



# 2015 ANNUAL REPORT

CDC Health Information Innovation Consortium (CHIIC)

*Published 2/24/16*





## CDC Health Information Innovation Consortium (CHIIC) 2015 Annual Report

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### Message from the Office of Public Health Scientific Services' Chief Public Health Informatics Officer

We are pleased to release the 2015 CDC Health Information Innovation Consortium (CHIIC) Report. The report reflects progress in accomplishing goals 1 and 2 as outlined in the [CDC Surveillance Strategy](#). These goals are: 1) to foster and promote creative solutions to surveillance challenges within CDC and states, territory, local, and tribal agencies, and 2) accelerate the utilization of emerging tools and approaches to improve surveillance data. The surveillance innovation project awards are a direct means of sponsoring small activities independent of the major initiatives going on within the agency.

Since 2014, CHIIC funded a total of 14 innovative projects: 9 projects in 2014 and 5 projects in 2015. We look forward to another annual portfolio of projects in 2016. In 2015, 5 completed projects from the 2014 CDC Surveillance Strategy Innovation Project Awards shared their results during a CHIIC quarterly forum. These projects demonstrated an increased rate of adoption of new informatics and IT approaches within CDC systems and an increased efficiency of existing systems and faster time to market for new systems, and the emergence of reused shared services (i.e. business and IT).

CDC is moving toward a culture of innovation that enables partnership and improvement in public health surveillance. Since its inception, CHIIC funding has enabled projects that have improved timeliness and accuracy of data collection through the use of electronic versus manual data entry, reduced the collection burden on healthcare providers to deliver surveillance data, enhanced an existing web service by providing a standards-based, configurable, re-useable and secure interoperable solution, and provided insights and tools that can be reused or extended to other surveillance systems or activities.

With CHIIC funding, programs were able to create, share, and use innovation to improve public health surveillance. This small investment yielded great returns in the form of an increased application and experimentation with using innovation within the agency and in partnership with state health departments and other stakeholders.

Thank you for your support of the CDC Health Information Innovation Consortium (CHIIC) and the CDC Surveillance Strategy. We look forward to another year of project ideas that serve as opportunity areas for innovation with CDC and public health partners.



Brian Lee  
Chief Public Health Informatics Officer



# CDC Health Information Innovation Consortium (CHIIC) 2015 Annual Report

“Promoting creative solutions to surveillance challenges.”

## CHIIC Overview

CDC recognizes and is committed to the call for innovative solutions. In 2014, the Office of Public Health Scientific Services (OPHSS) created the CDC Health Information Innovation Consortium (CHIIC) to foster and promote creative solutions to improve public health surveillance.

The goal of the consortium is to encourage innovative projects with Public Health Informatics and Health IT activities across the agency, make them available as reproducible tools and models, and share lessons learned openly with programs and projects within CDC and its public health partners. CHIIC serves as a channel for innovative projects in CDC programs and collaborates with State, Tribal, Local, and Territorial agencies.

## Summary

This report highlights the overall impact CHIIC’s funding has had in advancing innovation within the agency and in partnership with key stakeholders. The report identifies the number of project proposals submitted in the 2015 project portfolio, the number of awarded projects, and highlights the purpose, results, and reuse or extension opportunities of the completed projects from the 2014 project portfolio.

Each year, the consortium solicits project proposals, evaluates each proposal, and provides funding to innovative small projects. Proposed projects must have a short turnaround time, lasting no more than 3-6 months and should be able to explore and demonstrate effective and creative solutions to public health surveillance challenges.

As part of the proposal process, CHIIC requires that proposals address a local center, institute or office priority area, one or more of the CDC Surveillance Strategy goals, and at least one of the priority areas established for that year. In 2015, CHIIC identified 6 priority areas:

1. Interoperability & Reusability
2. Analysis & Visualization
3. Standardization & Vocabulary
4. Data Access & Open Data
5. Privacy & Security
6. Data Collection



## MISSION

- Identify and accelerate emerging tools and approaches to improve the availability, quality and timeliness of surveillance data as well information and data of use for public health, improving the information that surveillance needs.
- To get the right new technology into our systems faster.



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Awarded projects are selected based on potential impact, innovation, and implementation plan. Once projects are completed, they are required to share lessons learned and submit a project evaluation. CHIIC assists with the development and dissemination of project results in the form of a post on the CHIIC web site and/or presentation at a CHIIC quarterly forum.

