHIA, PA

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Disclosures

- The presenter has no conflict of interest to disclose

Outline

- Background
- IIS and Lead program collaboration
- Methods
- Results
- Discuss lessons learned
- Conclusion

BACKGROUND

History of PhilaVax

- Launched in 1993 as the KIDS Registry
 - Stored immunization data on children age 0-6
 - Later became lifespan registry: KIDS Plus IIS
- Board of Health regulations mandate reporting all **immunizations administered to all people** in Philadelphia (§ 6-210 of the Philadelphia Health Code)

History of PhilaVax

Re-named PhilaVax in May 2018



PhilaVax data

People in PhilaVax: 1,642,264

- Age 19+: 1,081,975
- Age 0-18: 560,289
- Age 0-6: 175,488

Reporting clinics:

- Active enrolled clinics: 1084
- Reported last year: 770

Timeliness:

- Most birth records entered within **30 days**
- Most immunization doses entered within **45 days**

*** 98.4% of Philadelphians are in PhilaVax**

Lead exposure in Philadelphia

- Philadelphia has persistent lead poisoning
- Consistent with many older Northeast cities
- Philadelphia's characteristics associated with lead:
 - **95% of properties** built when lead paint was still in use (pre-1978)¹
 - **26% of people** live below the poverty level²

References:

¹ACS estimates adjusted using Philadelphia Office of Property Assessment (OPA) data

²US Census 2016 American Community Survey, 1-year estimates

Combining two data sources

Blood Lead Level Surveillance Data

- All blood lead tests among Philadelphia children <16 years must be reported to PDPH
- Includes patient name, date of birth, test results
- Through electronic laboratory reporting (ELR)
- Person and test level data

PhilaVax Immunization Information System

- Mandated reporting of immunizations administered to all individuals in Philadelphia
- Includes patient name, date of birth, contact information for vaccine provider (i.e., practice)
- Reported through Electronic Health Records HL7 reporting, flat files, paper logs, etc.
- Person and immunization level data

PhilaVax and Lead Program Collaboration



Using PhilaVax to ID children for screening

- PhilaVax provides an extensive registry of Philadelphians
- PhilaVax and Blood Lead Level (BLL) surveillance data are two historically independent data sources
- Combining these sources helps identify gaps in screening

Blood lead level screening in Philadelphia

All blood lead levels (BLLs) among Philadelphia children <16 years are **reportable** to the health department

Screening identifies children who need **case management services** and informs program directions

Screening rates are high, but

Not all children are screened:

- ~**75% of children** screened at least once by age 2
- ~**83% of children** screened at least once by age 3

Not many are screened per guidelines:

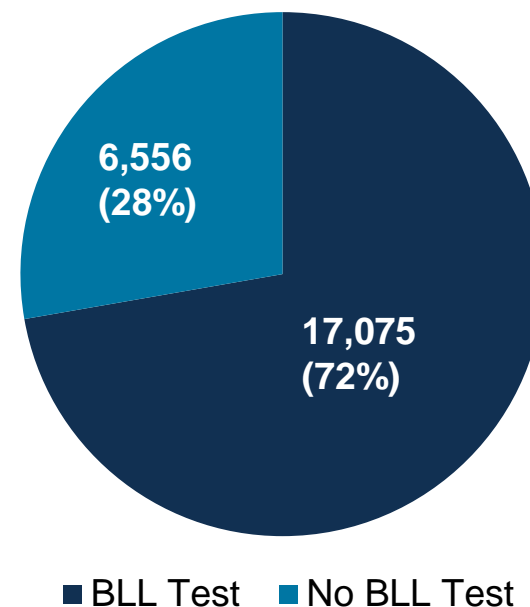
- ~**26% of children** screened at age 1 and again at 2

