



AIRA
AMERICAN IMMUNIZATION
REGISTRY ASSOCIATION

Immunization Information Systems (IIS) Interoperability Highlights

National Health IT Week

Tuesday, October 9, 2018
2pm – 3pm ET



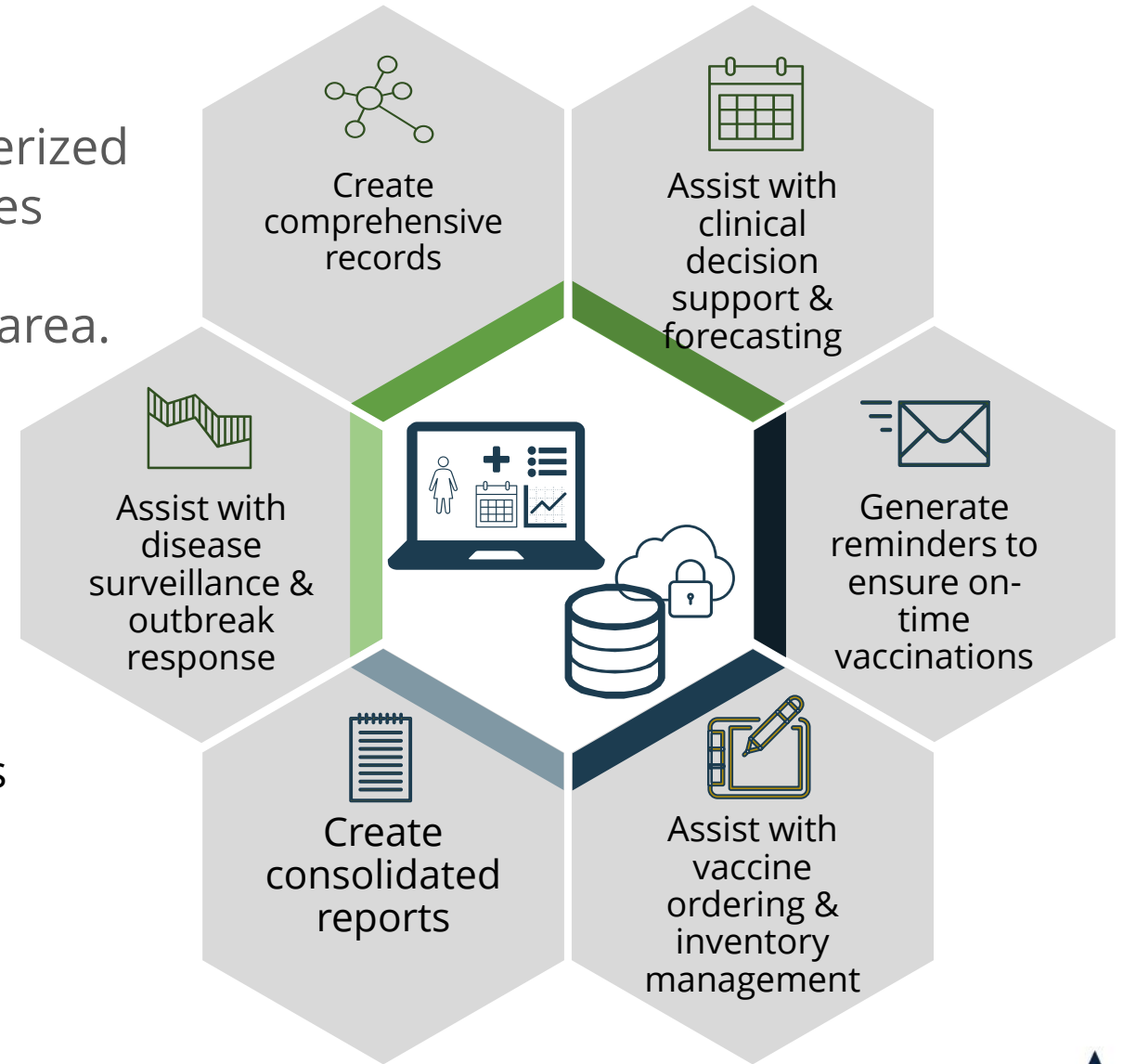
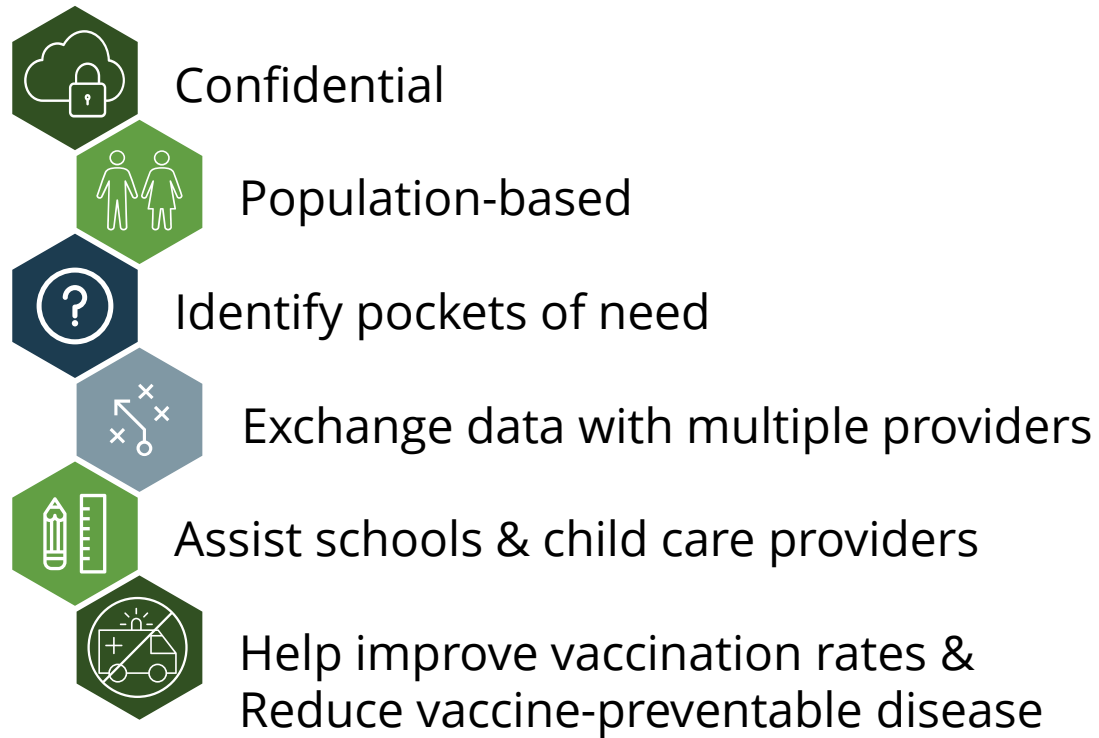
Speakers

- Mary Beth Kurilo, Policy and Planning Director, AIRA
- Angel Aponte, Computer Specialist, Division of Disease Control, NY City Department of Health and Mental Hygiene
- Jim Daniel, Director, Public Health Innovation, HHS
- Marty Woodruff, Associate Director, MiHIN
- Greg Faber, Integration Engineer, Epic
- Eric Larson, Senior Technical Project Manager, AIRA



IIS...

are confidential, population-based, computerized databases that record all immunization doses administered by participating providers to persons residing within a given geopolitical area.



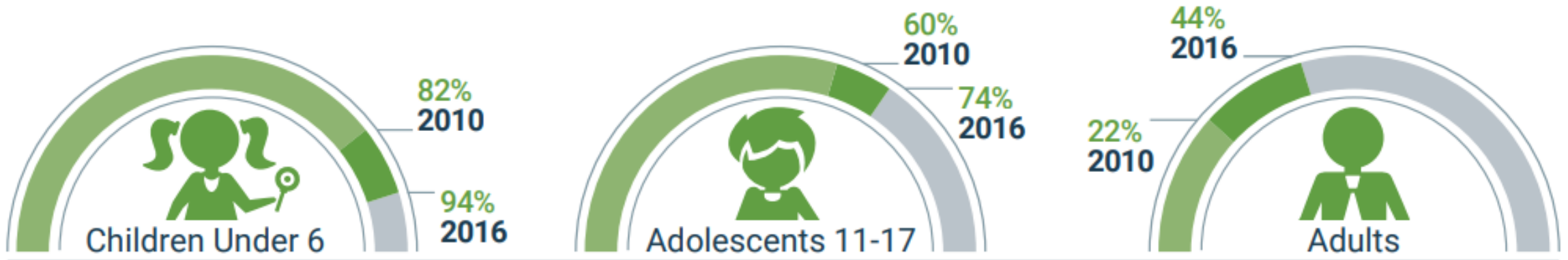
Maturity

- No national IIS; IIS operate in most states, some counties/territories
- Each system operates independently, but with unifying standards
- Newest IIS is hoping to launch later this year
- Oldest have been in existence for 25+ years



Progress in Data Capture

- Healthy People 2020 Goals
 - Children >6: 95%
 - Adolescents 11-17: 80%



Angel Aponte

NY City Department of Health and Mental Hygiene

New York Citywide Immunization Registry

Public health information integration

Real-time data exchange with EHRs

Consumer Access to immunization records

Angel Aponte

Computer Software Specialist

New York City Department of Mental Hygiene

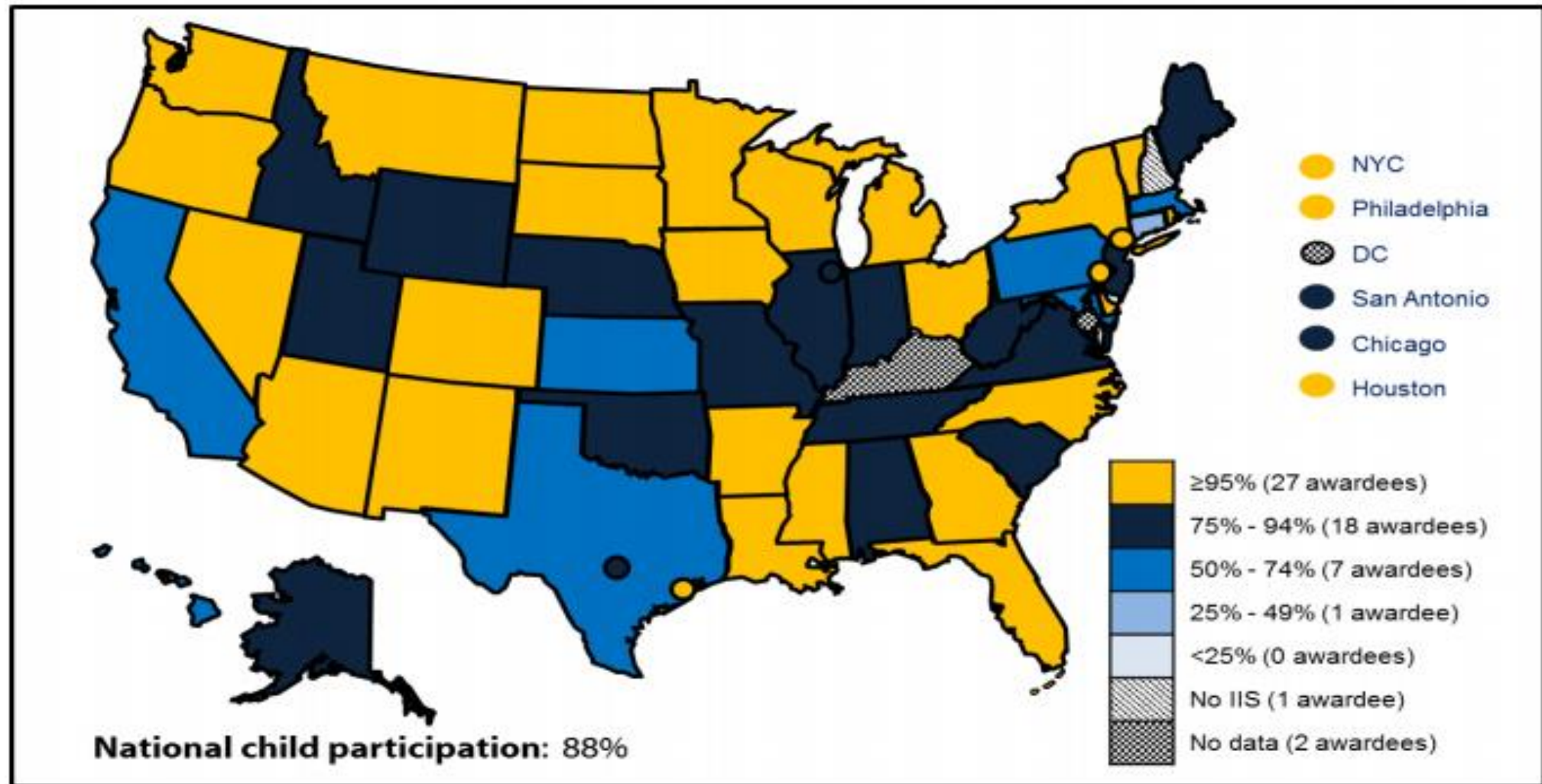
Division of Disease Control

aaponte@health.nyc.gov

56 Immunization Information Systems in US

Williams, Warren (2016), Partnering with IIS for the Future, CDC, 2016 AIRA Annual Meeting.

http://immregistries.org/files/resources/5835add981027/plenary_cultivating_community_establishing_standards_supporting_implementation_.pdf



Percentage of children aged <6 years participating in an Immunization Information System (IIS) – United States, five cities, and the District of Columbia, 2014

New York Citywide Immunization Registry (CIR)

- NYC's Immunization Information System
- Established in 1996
- Mandatory reporting of immunizations for patients 0-18 years of age
- 7 million patients
- 95 million immunizations
- Population-based
 - Birth certificates loaded twice a week
- Integrated with NYC's blood lead test database in 2004
 - Papadouka, et al. "Integrating the New York Citywide Immunization Registry and the Childhood Blood Lead Registry." Journal of Public Health Management and Practice, November 2004 - Volume 10 - Issue - p S72-S80,
<https://pdfs.semanticscholar.org/3a50/b3588b7b63668be86c4fbc812750c4d85fce.pdf>

[View Record](#)
[Print Reports](#)
[Pre-completed Forms and Referrals](#)
[Update Patient Info](#)

First:
Middle:
Last:
DOB:
Gender:

Mickey
Mouse
04/26/2004
M

908411358
123 Test Street
Brooklyn, NY 11211

(
Age: 13y 9m
)

Printer-Friendly Format

Immunization History

Event	1	2	3	4	5	6	Next Due
Influenza 1 Event/s	09/08/2017 Influenza-IIIV4 IM,Prsrv- free(age varies) 35y 7m						DUE ON 08/01/2018 INFLUENZA
DTP 1 Event/s	09/14/2017 DTaP 35y 7m						DUE NOW TD (>= 7 YRS.)