### 2015 Awarded Projects

In 2015, 25 diverse proposals from across the agency addressing HealthIT and non-HealthIT challenges were received. Out of 25 submitted proposals, CHIIC sponsored 5 projects from its \$250,000 project portfolio budget. The awarded projects were:

1. Proof of Concept and Technology for Hosting Bio-Surveillance Systems in the Amazon Infrastructure Cloud ([NCHHSTP](#))
2. Create and Pilot a FHIR Vocabulary Server ([NCEZID](#))
3. U.S. - Mexico Border Early Warning Disease Surveillance for Dengue and Chikungunya ([NCEZID](#))
4. Exploring Practice-Level Analytic Solutions for Smaller Health Care Practices that Support Population-Level Analytics ([NCCDPHP](#))
5. Leveraging EIP Framework for Opioid Overdose ([NCIPC](#))

### CHIIC Quarterly Forums

This year, 5 projects from the 2014 project portfolio presented at a CHIIC quarterly forum and 1 project submitted a completed project evaluation. The representing Centers were: National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), National Center on Birth Defects and Developmental Disabilities (NCBDDD), and National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP).

During the forum, presenters described a specific surveillance challenge or question and proposed a small, short method to build, test, or experiment to create validated learning toward helping their immediate challenge as well as connecting to other activities across CDC.

Additionally, two non-CHIIC projects presented. These were, the Research Electronic Data Capture (REDCap) and the EHR E-Surveillance Toolkit presented by the Public Health Informatics Institute (PHII). The use of REDCap is as a proposed shared service model within the NCEZID informatics office. REDCap is a secure web application for building and hosting online surveys and research databases. This shared service will help support all NCEZID epidemiological surveillance in the field and for research projects hosted here at CDC.

**The forum is open to the public health community, and the intended audience includes: informaticians, public health analysts, epidemiologists, health scientists, statisticians, information technology specialists, and anyone interested in innovative ways to help public health practice.**





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### CHIIC Reach

During the year, CHIIC hosted 4 quarterly forums with a total of 417 people attending in person or via webinar. Sixteen people requested to be added to the CHIIC Listserv, for a total of 53 Listserv members.

| Date                               | Attendance       | New to CHIIC Listserv |
|------------------------------------|------------------|-----------------------|
| Tuesday, February 24, 2015 @ 10 am | 88 participants  | 2                     |
| Tuesday, May 12, 2015 @ 10 am      | 96 participants  | 3                     |
| Tuesday, August 11, 2015 @ 2 pm    | 124 participants | 6                     |
| Tuesday, November 10, 2015 @ 2 pm  | 109 participants | 5                     |
|                                    | 417 participants | 16                    |

There were 30 CDC centers and divisions that participated in the forums as well as 1 federal agency, 8 organizations, and 9 health departments. A breakdown of each entity is provided:

#### CDC Centers, Institutes and Offices

##### **CDC OD**

- Office of the Associate Director for Policy (OADP)
- Office of the Associate Director for Science (OADS)
- Office of the Chief Operating Officer (OCOO)
- Office of the Chief Information Officer (OCIO)
  - Information Technology Services Office (ITSO)

##### **Office of Infectious Diseases (OID)**

- National Center for Immunization and Respiratory Diseases (NCIRD)
- National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
  - Division of Healthcare Quality Promotion (DHQP)
- National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP)

##### **Office of Noncommunicable Diseases, Injury, and Environmental Health (ONDIEH)**

- National Center for Environmental Health / Agency for Toxic Substances and Disease Registry (NCEH/ATSDR)
  - Division of Community Health Investigations OD
- National Center on Birth Defects and Developmental Disabilities (NCBDDD)
- National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
- National Center for Injury Prevention and Control (NCIPC)

##### **Office for State, Tribal, Local, and Territorial Support (OSTLTS)**

##### **National Institute for Occupational Safety and Health (NIOSH)**

- Division of Respiratory Disease Studies
- Division of Surveillance, Hazard Evaluations, and Field Studies (DSHEFS)



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### Center for Global Health (CGH)

- Division of Global HIV/AIDS (DGHA)
- Division of Global Health Protection (DGHP)
- Division of Parasitic Diseases and Malaria (DPDM)

### Office of Public Health Preparedness and Response (OPHPR)

- Division of Emergency Operations (DEO)

### Office of Public Health Scientific Services (OPHSS)

- Center for Surveillance, Epidemiology, and Laboratory Services (CSELS)
- National Center for Health Statistics (NCHS)

