CSTE Webinar:
State Innovations in Active Monitoring

March 4, 2015

1:30 – 3:00 pm Eastern
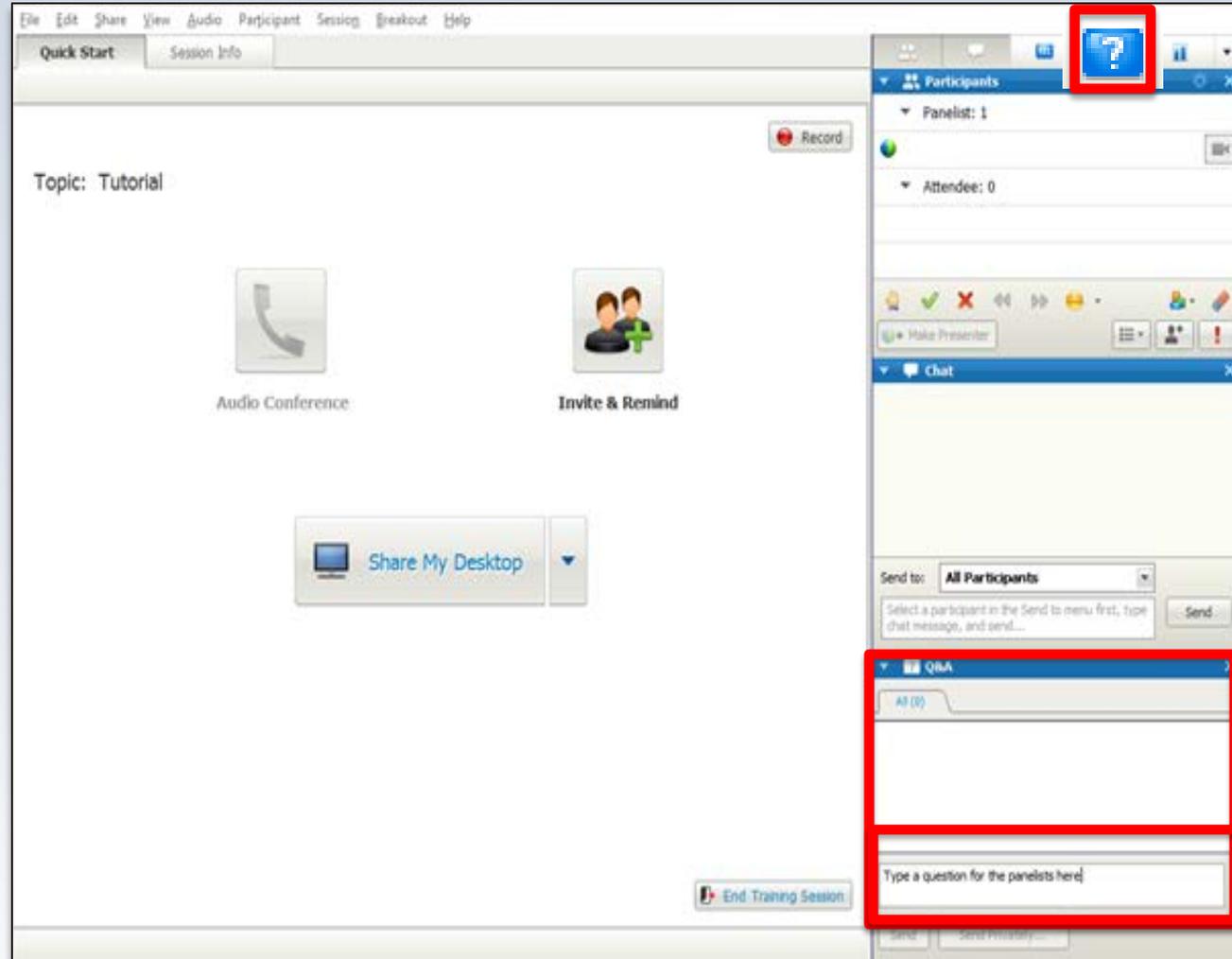
Webinar Agenda

- Opening Remarks: Dr. Jeffrey Engel, CSTE Executive Director

- Georgia Ebola Active Monitoring System
  - Dr. Laura Edison, Georgia Department of Public Health
  - Karl Soetebier, Georgia Department of Public Health

- Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois
  - Stacey Hoferka, Illinois Department of Public Health
  - Jennifer Vahora, Illinois Department of Public Health

- Q&A and Discussion: Presenters and Participants

Webinar Housekeeping

- **Please note that today's webinar is being recorded**
  - The webinar recording and presentation slides will be available in the webinar library on CSTE's website: http://www.cste.org/?page=WebinarLibrary

- **All phone lines have been placed on mute**

- **There will be a question-and-answer session at the end of the webinar**
  - To ask a question, please use the Q&A box on the right side of your screen

To Ask a Question

- **Click on the blue question mark tab on the top right panel of your screen**

- **This will open the Q&A box on the bottom right panel on your screen**

- **Type a question**

- **Send questions to <u>All Panelists</u>**

- **Questions will be answered during the Q&A period**

Webinar Agenda

- **Opening Remarks: Dr. Jeffrey Engel, CSTE Executive Director**

- Georgia Ebola Active Monitoring System
  - Dr. Laura Edison, Georgia Department of Public Health
  - Karl Soetebier, Georgia Department of Public Health

- Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois
  - Stacey Hoferka, Illinois Department of Public Health
  - Jennifer Vahora, Illinois Department of Public Health

- Q&A and Discussion: Presenters and Participants

CSTE

COUNCIL OF STATE AND
TERRITORIAL EPIDEMIOLOGISTS

Webinar Agenda

- Opening Remarks: Dr. Jeffrey Engel, CSTE Executive Director

- **Georgia Ebola Active Monitoring System**
  - **Dr. Laura Edison, Georgia Department of Public Health**
  - **Karl Soetebier, Georgia Department of Public Health**

- Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois
  - Stacey Hoferka, Illinois Department of Public Health
  - Jennifer Vahora, Illinois Department of Public Health

- Q&A and Discussion: Presenters and Participants

The Georgia Ebola Active Monitoring System

Presented by: **Laura Edison DVM, MPH**
CDC Career Epidemiology Field Officer
Georgia Department of Public Health, Epidemiology

Karl Soetebier MA
Technical Lead, Electronic Disease Surveillance System
Georgia Department of Public Health

March 4, 2015

We Protect Lives.

Active Monitoring

- Mid-October CDC began to screen travelers at ATL Hartsfield Jackson Airport
- CDC recommended active monitoring of all travelers for 21-days
- Georgia >100 travelers to monitor daily
  - Limited resources
  - 1 week to begin monitoring!!!

CDC Announces Active Post-Arrival Monitoring for Travelers from Impacted Countries

Recommend Tweet Share

Language: English

Press Release

For Immediate Release: Wednesday, October 22, 2014

Rapidly Increase 24/7 Capacity

- Develop a surveillance system
- Increase call capacity
- Staffing 7 days/week

We Protect Lives.

Ebola Active Monitoring System (EAMS)

- IT and Epidemiology collaboration
- 6 Days from concept to implementation
- Using SendSS web-based secure platform
- Goals
  - Monitoring with limited human resources
  - Easily maintain situational awareness
  - Rapid notification of ill travelers
  - Information sharing among DPH and Georgia's 18 health districts, CDC

We Protect Lives.

Active Monitoring Process

- DPH receives information from DGMQ and creates traveler record in EAMS

- DPH calls to enroll traveler
  - Risk assessment, instructions about reporting and what to do when ill
  - Deliver appropriate agreement for traveler to sign

- Traveler reports daily to DPH

- DPH follows-up with non-compliant and any symptomatic travelers

We Protect Lives.