METHODS

Identifying children for BLL testing

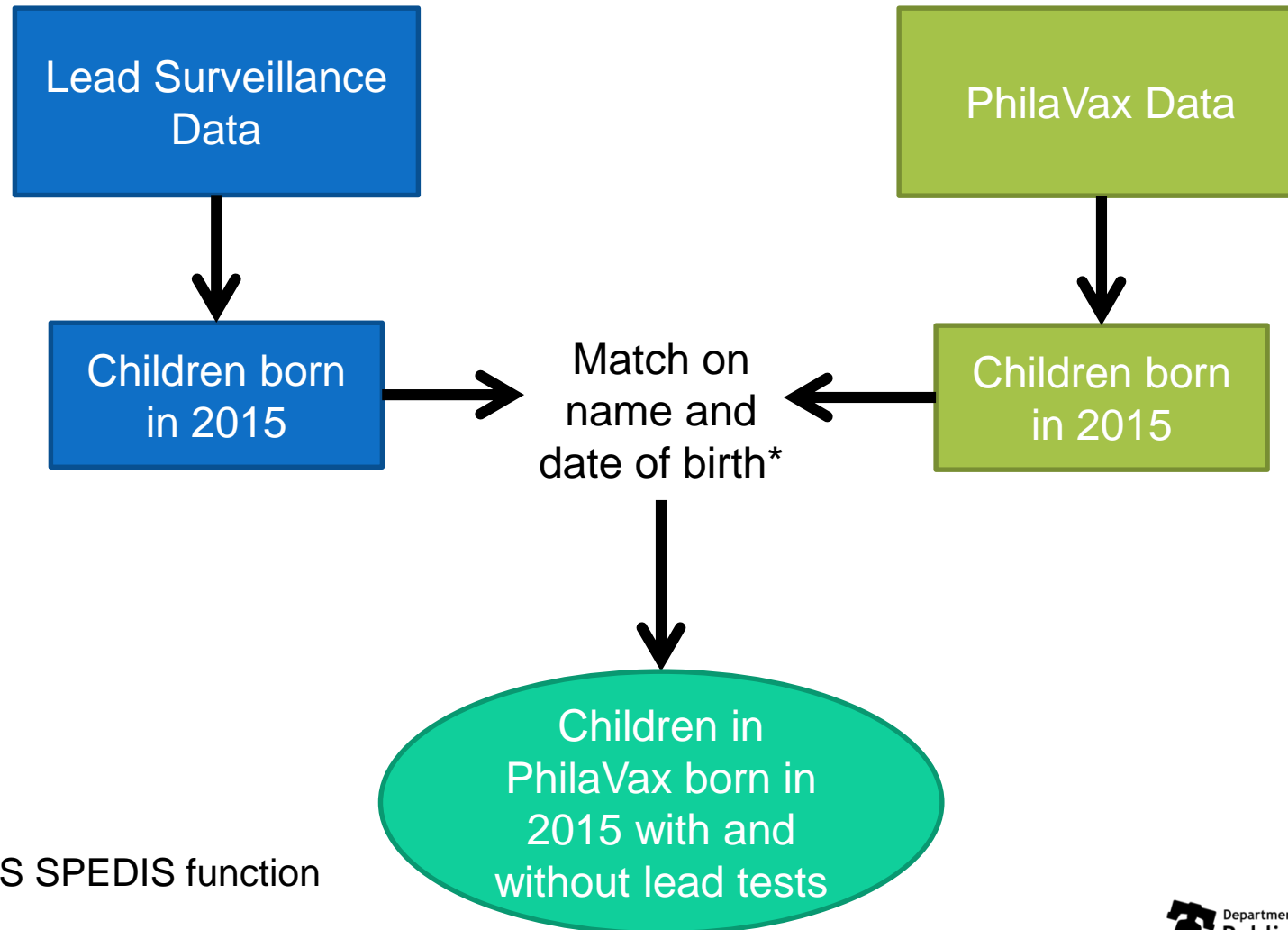
1. Match children in 2015 birth cohort from PhilaVax to children in BLL surveillance data
2. Flag children with no BLL test
3. Calculate provider screening rates (use last known PhilaVax provider)
4. Send notifications to providers with screening rates (extract address information from PhilaVax)
5. Evaluate effectiveness of intervention*
6. Determine next steps for future outreach*

**PhilaVax Children Born in 2015
(N=23,631) with a BLL Test**



*In progress

Merging Data Sets



*Using SAS SPEDIS function

Outreach to practices

- Children grouped by practice for mailing purposes
- Outreach inclusion:
 - Clinics with 10 or more children born in 2015
 - Appeared to be primary health care provider
- Clinics received a series of three notifications
- Outreach conducted in two batches:
 - Group 1: began in December 2017
 - Group 2: began in February 2018

RESULTS

Screening rates for 2015 birth cohort

	Screening Rate (%)	P-Value*
Gender		
Female	72.3	0.23
Male	73.0	
Race		
American Indian or Alaskan Native	72.7	<0.001
Asian	75.1	
Black or African American	76.0	
Native Hawaiian or Other Pacific Islander	70.8	
Other	71.9	
White	70.5	
Ethnicity		
Hispanic	73.0	0.21
Last Known Healthcare Facility That Provided Vaccine		<0.001
Health Center	67.8	
Hospital (i.e., ED, inpatient)	28.3	
Private Pediatric Office	78.6	

Practices included in outreach

241 practice groups associated with 2015 birth cohort

- 134 clinics included in mailing
- 107 clinics excluded (e.g., those with <10 children born in 2015, hospitals, missing data)

Screening rates improved after outreach

- Average clinic screening rates slightly increased
- Changes in screening rates varied by practice

	Pre-Outreach	3 Months Post-Outreach
Average	63.8%	67.2%
Standard deviation	22.1%	22.3%
Range	0.0-96.7%	0.0-96.7%

Clinic reponses

- 35 clinics voluntarily responded
 - 18 reported some children no longer in their care
 - 23 reported some children already received lead screening
- Some reasons for reported data discrepancies:
 - Child moved
 - Matching process did not capture all true matches
 - Hyphenated last names
 - Misspelled names
 - Name updated since birth

DISCUSSION

Overall findings

- Pairing immunization data with lead surveillance data can be used to evaluate lead screening rates
- Lead screening rates varied by race and the child's last known clinic type

Limitations

- Data considerations:
 - Bias towards children who are already in care and received vaccinations
 - Children moving in/out of Philadelphia
 - Matching is an imperfect method
 - Children with last known clinic of hospital may be seen elsewhere
- Logistical considerations for clinic (e.g., flagged children for lead test at next office visit, children with multiple providers)

Lessons Learned

- Immunization registry data may be a helpful population tool for other outreach efforts
- Further evaluation of outreach efforts is needed to assess effectiveness of intervention
 - Re-evaluate intervention at 6 months and 1 year post-notifications
 - Compare intervention versus non-intervention groups
 - Test intervention with younger birth cohort
 - Test different approaches to data matching

Conclusion

- IIS data can be used in novel ways.
- Several jurisdiction based programs are in need of reliable data to perform meaningful analysis for important public health initiatives.
- The IIS can be leveraged to provide the desired data.

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Questions?

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