### Organizations

- Bicoastal Hills Consulting
- Booz Allen
- CACI
- Dare Global Innovations
- L-3-Stratis
- Leidos
- Northrop Grumman
- Public Health Informatics Institute (PHII)

### State Health Departments

- California
- Georgia
- Indiana
- Louisiana
- Maryland
- Oregon
- Tennessee
- Utah
- Virginia

### Federal Government

- HHS IDEA Lab

## Completed Project Presentations

All 5 completed projects from the 2014 Surveillance Strategy Innovation Project Portfolio presented project findings during one of the quarterly forums, these included:

1. NARMS Now: Human Data (NCEZID)
2. Early Hearing Detection & Intervention Interoperability Pilot Site Project (NCBDDD)
3. Synthetic Patient Dataset for the Determination of Ventilator Associated Events in Electronic Health Records Systems (NCEZID)
4. Mobile Atlas (NCHHSTP)
5. Emerging Infection Program Web Service (NCEZID)

### 1. NARMS Now: Human Data Project (NCEZID)

Presenters: Julian Grass and Byron Douglas

Purpose: To provide easier and more timely access to antimicrobial resistance data through a web-based, interactive tool and the ability to download isolate-level data.

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Results – NARMS NOW: Human Data makes it easier and quicker to:

- Track changes in antibiotics commonly used to treat foodborne infections
- Display geographic variation of resistance
- Show trends in antibiotic resistance by state or national level
- Download 18 years of antibiotic resistance data for humans

Press coverage in: [Time](#), [Discovery](#), [Tech Insider](#)

Reuse or Extension Opportunities:

- Foodborne Outbreak Online Database (FOOD) Tool
- NCHHSTP Atlas
- FluView

To view the full project description, click [here](#). To visit the NARMS Now website, click [here](#).

## 2. **Early Hearing Detection & Intervention Interoperability Pilot Site Project (NCBDDD)**

Presenters: Xidong Deng, CDC and Dina Dickerson, Oregon Health Authority

Purpose: Demonstrate timely exchange of hearing screening and care plan data between healthcare and local public health departments through collaboration among CDC, Oregon Health Authority, and Oregon Health & Science University (Epic). This is the first time a state EHDI program has integrated their information system with the EHR system of their clinical partner.

Results:

- Reduced collection burden on healthcare providers to deliver surveillance data
- Eliminated manual data entry
- Single collection point, populating multiple state systems

Reuse or Extension Opportunities:

- Additional STLT health agencies collecting EHDI data
- Reuse of developed exchange standards

To view the full project description, click [here](#).

## 3. **Synthetic Patient Dataset for the Determination of Ventilator - Associated Events in Electronic Health Records Systems (NCEZID)**

Presenter: Barry Rhodes

Purpose: This project provided vendors and facilities with the means to check their ventilator associated event (VAE) automated determination logic. The validation process went from a manual, labor intensive process to an electronic process.

Results:

- Synthetic data set in an XML format
- Ability to test and validate data within vendors and facilities systems
- Electronic validation process

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Reuse or Extension Opportunities:

- Validation process for healthcare-associated infections (HAIs) can be replicated with healthcare facilities, vendors, and other stakeholders
- Creating synthetic data set allows vendors to code for themselves while validating their work

To view the full project description, click [here](#).

#### 4. **Mobile Atlas (NCHHSTP)**

Presenters: Rob Nelson and Rishi Tarar

Purpose: To create a mobile version of the online Atlas. The mobile version will complement the Atlas' current functionality by delivering interactive maps, graphs, and tables formatted for optimal display on mobile devices.

Results:

- Mobile users can access the application across multiple platforms and devices, work on different screen sizes, respond to user interaction quickly, be highly usable and intuitive, provide interactive visualization, have a GPS feature, and be 508-compliant
- Although the current application is a proof of concept (for demo only) project, there are steps in place to make the Atlas Mobile available to the public

To view the full project description, click [here](#).

#### 5. **Emerging Infection Program Web Service (NCEZID)**

Presenter: Jason Hall

Purpose: To provide a major enhancement to the existing secure web service Emerging Infection Program Web Service (EIP WS) pilot.