EAMS

Ebola Active Monitoring Weekly Reporting for CDC:

Reporting period: **02/23/15 to 03/01/15**

---

4. Total number of recent travelers from W. Africa who required active monitoring on the first day (Monday) of the reporting period:

113 total

103 travelers

6 healthcare

5 lab worker

0 non-traveler

---

5. Number of recent travelers from W. Africa who were added to those under active monitoring at any time during the reporting period:

29 total

29 travelers

0 healthcare

0 lab worker

0 non-traveler

---

8. Number of persons who were lost to follow up at any time during the reporting period (i.e. did not report for 48 hours or longer):

1 traveler(s)

Non-Compliant Travelers: L=Late M=Missing O=Ok S=Symptomatic
Tid: 149887   DGMQID: 46595   Status: NOT COMPLIANT   Checks: MOOOOMM   BAM: 02/15/2015

---

9. Number of persons who completed their 21 days of active monitoring during the reporting period:

47

39 travelers

5 healthcare

4 lab worker

0 non-traveler

---

10. Number of persons with whom initial contact was never established (i.e. missing or incorrect contact:

0

travelers

Ebola Active Monitoring Query

- **Used by hospital to determine if patients being treated are being monitored**

- **Hospital Partner logs in and enters patient information**

- **Records matching search criteria are providing limited information**

Georgia Department of Public Health

EBOLA | **Active Monitoring Query**

The following travelers matched your search criteria:

Last Name	First Name	Date Arrived	Date Monitoring Period Ends
Ebola Soet	Karl	10/15/2014	11/05/2014

To query for a traveler being monitored, please provide a date of birth and last name:

Traveler's Last Name: ebola soet
Date_of Birth: (mm/dd/yyyy) 01 / 01 / 1950

Search

We Protect Lives.

CDC Employee Integrated Monitoring

- CDC employees >50% of Georgia travelers
- Integrated monitoring since January 2015
- DPH creates EAMS record for traveler
- CDC
  - Enrolls traveler
  - Delivers Georgia Self-Monitoring Agreement
  - Follows up with non-compliant or symptomatic employees
  - CDC uses EAMS
    - Special account with only CDC employees
    - Facilitates communication and information sharing between DPH, the health district, and CDC

We Protect Lives.

Active Monitoring Summary

- Monitoring 109 travelers today, 860 total (3/2)
- 23 Referred for medical evaluation
  - 8 Influenza, 8 viral URI
  - traveler's diarrhea, viral gastroenteritis, malaria, chronic disease or viral infection complications
- 5 Tested for Ebola (all negative)
- 17 Some-risk travelers DAM (all asymptomatic)
- 2 High-risk travelers DAM and quarantine
- Improving processes and hiring to sustain effort

We Protect Lives.
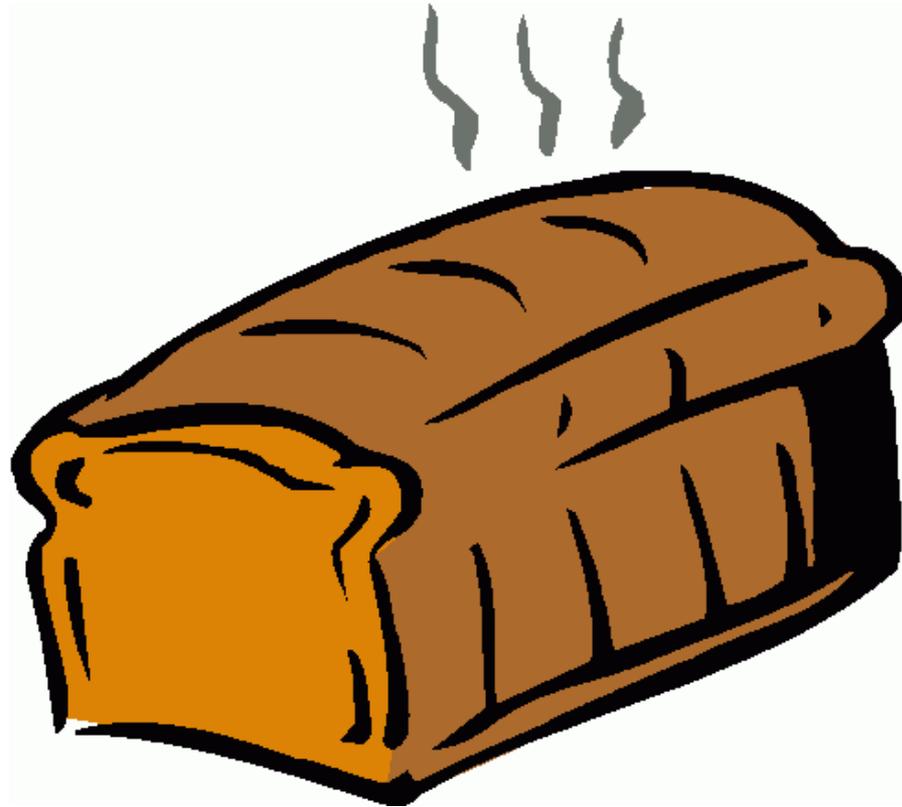
"How'd they do that?"