...

Lead Test History

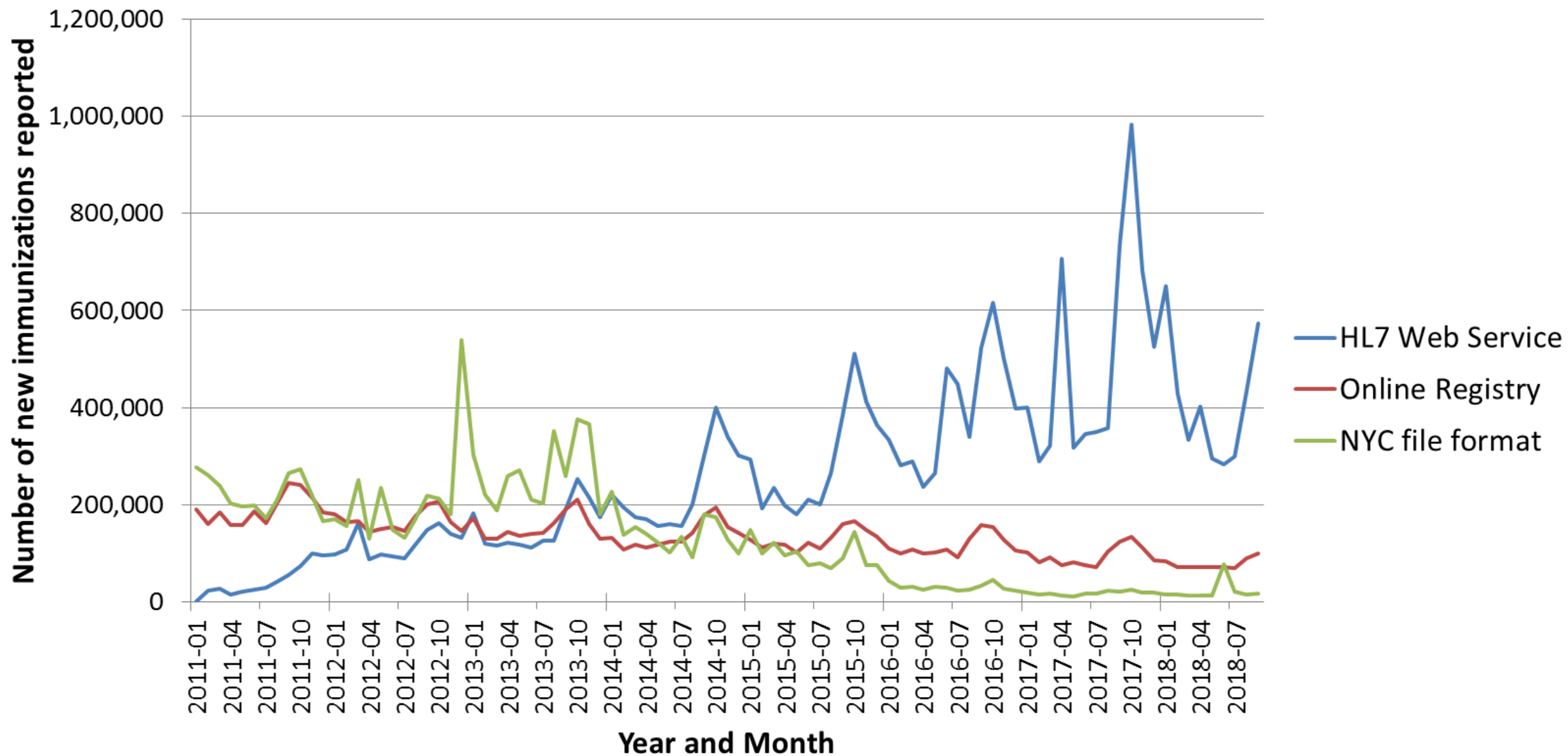
More useful lead information is available in the [Tools](#) section.

Event		Date	Test Type	BLL	Recommendation
Lead Tests 3 Events	3	08/15/2008	Venous	2µg/dl	Your child's blood lead level is not elevated. Early detection of any future lead poisoning is important. Ask your medical provider to conduct a risk assessment for lead poisoning at each pediatric check-up.
	2	07/02/2007	Venous	3µg/dl	
	1	06/01/2005	Venous	3µg/dl	

Multiple sources of health information

- Birth record – many data elements from birth certificate
- Clinical records
 - 71 EHRs in 2,799 healthcare facilities reported immunizations to CIR in 2017
 - Advisory Committee of Immunization Practice (ACIP) recommendation is 52 vaccination events (33 shots in vaccine series + 19 flu vaccines) by age 18
 - Number of data elements reported and data quality varies by doctor, hospital, and EHR
- Lab reports for blood lead level
 - Less populated than clinical and birth records
 - Name, DOB, often sex assigned at birth and address
- Consolidate all health information into a single patient record

Immunizations reported to CIR, monthly, by reporting method January 2011 to September 2018



Real-time immunization record search

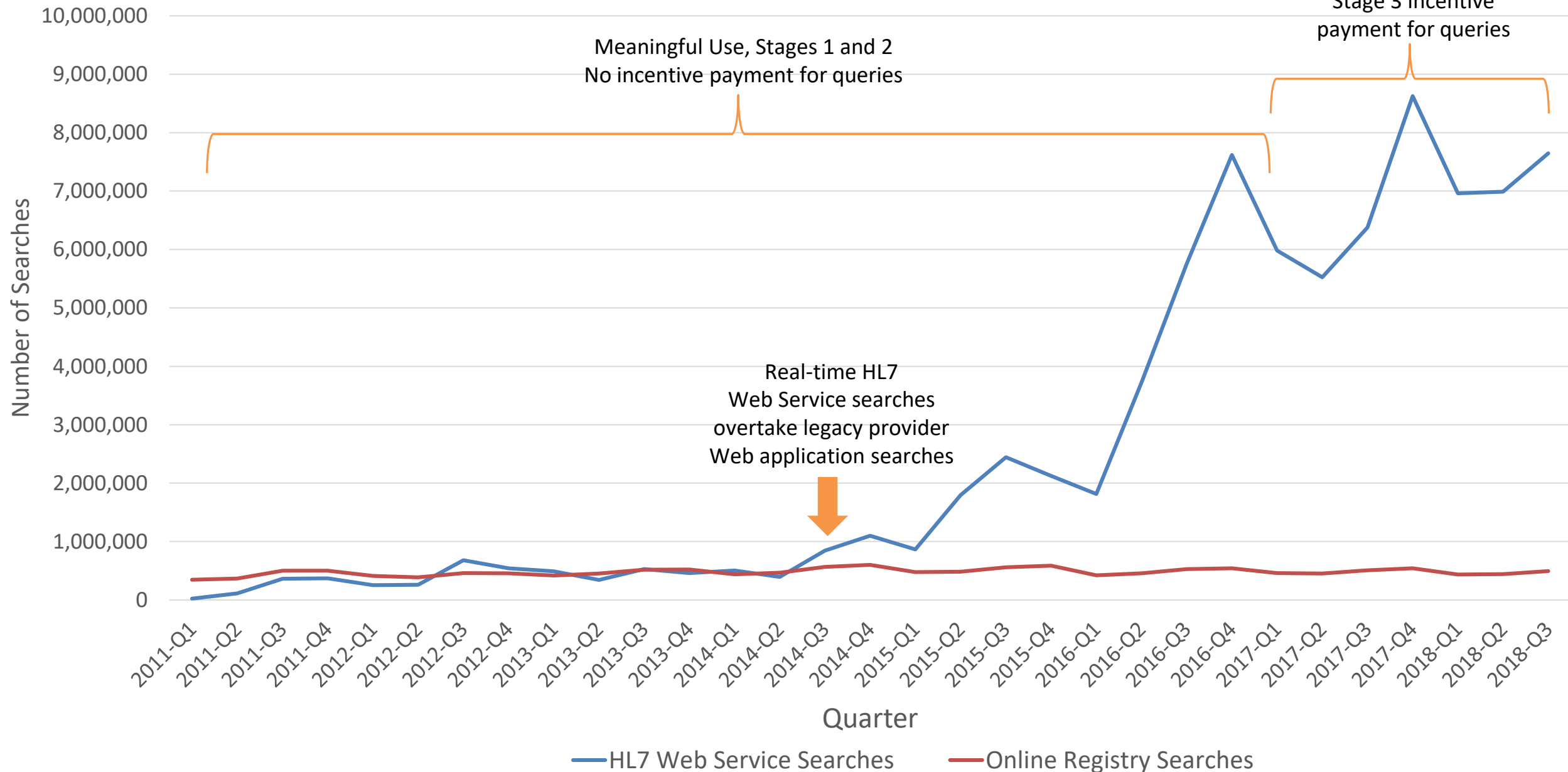
- 16 EHRs in 1,293 healthcare facilities searched CIR in 2017
- Real-time EHR integration with NYC CIR
 - Metroka, et al., IIS-EHR Partnerships: Providing and Displaying Immunizations and Clinical Decision Support in EHRs. AIRA National Meeting, 2016.
<http://repository.immregistries.org/resource/track-c-iis-ehr-partnership-providing-and-displaying-immunizations-and-clinical-decision-support-in/>
- Online Registry Web application to search or report
- My Vaccine Record (Consumer Access/Patient Portal application) requests by parents and students
 - Daniel, et al., Consumer Connections to IIS Records: A Spectrum of Approaches and Results. AIRA National Meeting, 2017.
<http://repository.immregistries.org/resource/consumer-connections-to-iis-records-a-spectrum-of-approaches-and-results/>
- NYS law and NYC Health Code require unique matching record

2-step patient record search process

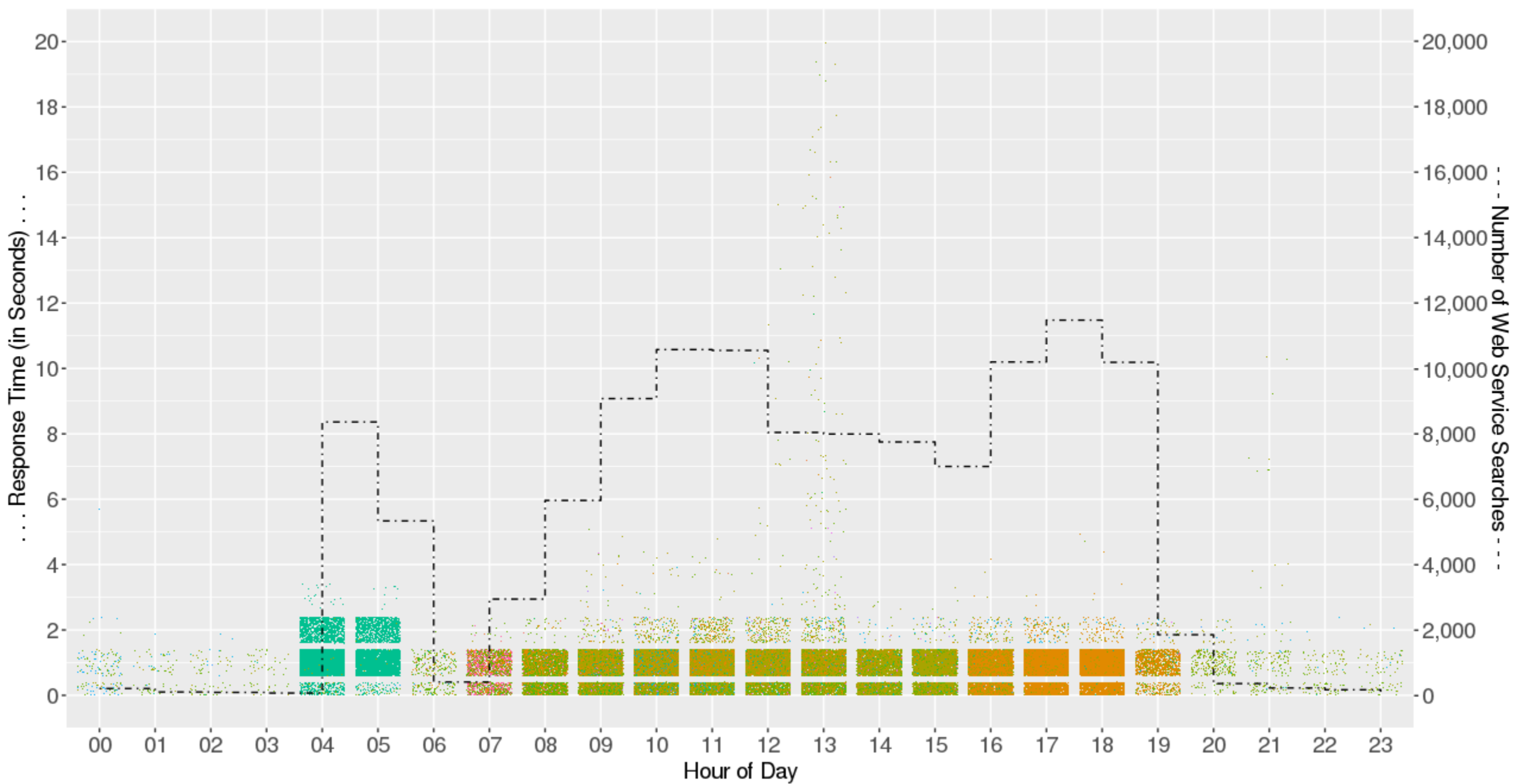
- Step 1, ~40 exact match queries take a fraction of a second
- Step 2, if a unique exact match is not found, perform a probabilistic search using a trained machine learning model
 - Blocking phase followed by scoring of pairs of records
 - Probabilistic search must find only one match above 90% match probability threshold
 - Match threshold set empirically, based on tests
- Near zero tolerance for incorrect matches
 - Research scientists perform data and software quality assurance
 - Raise the match threshold
 - Improve the matching model

Patient immunization record searches in CIR, quarterly, by real-time search method

January 2011 to September 2018



Response time For HL7 Web service searches, colored by sending application
October 4, 2018



My Vaccine Record parent and student access patient portal, launched January, 2017



Results

[exit session](#)

Sign up to receive immunization messages from the Health Department when this feature becomes available.