Results:

- Provided a standards-based, configurable, re-useable and secure interoperable solution
- Supports timely and effective system interaction between the CDC and public health partners for EIP and other surveillance activities

Reuse or Extension Opportunities:

- Is reusable by other CIO's
  - As CDC Shared Services, with appropriate resources to NCEZID for additional support personnel and expansion to more scalable server configurations
- Changed the framework and service to support a second EIP program
- Provides support for new data interfaces
  - Requires only configuration and minor development specific for new data
- EIP WS are SOAP-based services
- Expandable to RESTful services
- Easily extensible for two-way data communication between states and CDC



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- Expandable to transfer data types XML, JSON, TEST, CSV, Excel and serializable binary data streams

To view the full project description, click [here](#).

### CHIIC Advisory Group

The advisory group consists of informaticians and public health practitioners from CDC centers, institutes and offices with subject matter expertise in public health surveillance, informatics and cross-cutting policy concern. The advisory group reviews and provides insight for CHIIC focus areas, identify potential projects and review project award criteria and project output. The group composition was selected based on input from the CDC Surveillance Leadership Board (SLB).

Over the past couple of years the advisory group members have contributed to the process of establishing annual priority areas for the CHIIC project portfolio, made recommendations for awarded projects, attended brainstorming sessions with project teams, and much more. We appreciate the dedication of each member. The members include:

**Barry Rhodes**, Computer Scientist, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)

**Tom Savel, MD** Director, Informatics Innovation Unit, Center for Surveillance, Epidemiology and Laboratory Services (CSELS)

**Cyrus Shahpar**, Medical Officer, Center for Global Health (CGH)

**Thom Sukalac**, Associate Director for Informatics, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP)

### Visit the CHIIC internet and intranet web sites to

- learn more about proposed and awarded projects,
- view upcoming forum dates, and
- join the CHIIC list serv.

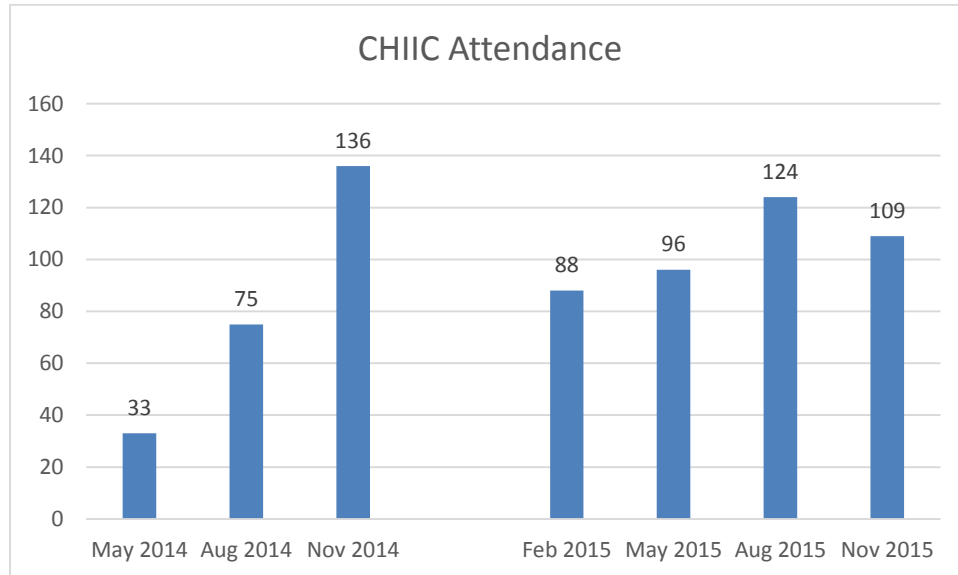
Internet site: <http://www.cdc.gov/ophss/chiic/>

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### Appendix

#### 2014 and 2015 Attendance

CHIIC held its kick off forum on May 13, 2014. To date, CHIIC has held 7 forums with a total of 696 attendees. See graph below for an attendance breakdown.



In 2015, CHIIC received 25 proposals for ideas from across CDC programs and awarded 5 projects:

| Center             | Submitted | Awarded  |
|--------------------|-----------|----------|
|                    | 4         |          |
| CGH                | 1         |          |
| NIOSH              | 2         |          |
| OPHPR              | 1         |          |
| <b>OID</b>         | <b>12</b> | <b>3</b> |
| NCEZID             | 9         | 2        |
| NCHHSTP            | 3         | 1        |
| <b>ONDIEH</b>      | <b>6</b>  | <b>2</b> |
| NCCDPHP            | 3         | 1        |
| NCIPC              | 3         | 1        |
| <b>OPHSS</b>       | <b>3</b>  |          |
| NCHS               | 1         |          |
| CSELS              | 2         |          |
| <b>Grand Total</b> | <b>25</b> | <b>5</b> |