"How'd they do that?"

- A good loaf of bread starts with good ingredients
  - Extensible, secure, internet platform to deliver dynamic content and collect, process and manage data
  - DPH uses SendSS, a home grown solution
    - Basic components are web server, code base for delivering dynamic web content and database system.
    - Pure Oracle
    - 14 years of development and extension
    - Supports multiple program areas

We Protect Lives.

We Protect Lives.
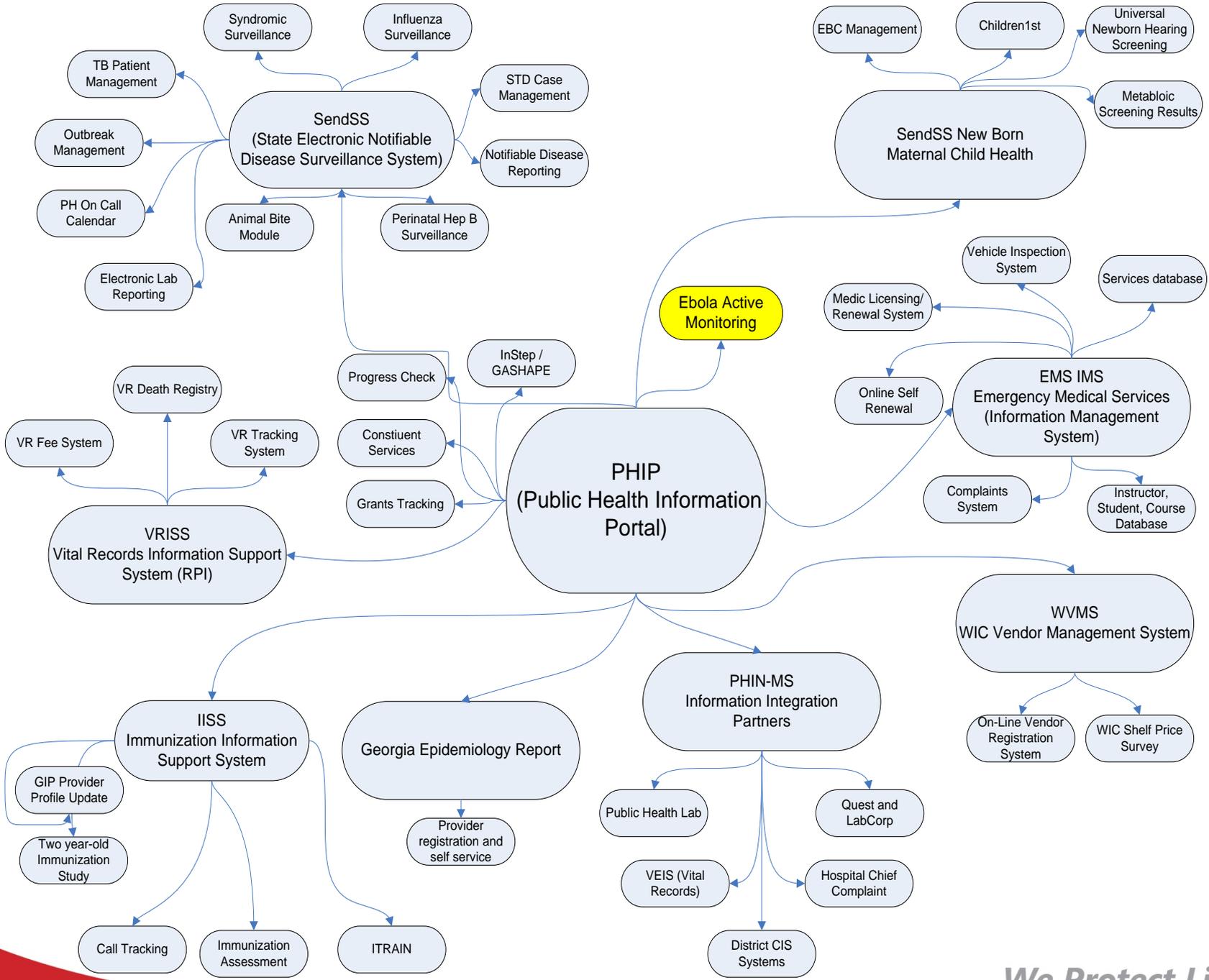
"How'd they do that?"