Text Messages: ☒ Yes ☐ No Cell Number

Email Messages: ☒ Yes ☐ No Email Address

[save](#)

This report contains immunization data that have been reported to the Health Department's Citywide Immunization Registry (CIR). Report with your health care provider for completeness and accuracy. Records may be updated by completing and mailing the [Immunization Enrollment or Update form \(PDF\)](#).



save



Print



Bureau of Immunization

CIR ID: 578007887
Name: MINNIE MOUSE
DOB: 10/10/2005
Age: 11 y 5 m
Sex Assigned Female
at Birth:



Citywide
Immunization
Registry

42-09 28th Street, 5th Floor, CN Z1
Long Island City, NY 11101-4132
email: cir-records@health.nyc.gov
www.nyc.gov/health/cir

Immunization History

Date 03/07/2017 03:08 PM

Vaccine	Vaccine Name	Date of Vaccination	Next Due/Recommendation
Influenza			Due on 08/01/2017 Influenza
	Influenza	09/23/2014	
	Influenza, IIV3, Adjuvanted, IM (>=65yrs)	08/25/2016	
	* Influenza, IIV3, IM	12/05/2016	
HepB			Completed Vaccine Series
	DTaP-Hep B-IPV (Pediarix)	12/10/2005	
	DTaP-Hep B-IPV (Pediarix)	02/13/2006	
	DTaP-Hep B-IPV (Pediarix)	05/10/2006	

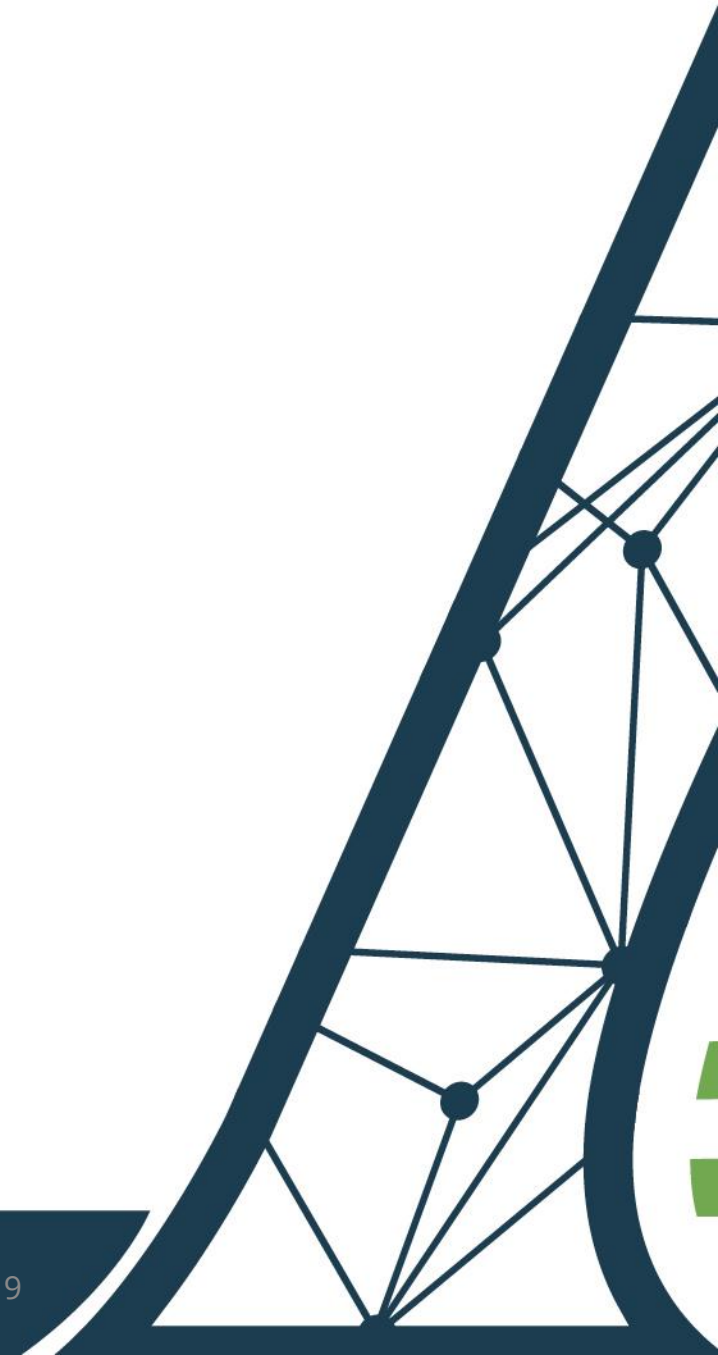
- Download or Print.
- Enter cell phone number and or email for future messages from Bureau of Immunization.

Goal: Free, Open Source Master Patient Index and Immunization Registry Components

- More than 56 CDC grantees (50 states, 6 cities, Indian Health Service, and US territories)
- International Immunization Programs
- Simplify accurate matching of disparate data sources
- Benefits:
 - No up-front cost for software
 - Community of experts
 - Vendor and platform agnostic
- To-do list:
 - Finish migration to PostgreSQL database
 - Improve documentation
 - Source code audit
 - Docker images with bundled applications and services
 - Release all source code on GitHub
- Challenges:
 - Build community of experts
 - Free software governance process
 - Obtain funds for to-do list

Jim Daniel

Health and Human Services





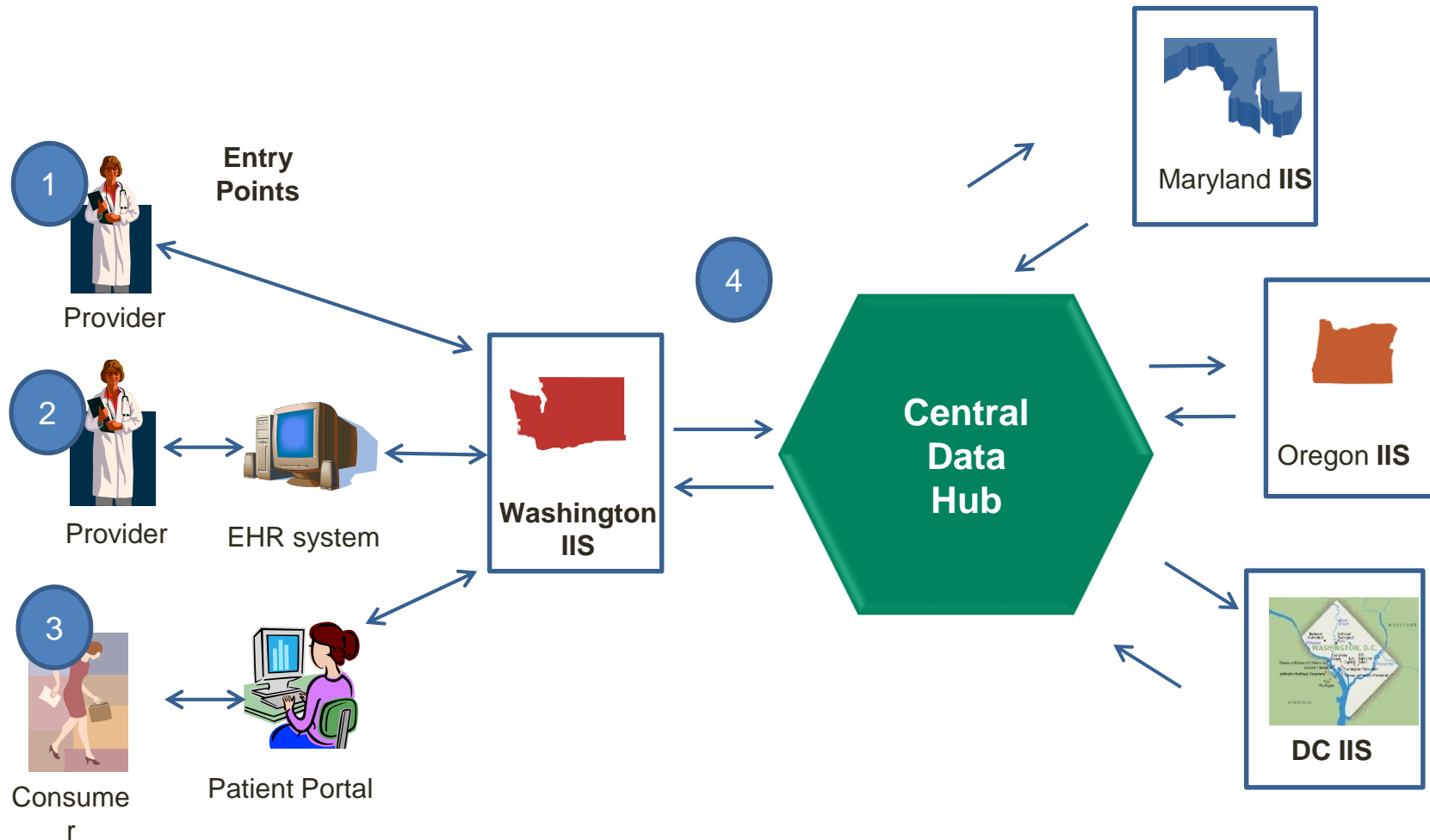
Office of the
CHIEF TECHNOLOGY OFFICER

Office of the CTO: Immunizations and Public Health Innovation

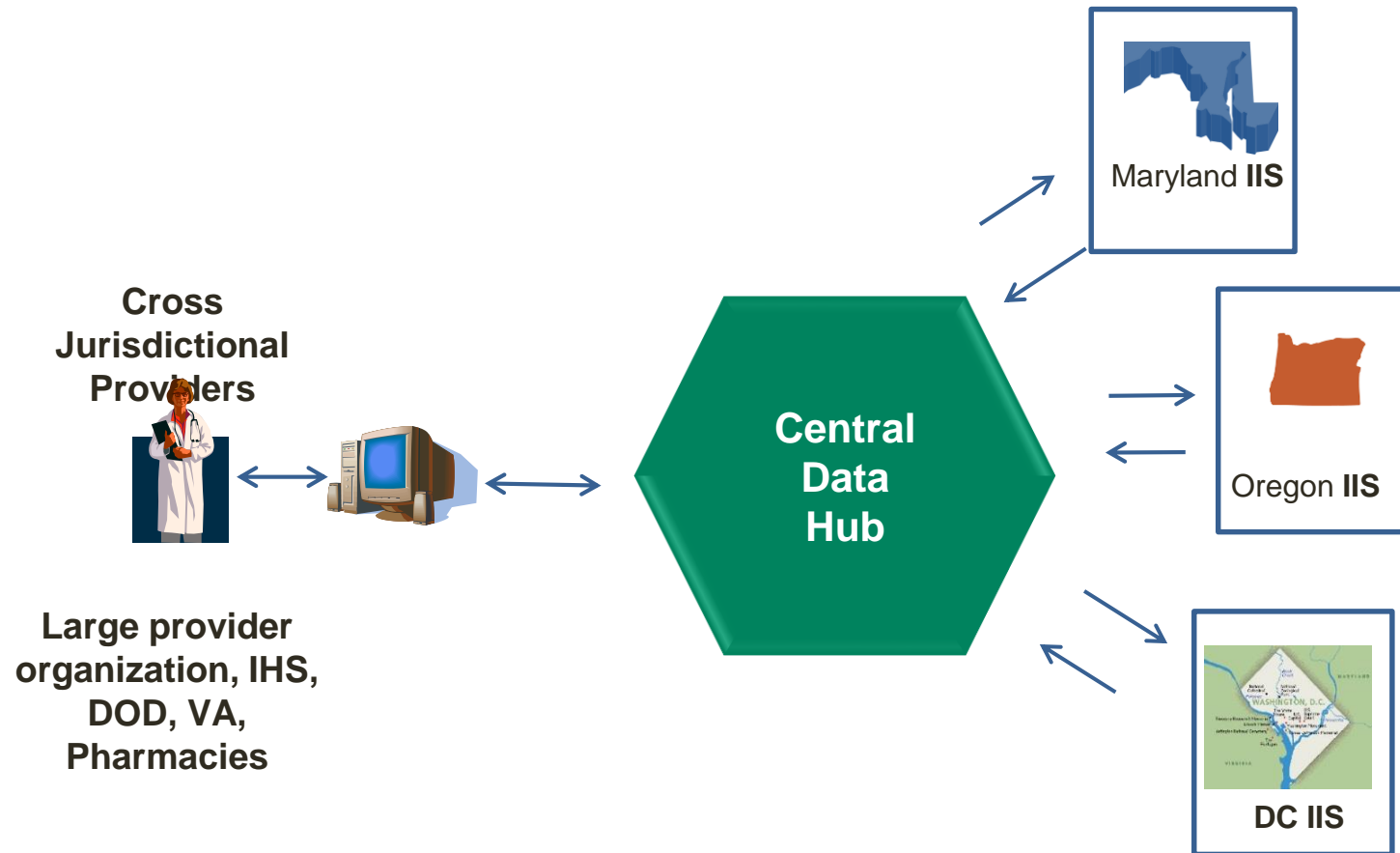
September 9, 2018

Current HUB to enable IIS to IIS exchange

Actors ↔ IIS ↔ Hub ↔ (Additional IIS...)