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## Communication channels

CHIIC's project proposals and quarterly forums are promoted through the following channels:

1. CDC Today announcements
2. CHIIC Internet site, <http://www.cdc.gov/ophss/chiic/>
3. CHIIC Intranet site (Internal to CDC only), <http://intranet.cdc.gov/ophss/chiic/>
4. CHIIC Listserv, [CDCL-CHIIC@LISTSERV.CDC.GOV](mailto:CDCL-CHIIC@LISTSERV.CDC.GOV)
5. Connects article (optional, post presentation)
6. Calendar invitation sent out through Outlook
7. OPHSS lobby monitor
8. Posters and flyers
9. phConnect (Note: this site was shut down on December 31, 2015 after 6 years of servicing the public health community. We transitioned the information from this site to the CHIIC Internet site.)

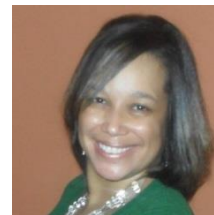
## CHIIC Staff



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## Glossary

|               |   |
|---------------|---|
| <b>CGH</b>    | Center for Global Health  |
| <b>CHIIC</b>  | CDC Health Information Innovation Consortium                    |
| <b>CIOs</b>   | CDC Centers, Institutes and Offices                             |
| <b>CSELS</b>  | Center for Surveillance, Epidemiology, and Laboratory Services  |
| <b>DEO</b>    | Division of Emergency Operations                                |
| <b>DGHA</b>   | Division of Global HIV/AIDS                                     |
| <b>DGHP</b>   | Division of Global Health Protection                            |
| <b>DHQP</b>   | Division of Healthcare Quality Promotion                        |
| <b>DPDM</b>   | Division of Parasitic Diseases and Malaria                      |
| <b>DSHEFS</b> | Division of Surveillance, Hazard Evaluations, and Field Studies |
| <b>EHDI</b>   | Early Hearing Detection & Intervention Interoperability         |
| <b>EHR</b>    | Electronic Health Record  |
| <b>EIP WS</b> | Emerging Infection Program Web Service                          |
| <b>FOOD</b>   | Foodborne Outbreak Online Database                              |

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|                   |   |
|-------------------|---|
| <b>HAI</b>        | Healthcare-Associated Infections  |
| <b>HHS</b>        | Health and Human Services   |
| <b>ITSO</b>       | Information Technology Services Office  |
| <b>NARMS</b>      | National Antimicrobial Resistance Monitoring System   |
| <b>NCBDDD</b>     | National Center on Birth Defects and Developmental Disabilities                             |
| <b>NCCDPHP</b>    | National Center for Chronic Disease Prevention and Health Promotion                         |
| <b>NCEH/ATSDR</b> | National Center for Environmental Health / Agency for Toxic Substances and Disease Registry |
| <b>NCEZID</b>     | National Center for Emerging and Zoonotic Infectious Diseases                               |
| <b>NCHHSTP</b>    | National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention                       |
| <b>NCHS</b>       | National Center for Health Statistics   |
| <b>NCIPC</b>      | National Center for Injury Prevention and Control   |
| <b>NCIRD</b>      | National Center for Immunization and Respiratory Diseases                                   |
| <b>NIOSH</b>      | National Institute for Occupational Safety and Health                                       |
| <b>OADP</b>       | Office of the Associate Director for Policy   |
| <b>OADS</b>       | Office of the Associate Director for Science  |
| <b>OCIO</b>       | Office of the Chief Information Officer   |
| <b>OCOO</b>       | Office of the Chief Operating Officer   |
| <b>OID</b>        | Office of Infectious Diseases   |
| <b>ONDIEH</b>     | Office of Noncommunicable Diseases, Injury, and Environmental Health                        |
| <b>OPHPR</b>      | Office of Public Health Preparedness and Response   |
| <b>OPHSS</b>      | Office of Public Health Scientific Services   |
| <b>OSTLTS</b>     | Office for State, Tribal, Local, and Territorial Support                                    |
| <b>PHII</b>       | Public Health Informatics Institute   |
| <b>REDCap</b>     | Research Electronic Data Capture  |
| <b>SLB</b>        | Surveillance Leadership Board   |
| <b>STLT</b>       | State, Tribal, Local, and Territorial   |
| <b>VAE</b>        | Ventilator Associated Event   |