- Good ingredients alone do not make good bread. You need knowledgeable bakers.
  - Reduced focus on "The System"
  - Cultivate the view of "IT" as a capacity
    - DPH has developer(s) who work closely with the Epidemiology Section
    - Have relationships with people involved in response
    - Have tools at his or her disposal ready to go

Lessons from the Past

- SendSS team response to Hurricanes Katrina and Rita, 2005
    - Survey tool developed and used daily for outbreak management used to gather information about physician volunteers, conduct shelter surveillance and support mortality registry

Lessons from the Past

- SendSS team response to H1N1
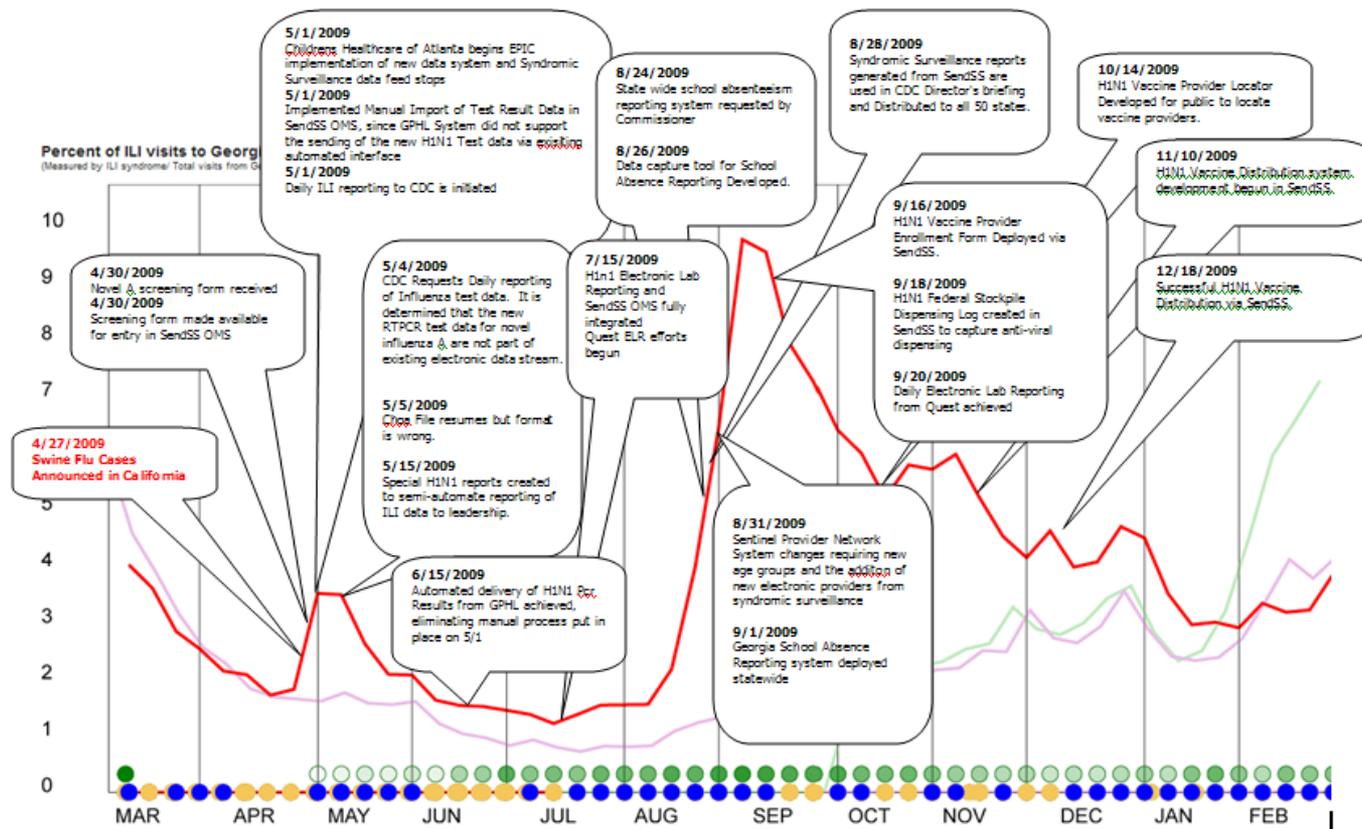
SendSS Team Response to Novel A H1N1 Influenza in GA

The efforts of the SendSS team are overlaid on the ILI visualization of syndromic and viral isolate data produced by SendSS and used to track the progress of H1N1 in GA. Each entry also identifies the core PHIN competency employed in achieving the response: Early Event Detection (EED), Outbreak Management (OM), Connecting Laboratories (CLS), Countermeasures and Response Administration (CRA), Strategic National Stockpile (SNS)

We Protect Lives.

"How'd they do that?"

- Bread takes hours of preparation, before it can be baked.
  - Reduce focus on single task systems. Instead look for flexible solutions that can grow as information needs change
    - Try and reuse resources
    - Encourage leadership to make long term investments in technical personnel instead of short term contract hires

"How'd they do that?"

- Serve it daily, and break it with others
  - Build versus buy is often the question, but what matters more is that the knowledge and skill to make it work is used routinely
  - Share that knowledge routinely with others through mentoring and collaboration

Challenges

- Expense of maintaining knowledgeable and skilled IT personnel

- Encouraging cross-training between knowledge domains of epidemiology and information technology

- Some travelers did not have access to computers or the internet, and preferred to report temperatures by phone

- EAMS initially not compatible with some web browsers

- Periodic server problems

Successes

- Simplicity
  - Allows 1-2 epidemiologists to monitor >100 travelers
  - Facilitates information sharing
- Flexibility
  - Variables can easily be added/adjusted to EAMS
  - Adapt to include new users (CDC, District Epis)
- Sensitivity/timeliness
  - System immediately detects fever/symptoms
  - Real-time data and status displayed on summary
- Stability
  - SendSS widely used and well supported

Thank You

Our Awesome Ebola Epi Team!