PIPO Expansion of HUB



PIPO Expansion of HUB

Phase One

- Environmental Scan
 - Current HUB project
 - Sequoia
 - TEFCA
 - Others
- Stakeholder engagement and Requirements
 - Policy
 - Security
- Workflow
 - Additional requirements
 - Onboarding
- Evaluation/improved data quality

PIPO Expansion of HUB

Phase Two

- Additional Services added to HUB
 - Translation services
 - Transport services
 - Potential FHIR services
- Pilot Implementations

[Program Name] gives you quick, easy and secure online access to your family's immunization records. It's ideal for:

- Proof of immunization for school or camp registration
- Seeing a new healthcare provider
- Tracking boosters and yearly vaccines, like the flu shot
- Managing immunization records for an elderly parent
- Preparing for foreign travel or moving to another country
- Being prepared in case of emergency



FOR OFFICE USE ONLY
Temporary Password/PIN:

Sign up today... it's easy!
Call or visit us online today:
000-000-0000
ProgramName.com

LOGO HERE



For more information on this letter, please visit health.gov/immunization.
The HubNet, the logo, the HubNet logo, and the Blue Button logo are registered Service Marks of the U.S. Department of Health and Human Services.

You need an easy way to access your family's immunization records.



Inject more
CONVENIENCE
into your family's
immunization records.

LOGO HERE



Getting started is as easy as 1-2-3. All you need to do is:

1. **Register.** Complete a [Program Name] enrollment form online or at your healthcare provider's office.
2. **Request.** Your healthcare provider approves your request and sets up the account while you're at their office.
3. **Review.** Log in as soon as possible and activate your account. You'll have immediate access to your family's immunization records to view, download or print as often as you need.

Now you can manage your family's immunization records online. When you sign up for [Program Name], you can use any trusted computer to view your up-to-date immunization records. You can also download or print an official copy. Why use [Program Name]?

It's easy.

Gaining access to your immunization records is simple. Just complete a [Program Name] enrollment form online or at your healthcare provider's office. Your healthcare provider then creates your account and, if you have not already set up your password, provides you with a temporary password/PIN. Log in as soon as possible to activate your account. You'll have immediate access to your family's immunization records. Best of all, you only need one login ID and password to access immunization records for your entire family.

It's convenient.

You may not need your immunization records often, but when you do, [Program Name] enables you to effortlessly download and print official copies as you need them, without an extra trip to your healthcare provider's office. Whether you're registering kids for kindergarten or summer camps, moving them into a new school district, seeing a healthcare provider for the first time, applying for state support such as WIC, or just wanting more control over your family's health records, [Program Name] has you covered.

It's secure.

Accessing your immunization records through [Program Name] is just as private and secure as banking or paying bills online. What makes [Program Name] so secure? First, you create your own password. This means that only you and those you choose to share it with can access your family's immunization records. Second, no other personal information is available through the tool. Your information is protected.

Provider Frequently Asked Questions

What is [Program Name]?

[Program Name] gives patients access to their own and their family members' immunization records, and allows them to download and print official copies to satisfy the requirements of schools, camps, state agencies, employers and others who require proof of immunization.

What are the goals of [Program Name]?

[Program Name] aims to reduce the administrative burden of immunization records requests for you and your staff, improve immunization rates and empower patients to take greater control over their health.

How does [Program Name] work?

[Program Name] is a consumer portal that connects with [State Name]'s immunization information system. The program allows patients to view and print official copies of their immunization records.

Does [Program Name] provide official immunization records?

The immunization records provided by [Program Name] are official certificates that can be used to satisfy requirements by schools, camps, employers and others who require proof of immunization.

How much will it cost patients to use [Program Name]?

[Program Name] is free for your patients and providers.

What is your role in [Program Name]?

Your practice is vital to the success of [Program Name]. Your role includes educating consumers and creating awareness of [Program Name], communicating the benefits of using [Program Name] to access immunization records and approving patients' initial account requests.

Is it easy to register patients in [Program Name]?

Registering patients in [Program Name] is a simple, one-time process that generally takes less than two minutes. Your office reviews and approves the application during the visit, matches records from the state immunization information system and provides each patient with a program user guide.

Can my patients pre-register for [Program Name]?

Yes, patients may start the enrollment process online and your office can simply review and complete the application during the visit.

How long will it take to activate a patient's account?

Activating a [Program Name] account is a two-step process that takes just minutes for you and your patients. First, your office reviews and approves the application during the visit. If the patient has not enrolled in advance, your office provides a secure, temporary password/PIN and a program user guide. Then the patient logs in at home or elsewhere and activates the account. The patient then has immediate access to family immunization records. —OVR—

Technical Support Hotline 000-000-0000

Provider Frequently Asked Questions, continued

How soon will a patient be able to see their updated records following an immunization?

The timeframe will vary depending on how frequently your office updates the state immunization information system. As soon as the immunization data has been moved into the system, it will be displayed in [Program Name].

Can any healthcare provider use [Program Name]?

At this time, only [state registry] participants and their staff can access immunization records through [Program Name]. The state immunization program determines the eligibility of providers to participate in the program.

What if a patient identifies an inaccuracy in their immunization records?

Patients should alert your staff to incomplete or inaccurate immunization records. Only you or your staff may update or add records in [state registry].

Does [Program Name] keep patients' records secure?

Yes. Patients use a unique, temporary password/PIN to activate their account and set their own private password. No other personal information is available through the tool, and records can only be modified by you or your staff.

How long do patients have to activate their account?

Patients have 10 days to log in to [Program Name] and activate their account. If they do not activate the account within 10 days, they will need to contact your office.

Does [Program Name] work with Blue Button?

Yes, [Program Name] is Blue Button capable. Patients may use the Blue Button Connector to access the program. Blue Button is a way to get your health records electronically so you can review and share your health records to achieve your health goals. For more information please visit health.gov/bluebutton.

What if I need help authenticating a patient account?

You and your patients may access a technical support hotline by calling [800 Number].

Who should I contact if I have further questions on [Program Name]?

Additional information on the program is available at [URL].

Sign up today... it's easy! Call or visit us online today for additional information:
000-000-0000 • ProgramName.com

LOGO HERE



Technical Support Hotline 000-000-0000

Learn how your patients can easily and securely access their immunization records online.

Insert Program Logo Here



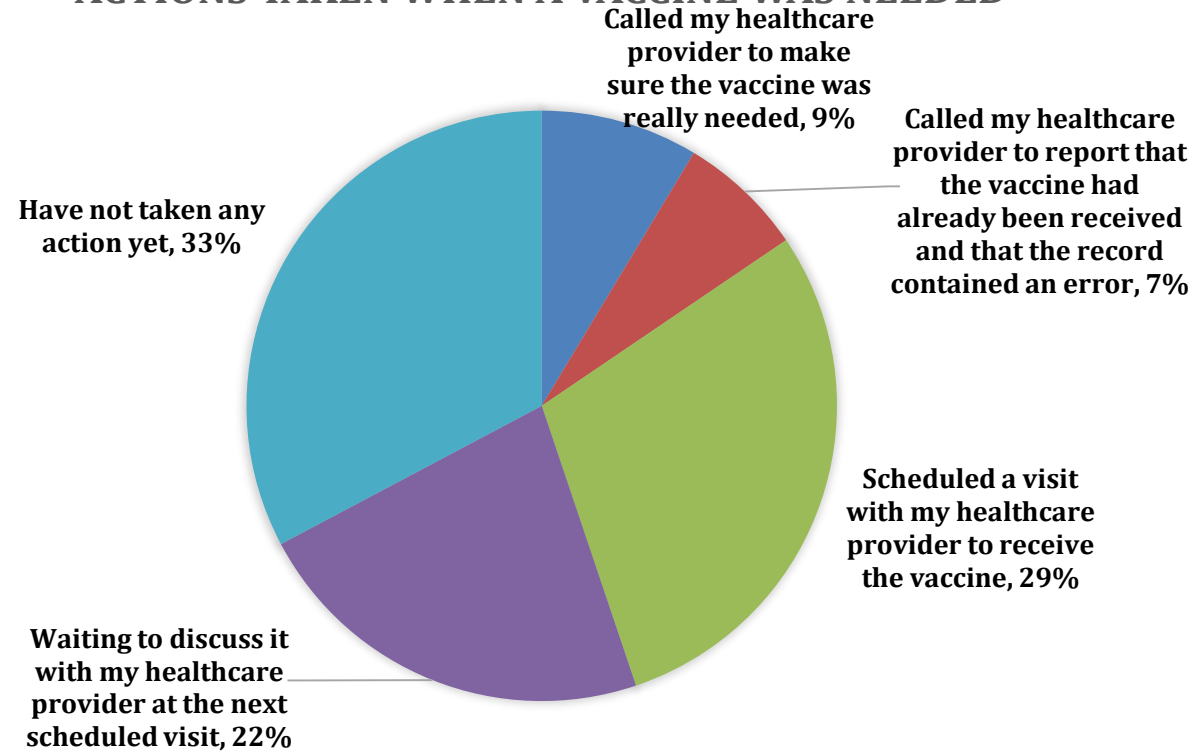
[Program Name] gives your patients access to their own and their families' immunization records.

- Reduce administrative workload for your staff.
- Empower your patients with more control over their immunization records.
- Simple, one-time enrollment process takes less than two minutes for your patients to complete!

To learn more or to participate in [Program Name], call or email [Contact Name, phone, email].

000-000-0000
ProgramName.com

ACTIONS TAKEN WHEN A VACCINE WAS NEEDED



Bringing it all together

How can an integrated infrastructure support:

- Consumer access
- Cross-jurisdictional exchange
- Support of cross-jurisdictional providers
- Quality metrics
- Value add of IIS data

Questions

James.Daniel@hhs.gov

@jim_daniel

Marty Woodruff

Associate Director, MiHIN





MiHIN
Shared Services

Connecting Immunization Efforts

Marty Woodruff
Associate Executive Director



Today's Agenda



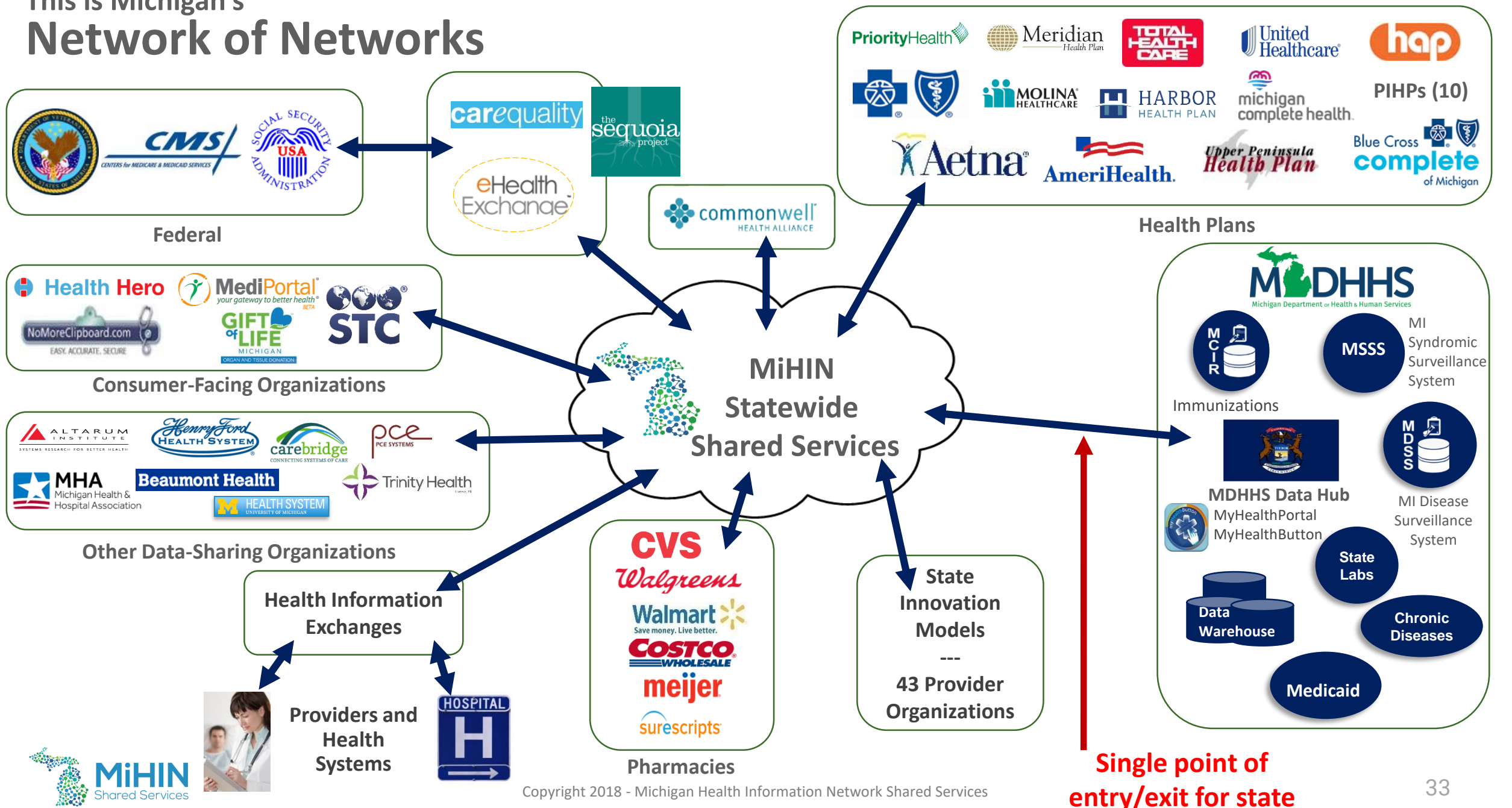


Michigan Health Information Network Shared Services (MiHIN)

MiHIN is Michigan's initiative to continuously improve healthcare quality, efficiency, and patient safety by promoting secure, electronic exchange of health information. MiHIN represents a growing network of public and private organizations working to overcome data sharing barriers, reduce costs, and ultimately advance the health of Michigan's population.

MiHIN is a
**network for sharing
health information
statewide for Michigan**

This is Michigan's Network of Networks



Immunization Use Cases in Michigan and Across the Country

Can reduce rates of vaccine preventable disease and help improve quality scores,
leading to increased revenue and savings



For **every \$1** spent on a childhood vaccine, the country **saves \$10** by averting treatment costs¹



For each birth cohort immunized, **42,000 deaths** and **20 million illnesses** are prevented, resulting in **\$69 billion** in net savings²



Immunization measures are commonly used in pay-for-performance initiatives, tying immunization rates to millions of dollars

¹ "Facts," Every Child By Two, accessed on June 27, 2016, http://www.ecbt.org/index.php/facts_and_issues/

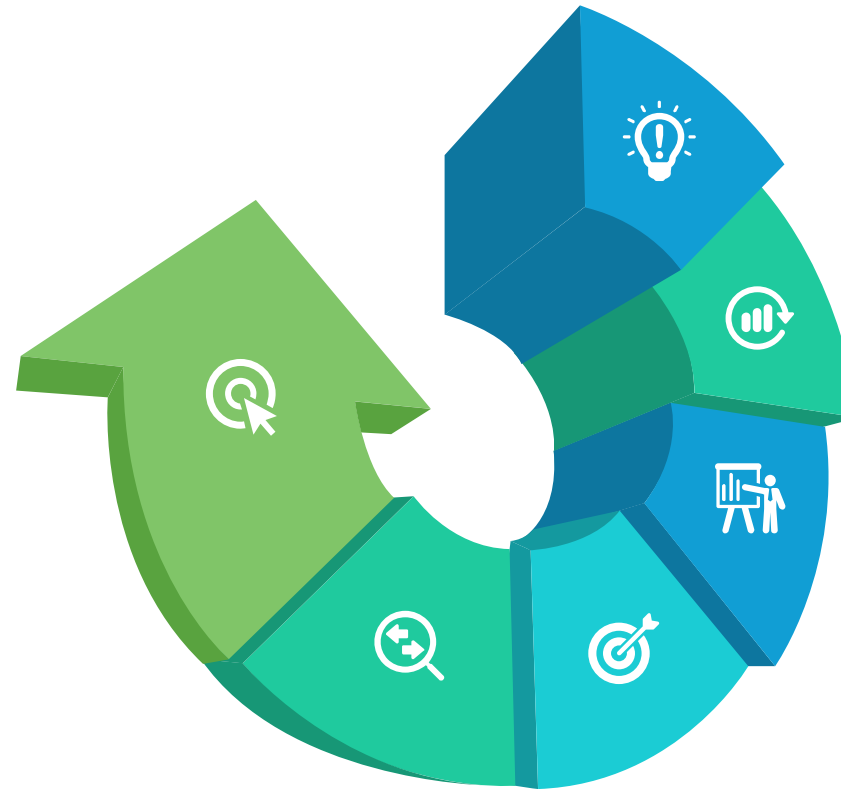
² "Vaccine-Preventable Diseases, Immunizations, and MMWR --- 1961—2011," Centers for Disease Control and Prevention, accessed on October 12, 2017, <https://www.cdc.gov/mmwr/preview/mmwrhtml/su6004a9.htm>

Immunization Data

As applied to quality reporting

Immunization data is needed to calculate several quality measures for Meaningful Use / PQRS / HEDIS:

- ✓ Childhood immunization status
- ✓ Immunizations for adolescents
- ✓ Pneumococcal vaccination status for older adults
- ✓ Preventative care & screening: influenza immunization
- ✓ Human papillomavirus vaccine for female adolescents



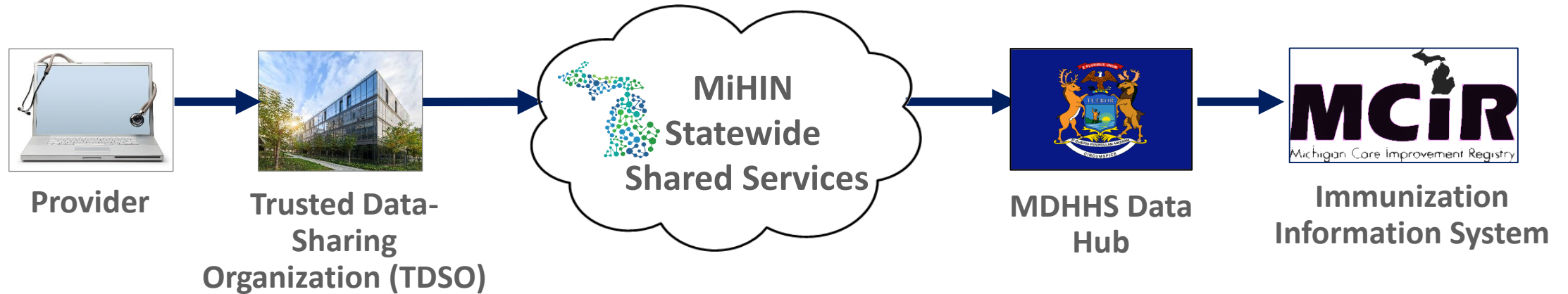
In Michigan

Michigan Care Improvement Registry (MCIR) is Michigan's Immunization Information System

MCIR currently expends significant resources to create customized reports for each payer/health plan and other recipients



Immunizations Use Case Data Flow



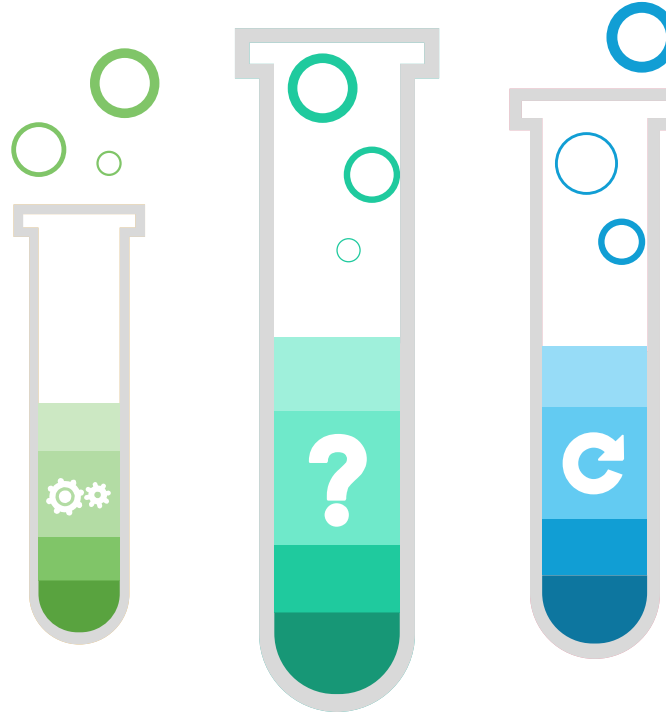
1. Provider sends immunization update to MiHIN via TDSO
2. MiHIN routes immunization update to MDHHS Data Hub
3. Data Hub routes update to MCiR

Immunization History-Forecast Use Case

Query to retrieve electronic data containing patient immunization records

MCIR allows healthcare providers to query for patient immunization history and forecast

Opportunity to explore health plans performing queries



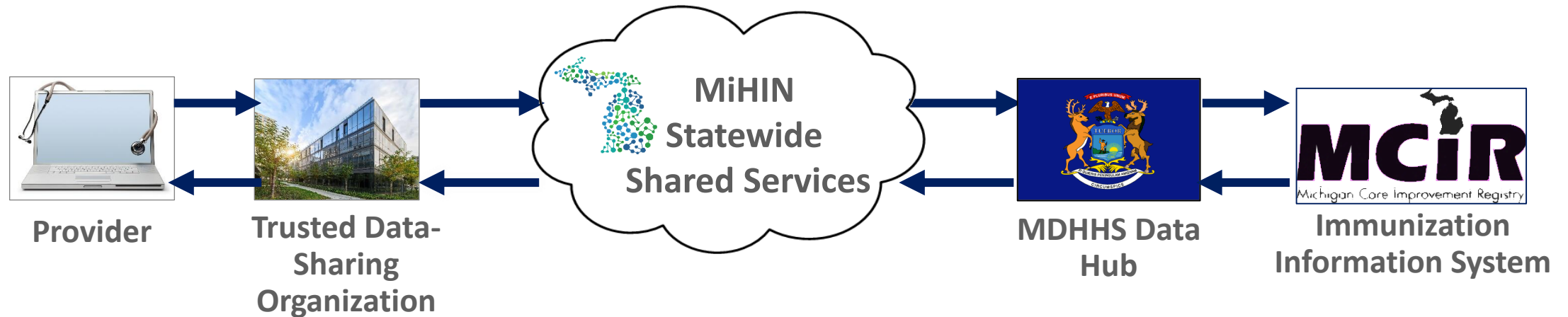
Send an inquiry to MCIR to determine:

- ✓ Past immunizations (history)
- ✓ Immunizations needed (forecast)

Providers can maximize patient visits as opportunities to verify if patient is current on immunizations

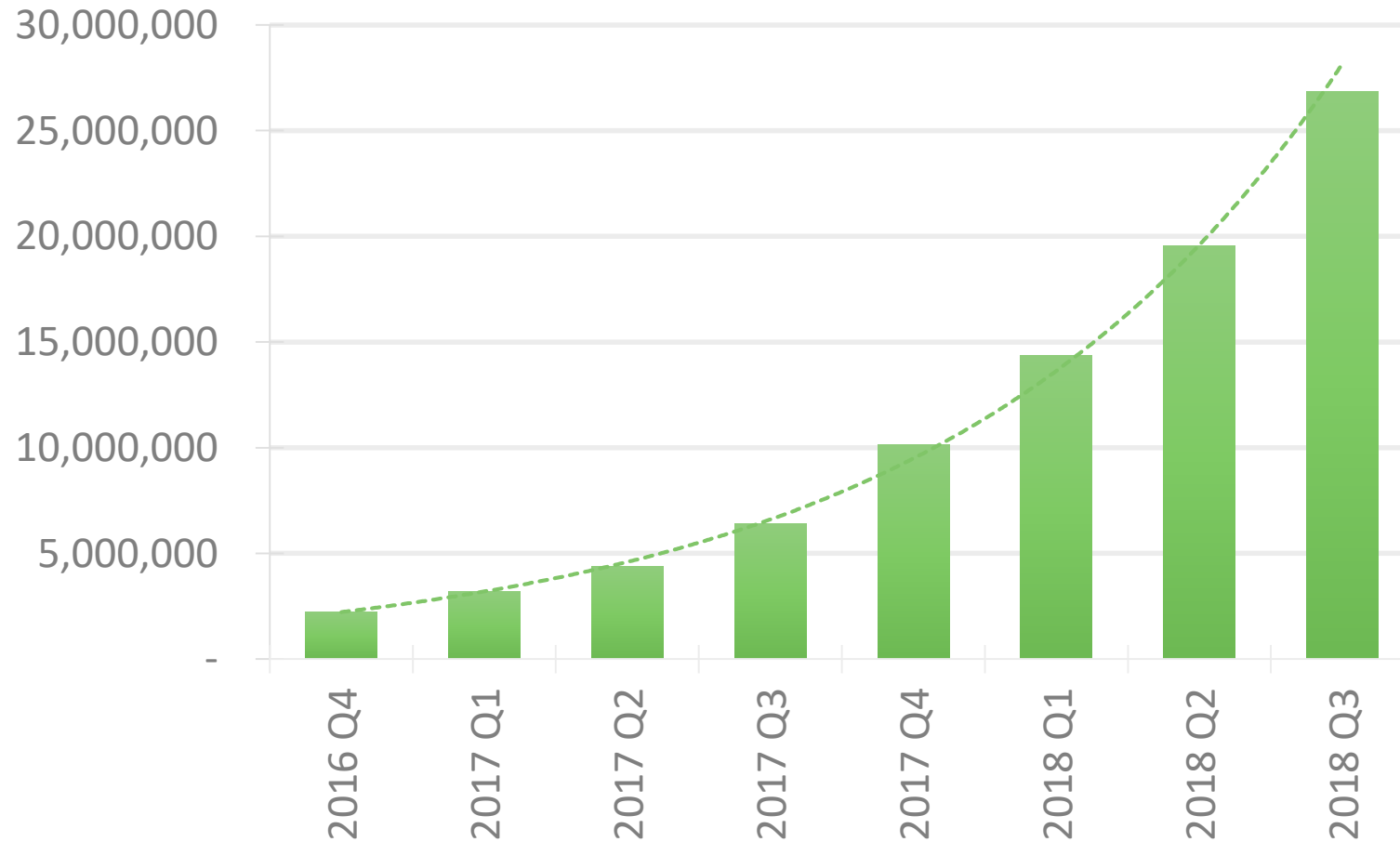


Immunization History-Forecast Use Case Data Flow



1. Provider sends query for immunization history to MiHIN via TDSO
2. MiHIN routes query to MDHHS Data Hub
3. Data Hub routes query to MCiR
4. Response with immunization history is returned via the same path

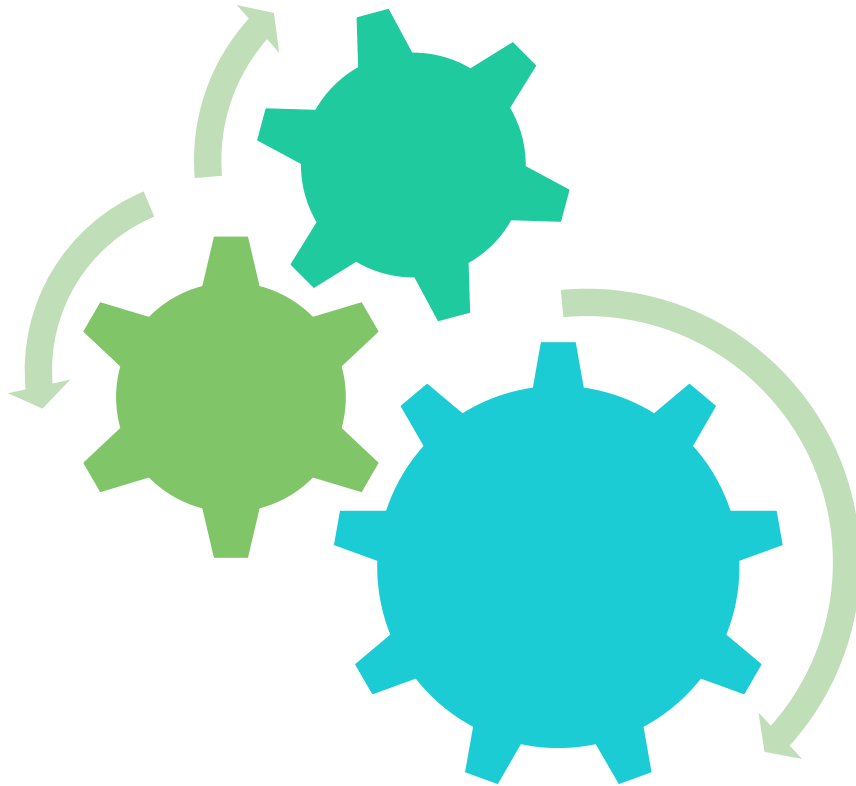
Michigan's Progress with Sharing Immunization Records



TOTAL
Immunization history-
forecast queries to
MCIR
since 2016

Interstate Immunizations

Working to improve information-sharing across state lines



42% of Americans will live in more than one state, meaning immunization records are scattered across the nation and difficult to access³



This effort can enable and facilitate access to immunization information from multiple jurisdictions using the current capabilities of organization, such as CommonWell and the ONC PHIZ Hub, willing to participate



Goal: Fill gaps in Immunization Information Systems for shared or transient consumers using interstate information sharing



Value: Reduce vaccine preventable diseases, improve adherence to vaccination schedules, prevent duplicate vaccinations, and improve quality scores

³. "Who Moves? Who Stays Put? Where's Home," Pew Research Center (December 17, 2008), accessed October 4, 2018, <http://www.pewsocialtrends.org/2008/12/17/who-moves-who-stays-put-wheres-home/>

Path to Interstate Immunization Exchange

Status and Landmarks



In mature production with **Michigan's IIS** (2012)



In mature production with **major national pharmacy chains** (2013-14)



Onboarding with **ONC PHIZ** for sharing with its participating jurisdictions (**WA, OR, NY/NYC**)



Testing Michigan IIS data with **North Dakota IIS**



Design and develop pilot with **CommonWell**

Integrating with CommonWell



- ✓ CommonWell Health Alliance is a trade association of public health entities dedicated to creating interoperable nationwide exchange of health data
- ✓ MiHIN is developing a connection to CommonWell to exchange immunization information
- ✓ Data sourced from CCDs and the IIS
- ✓ Designing bi-directional query using FHIR and HL7 v2
- ✓ Data accessed from CommonWell will improve data completeness in Michigan's IIS
- ✓ CommonWell can also access records via MiHIN



Thank you!

Marty Woodruff

*Michigan Health Information Network
Shared Services*

marty.woodruff@mihin.org

Greg Faber

EPIC



The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

Vaccination Query: An EHR Perspective

Gregory Faber, PhD

Overview of Epic

- ▶ Located in Verona, WI
- ▶ ~9800 Employees
- ▶ Founded in 1979
- ▶ ~400 Total Live Organizations



EHR Goals

- ▶ Healthy Patient Population
 - ▶ Complete and Accurate Patient Immunization Record
- ▶ Streamlined and Intuitive End User Workflows
- ▶ Support and Promote Interoperability Standards
- ▶ Standard “Out-of-the-Box” Interfaces
 - ▶ Easy Integration with Registries
 - ▶ Simplified Support of Interfaces

Epic and Vaccination Query Interfaces - 12 Year Retrospective

- ▶ Sept. 2006 - Epic's first designs and development for VXQ/VXR
- ▶ Sept. 2009 - First Epic customer to go-live with VXQ/VXR (1)
- ▶ Feb. 2010 - Meaningful Use Stage 1 Development (1)
- ▶ Aug. 2010 - CDC HL7 2.5.1 Implementation Guide (1)
- ▶ Jan. 2011 - Develop proprietary Web Service (1)
- ▶ Feb. 2011 - Develop proprietary Web Service (2)
- ▶ Aug. 2011 - Develop proprietary Web Service (7)
- ▶ Sept. 2012 - Add support for QBP/RSP (MU Stage 2) (20)

* Number in parentheses (#) are the total number of query interfaces Live

Epic and Vaccination Query Interfaces - 12 Year Retrospective

- ▶ Jan. 2013 - Automated querying (30)
- ▶ Jul. 2013 - Support for the CDC WSDL (36)
- ▶ Mar. 2015 - Reconcile Outside Immunizations (58)
- ▶ Mar. 2016 - MU Stage 3 Development (81)
- ▶ May 2017 - Store the registry MRN (103)
- ▶ Sept. 2017 - Location based filtering for queries (126)
- ▶ August 2018 - Today (236)

* Number in parentheses (#) are the total number of interfaces Live

Epic and Vaccination Query Interfaces - 12 Year Retrospective

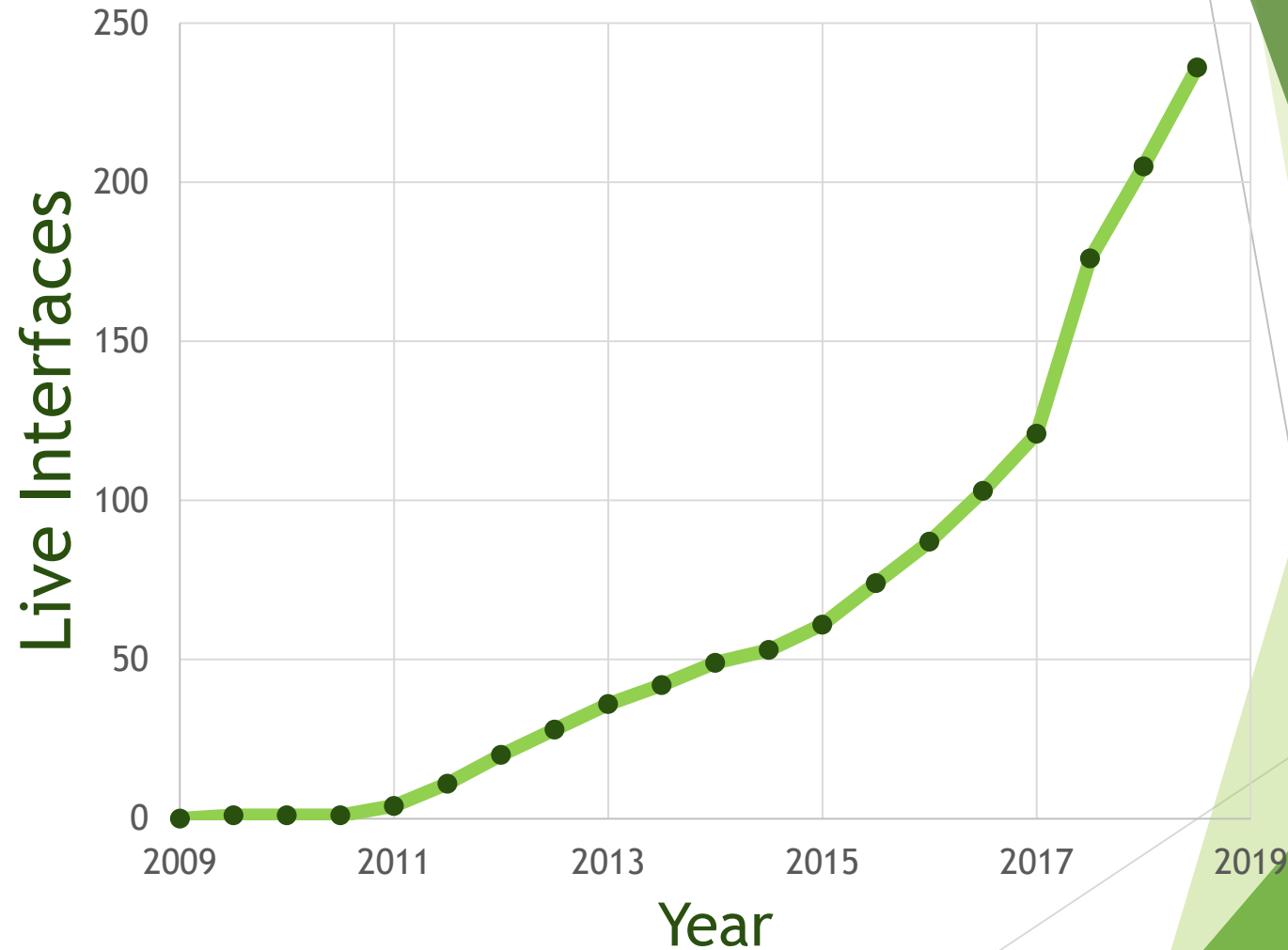
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* Number in parentheses (#) are the total number of interfaces Live

Vaccination Query Interface Statistics

- ▶ 236 Live Interfaces
- ▶ 35 State Registries
- ▶ 1 City Registry
- ▶ >200 million queries sent a year



Drivers for EHR Interface Development


- ▶ Fixes
- ▶ Updates to National Standards
 - ▶ CDC HL7 Implementation Guides
 - ▶ ONC and Meaningful Use Guidelines
- ▶ Customer enhancement requests
- ▶ Company wide initiatives

Example Workflow - Chart Review

Bryson Crawford

4yo, 1/10/2014

MRN: 55103



Care Team

PCP: Seeger, Marty, MD

Immunizations - All Types

All Admin Types

Incomplete Admins

Historical Admins

New Admin

Immunization Report

E-Sign

Imm Registry

More

?

✕

Administration History

Administered On

Next Due

☐ Show Deleted

☒ Show Deferred

Immunizations

DTAP-IPV-HEP B

7/10/2014, 5/10/2014, 3/10/2014

+ New

Hib (PRP-T)

1/10/2015, 5/10/2014, 3/10/2014

+ New

Influenza Whole

10/18/2017

MMR

1/10/2015

+ New

Pcv13

1/10/2015, 5/10/2014, 3/10/2014

+ New

Varicella

1/10/2015

+ New

Immunizations from Immunization Registries

No registry information available

☒ Mark as Reviewed


Never reviewed.

Example Workflow - Initiate Query

Bryson Crawford

4yo, 1/10/2014

MRN: 55103



Care Team
PCP: Seeger, Marty, MD

Immunizations - All Types

All Admin Types

Incomplete Admins

Historical Admins

New Admin

Immunization Report

E-Sign

Imm Registry

More

?

X

Administration History

Administered On

Next Due

☐ Show Deleted

☒ Show Deferred

Immunizations

DTAP-IPV-HEP B

7/10/2014, 5/10/2014, 3/10/2014

+ New

Hib (PRP-T)

1/10/2015, 5/10/2014, 3/10/2014

+ New

Influenza Whole

10/18/2017

MMR

1/10/2015

+ New

Pcv13

1/10/2015, 5/10/2014, 3/10/2014

+ New

Varicella

1/10/2015

+ New

Immunizations from Immunization Registries

State Immunization Registry


A request was initiated today at 3:23 PM


☒ Mark as Reviewed


Never reviewed.






Example Workflow - Query Response


Reconcile
Outside
Imms →


 New immunizations from outside sources are available for reconciliation.


 Reconcile Outside Immunizations with the immunizations on the patient's chart.

 Administration History


	Administered On	Next Due	<input type="checkbox"/> Show Deleted	<input checked="" type="checkbox"/> Show Deferred
Immunizations				
> Dtap/hepb/ipv (Pediarix)	7/10/2014, 5/10/2014, 3/10/2014			 New
> HiB	1/10/2015, 5/10/2014, 3/10/2014			 New
> Influenza Whole	10/18/2017			
> MMR	1/10/2015			 New
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014			 New
> Varicella	1/10/2015			 New

 Immunizations from Immunization Registries

 State Immunization Registry

 Immunizations as of today at 4:35 PM

	Administered On
> DTAP (Dtap/hepb/ipv (Pediarix))	7/10/2014, 5/10/2014, 3/10/2014
> Flu (Influenza Whole)	10/18/2017
> Hib	1/10/2015, 5/10/2014, 3/10/2014
> MMR	1/10/2015
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014
> Tdap	7/10/2015
> Varicella	7/10/2015, 1/10/2015

 Recommended immunizations as of today at 4:35 PM


	Recommended Due Date
> MMR	5/1/2018
> Var (Varicella)	5/1/2018
> IPV	5/1/2018
> Influenza (Influenza Whole)	9/1/2018

Registry
History →

Registry
Forecast →

Example Workflow - Reconcile Outside Immunizations


Bryson Crawford
4yo, 1/10/2014
MRN: 55103




Care Team
PCP: Seeger, Marty, MD

Reconcile Outside Info


Allegies Medications Problems **Immunizations**

 Outside of Local Medical Record

Immunization	Administered On	
> Tdap	7/10/2015	Add All Discard All
> Varicella	7/10/2015	Add All Discard All

 Current Immunizations in Local Medical Record

Immunization	Administered On
> Dtap/hepb/ipv (Pediarix)	7/10/2014, 5/10/2014, 3/10/2014
> HiB	1/10/2015, 5/10/2014, 3/10/2014
> Influenza Whole	10/18/2017
> MMR	1/10/2015
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014
> Varicella	1/10/2015

→ Next  File & Close Close

Example Workflow - Administer Vacccs

Bryson Crawford

4yo, 1/10/2014

MRN: 55103



Care Team

PCP: Seeger, Marty, MD

Immunizations - All Types

All Admin Types

Incomplete Admins

Historical Admins

New Admin

Immunization Report

E-Sign

Imm Registry

More

?

Administration History

Administered On

Next Due

☐ Show Deleted

☒ Show Deferred

Immunizations

> Dtap/hepb/ipv (Pediarix)	7/10/2014, 5/10/2014, 3/10/2014	+ New
> HiB	1/10/2015, 5/10/2014, 3/10/2014	+ New
> Influenza Whole	10/18/2017	
> IPV	5/8/2018	+ New
> MMR	5/8/2018, 1/10/2015	+ New
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014	+ New
> Tdap	7/10/2015	+ New
> Varicella	5/8/2018, 7/10/2015, 1/10/2015	+ New

Immunizations from Immunization Registries

State Immunization Registry

Immunizations as of today at 4:35 PM

	Administered On
> DTAP (Dtap/hepb/ipv (Pediarix))	7/10/2014, 5/10/2014, 3/10/2014
> Flu (Influenza Whole)	10/18/2017
> Hib	1/10/2015, 5/10/2014, 3/10/2014
> MMR	1/10/2015
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014
> Tdap	7/10/2015
> Varicella	7/10/2015, 1/10/2015

Example Workflow - Administer Vacccs

Bryson Crawford

4yo, 1/10/2014

MRN: 55103



Care Team

PCP: Seeger, Marty, MD

Immunizations - All Types

All Admin Types

Incomplete Admins

Historical Admins

New Admin

Immunization Report

E-Sign

Imm Registry

More

Administration History

Administered On

Next Due

☐ Show Deleted

☒ Show Deferred

Immunizations

> Dtap/hepb/ipv (Pediarix)	7/10/2014, 5/10/2014, 3/10/2014	+ New
> HiB	1/10/2015, 5/10/2014, 3/10/2014	+ New
> Influenza Whole	10/18/2017	
> IPV	5/8/2018	+ New
> MMR	5/8/2018, 1/10/2015	+ New
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014	+ New
> Tdap	7/10/2015	+ New
> Varicella	5/8/2018, 7/10/2015, 1/10/2015	+ New

Immunizations added from the
Reconcile Outside Info activity

Immunizations from Immunization Registries

State Immunization Registry

Immunizations as of today at 4:35 PM


	Administered On
> DTAP (Dtap/hepb/ipv (Pediarix))	7/10/2014, 5/10/2014, 3/10/2014
> Flu (Influenza Whole)	10/18/2017
> Hib	1/10/2015, 5/10/2014, 3/10/2014
> MMR	1/10/2015
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014
> Tdap	7/10/2015
> Varicella	7/10/2015, 1/10/2015

Example Workflow - Administer Vacccs

Bryson Crawford

4yo, 1/10/2014

MRN: 55103



Care Team
PCP: Seeger, Marty, MD

Immunizations - All Types All Admin Types Incomplete Admins Historical Admins New Admin Immunization Report E-Sign Imm Registry More ?

Administration History

	Administered On	Next Due	<input type="checkbox"/> Show Deleted	<input checked="" type="checkbox"/> Show Deferred
Immunizations				
> Dtap/hepb/ipv (Pediarix)	7/10/2014, 5/10/2014, 3/10/2014			+ New
> HiB	1/10/2015, 5/10/2014, 3/10/2014			+ New
> Influenza Whole	10/18/2017			
> IPV	5/8/2018			+ New
> MMR	5/8/2018, 1/10/2015			+ New
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014			+ New
> Tdap	7/10/2015			+ New
> Varicella	5/8/2018, 1/10/2015, 1/10/2015			+ New

Immunizations from Immunization Registries

State Immunization Registry

Immunizations as of today at 4:35 PM

	Administered On
> DTAP (Dtap/hepb/ipv (Pediarix))	7/10/2014, 5/10/2014, 3/10/2014
> Flu (Influenza Whole)	10/18/2017
> Hib	1/10/2015, 5/10/2014, 3/10/2014
> MMR	1/10/2015
> Pcv13	1/10/2015, 5/10/2014, 3/10/2014
> Tdap	7/10/2015
> Varicella	7/10/2015, 1/10/2015

IIS recommended immunizations administered during the encounter. (Sent to the IIS as a VXU message)

Benefits of Bi-directional Query with IIS

- ▶ Access to the patient's complete immunization history
- ▶ Accurate immunization forecasting
- ▶ Easy reconciliation of outside immunizations to the medical record
- ▶ Patient outreach for overdue immunizations (using reporting tools)
- ▶ Patient access to a complete immunization record for school/work (via the patient portal)

Contact Information

► Greg Faber - gfaber@epic.com

Eric Larson

AIRA





AIRA
AMERICAN IMMUNIZATION
REGISTRY ASSOCIATION

Measurement and Improvement

The Challenge w/ Standards

The Measurement and Improvement Project

The Impact

Standards Alignment Challenges



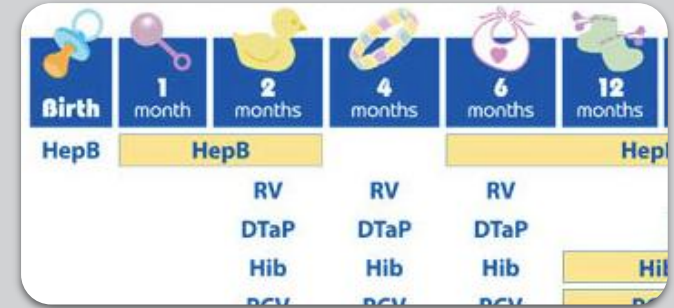
Transport

- 13 Page Specification



HL7 V2

- 408 Page IG
- 28 Page Addendum



CDS

- 139 Page Logic Specification
- 23 Disease Specific Excel Spreadsheets



Measurement and Improvement

Content Areas Well Underway:

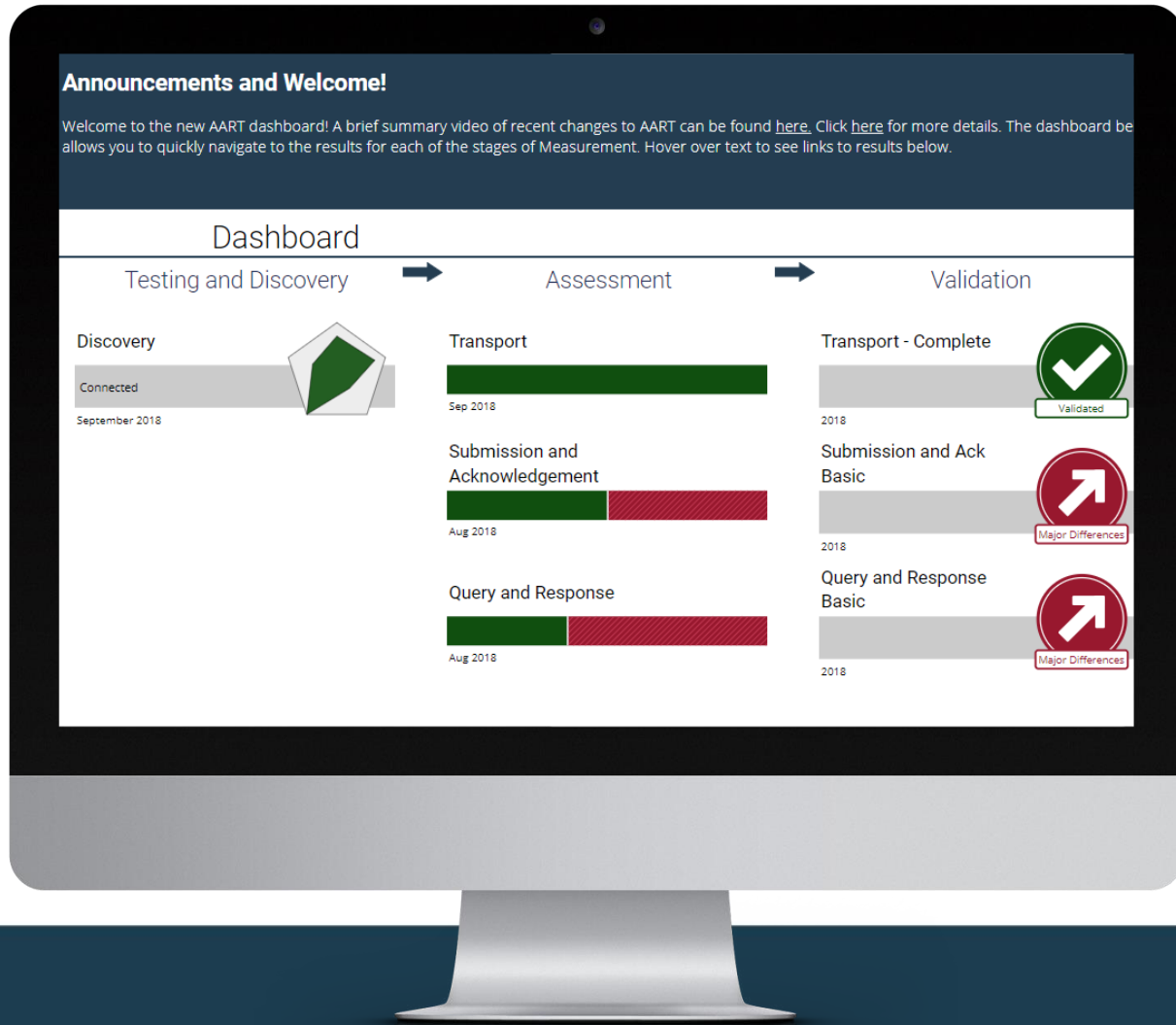
- ✓ Transport
- ✓ HL7
 - ✓ Submission & Acknowledgement
 - ✓ Query and Response

In Motion:

- ❑ Clinical Decision Support
- ❑ Evaluation of Data At Rest



Aggregate Analysis Reporting Tool (AART)



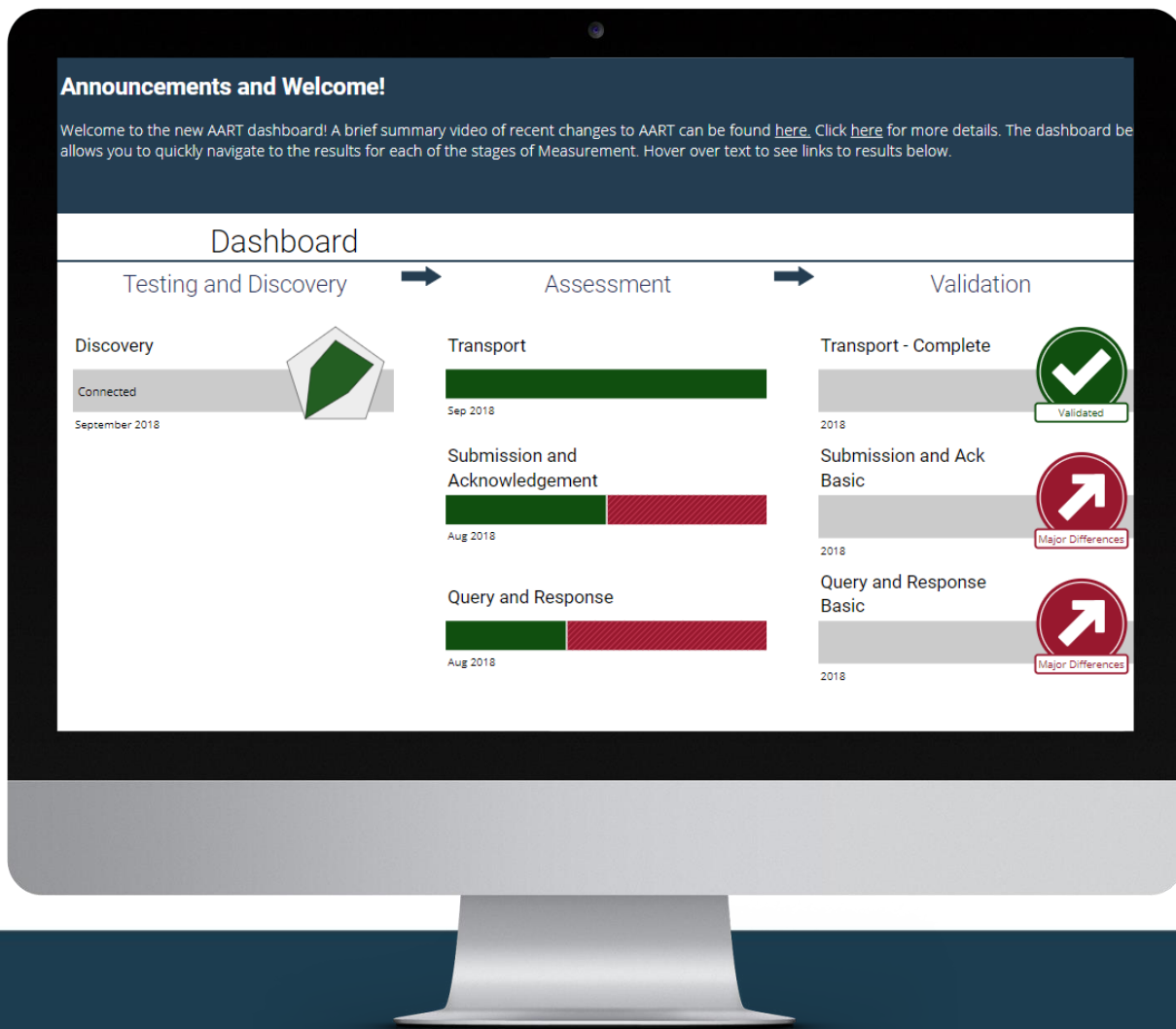
- AIRA Developed Measurement Tool
- Testing is performed a regular basis
- Each IIS has a Dashboard of their individual results
- Quarterly National Aggregate Reports are developed and published





AIRA
AMERICAN IMMUNIZATION
REGISTRY ASSOCIATION

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce



CDC WSDL Validator



HL7 VXU/ACK
Validator



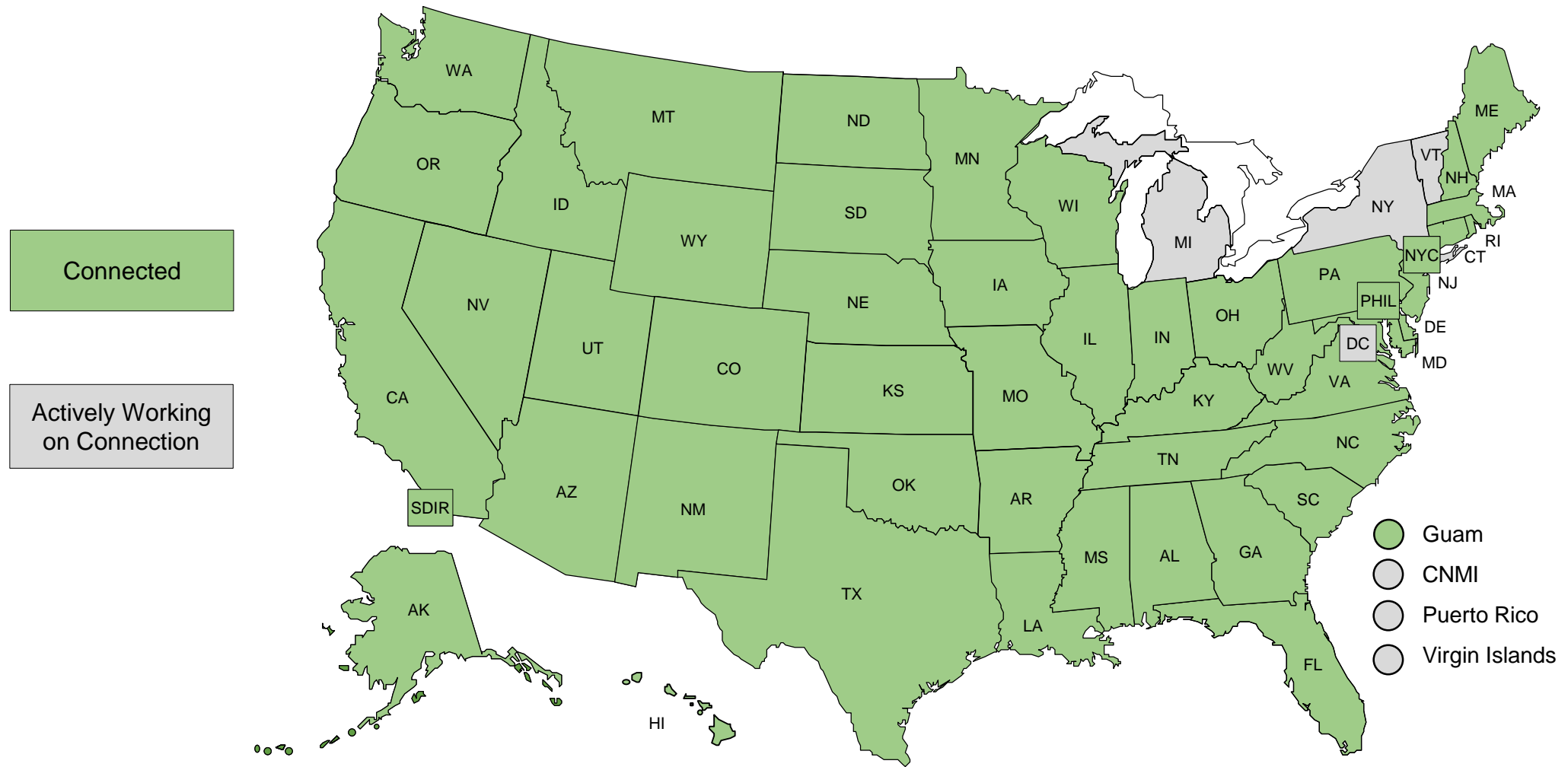
HL7 QBP/RSP
Validator



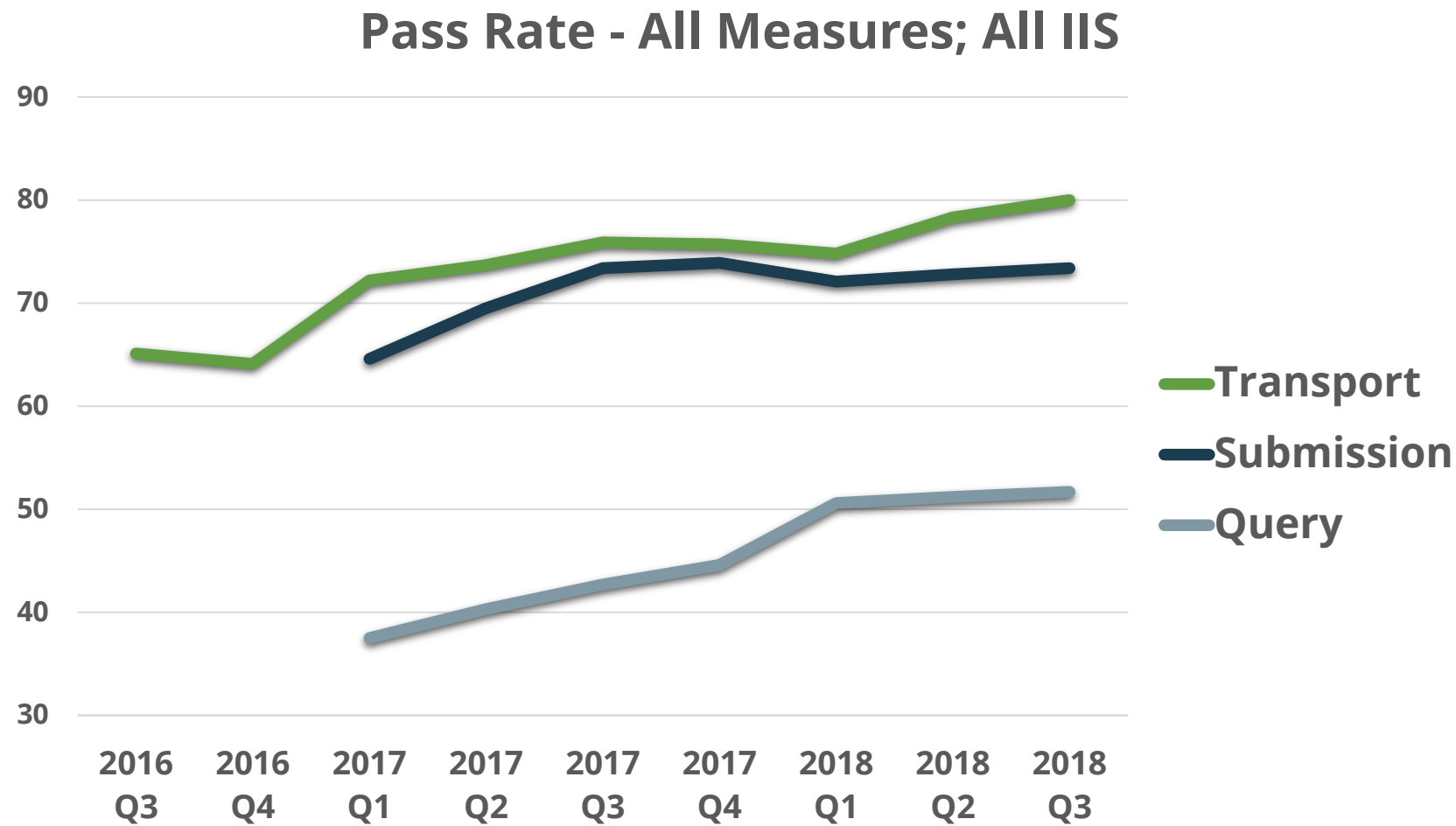
CDS Test Case
Management and
Execution



Great Participation Nationwide!



The Impact



Address Cleansing



Address Cleansing & Geocoding

- SmartyStreets is a data quality intervention service
- It is available to all IIS at **no cost**
- Choose from multiple ways to connect (manual, auto, API, UI)
- Use the service to:
 - De-dupe patient records
 - Map provider sites
 - Cleanse data at migration
 - and more...

**107 million+ addresses
standardized/validated!**



SmartyStreets Users Say...

"SmartyStreets works great. I'm really happy with the speed and their customer service."

– Josh Hull, Michigan

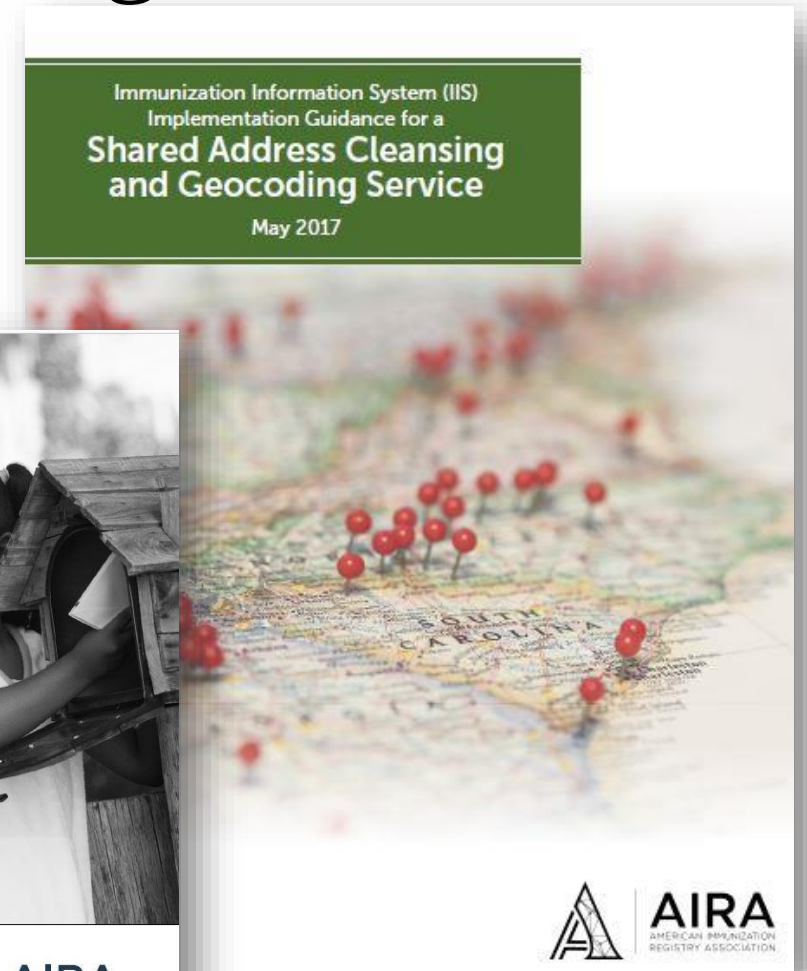
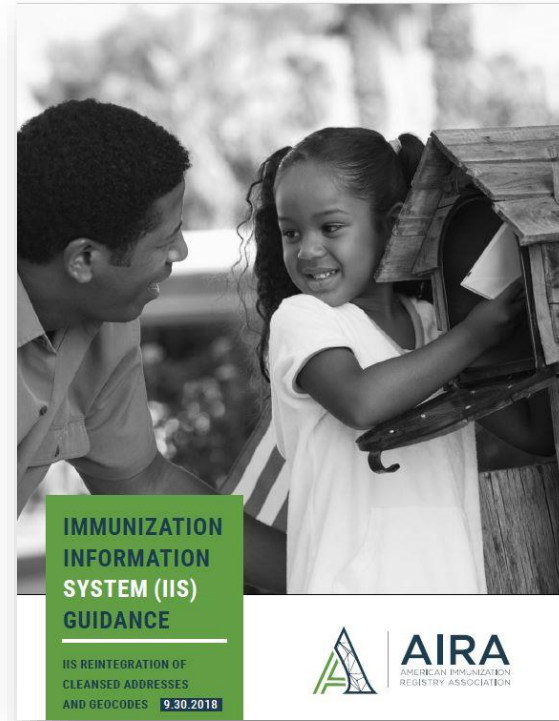
"The manual batch process is fast, easy, and reliable."

– Mike Dougherty, Texas



Address Cleansing & Geocoding Guidance

- Reintegration Guidance is now available!
- Webinar launch of the guide on 10/22
- SmartyStreets User Group meets monthly – everyone is welcome!



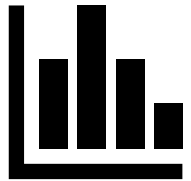
Discussion, Questions



In Conclusion



Standardization activities have directly improved interoperability with EHRs and IIS, as well as improved the quality of data within IIS



This has strengthened IIS as important analytic tools that support a wealth of population health needs



Providers can access these data seamlessly through EHR query at the point of care, supporting clinical decisions, ensuring appropriate immunization, and lowering burden



Questions, Further Contact? Thank you!

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