Amanda Feldpaush, Audrey Kunkes, Cherie Drenzek, Wendy Smith, Angie Parham, Julie Gabel, Jessica Tuttle, Melissa Tobin-D'Angelo, Romana Fetherolf, Taylor Guffey, Katy Sanlis, Chelsea Williams, Lean Abdelazziz, Rebecca Reymond, Manka Banda, Pascale Wortley

Contact Information

Laura Edison
404-657-6452
Laura.edison@dph.ga.gov

Karl Soetebier
404-463-3471
Karl.soetebier@dph.ga.gov

We Protect Lives.

Webinar Agenda

- Opening Remarks: Dr. Jeffrey Engel, CSTE Executive Director

- Georgia Ebola Active Monitoring System
  - Dr. Laura Edison, Georgia Department of Public Health
  - Karl Soetebier, Georgia Department of Public Health

- **Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois**
  - **Stacey Hoferka, Illinois Department of Public Health**
  - **Jennifer Vahora, Illinois Department of Public Health**

- Q&A and Discussion: Presenters and Participants

Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois

Stacey Hoferka, MPH, MSIS
Surveillance & Informatics Epidemiologist

Jennifer Vahora, MPH
Applied Public Health Informatics Fellow

March 4, 2015

Introduction

- Provide summary of the use of REDCap for measles symptom monitoring in contacts

- Demonstrate how IDPH has implemented and utilized the software as part of outbreak response

- Objectives:
  - Describe the use of REDCap for public health outbreak data management
  - Discuss the technical and program aspects of implementing REDCap into public health surveillance and response activities

Background

- Summer 2014
  - Tennessee Department of Health demonstrated the Research Electronic Data Capture (REDCap) program to IDPH
  - IDPH evaluated REDCap use for multiple outbreak scenarios
  - Worked with Vanderbilt University to expedite licensing agreement and installation

- October 2014
  - O'Hare International Airport began screening travelers for Ebola
  - Preparations for traveler data management
  - Illinois-National Electronic Disease Surveillance System (I-NEDSS)
  - IDPH selected REDCap as an option for active signs and symptom monitoring of at-risk travelers

From Academia to Applied Public Health: REDCap Features

- HIPAA compliance, including a full audit trail, user-based privileges, and integration with the institutional LDAP server

- Log of user activity and tracking changes

- Scheduling and Automated invitations

- Record Status Dashboard

- Import/export (including export to common statistical packages such as SAS, SPSS and Excel)

IDPH Evaluation of REDCap

- Evaluated use of REDCap for 4 outbreaks:
  - New Delhi Metallo-β-Lactamase
  - Foodborne illness
  - Poison Ivy/Sumac Rash Outbreak in Mud Race Obstacle Course
  - Middle East Respiratory Syndrome
- 6 criteria:
  - Magnitude of cases and contacts across jurisdictions
  - Self-reporting of symptoms and exposures
  - Storage and multisite access to lab reports
  - Reuse of templates for future outbreaks
  - Repeated measurements
  - Ability to perform long-term case follow-up

Vahora, J, Allison AM. *Evaluation of REDCap as a Tool for Outbreak Data Management, Illinois, 2013-2014.* Online Journal of Public Health Informatics. Vol. 7, No. 1, 2015.

Measles in Northeastern Illinois

- Fifteen (15) confirmed measles cases with rash onset from Jan. 16th– Feb. 19

- Age range included cases from under 1 to over 40 years old

- High number of exposures and settings, including:
  - Daycare
  - Pediatric physician office
  - Hospital ED
  - Radiology center
  - Healthcare clinic
  - Travel-O'Hare, hotel, shuttle
  - Workplace
  - Community college
  - Public settings: grocery store, restaurants

- Individual follow-up was conducted with all exposed persons when contact information was available

- Many at-risk susceptible contacts were identified
  - Household
  - Patients
  - Healthcare Workers
 - Travelers
  - General Public

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

From Ebola to Measles:
Simple set-up and transition

- Modify Ebola monitoring to measles
  - Rash, cough, coryza, conjunctivitis
  - Enable photo upload (e.g. for rash)

- Monitoring days (events) customized based on each individual's exposure period

- Provided separate access and independent project for each local health department

- Available to hospitals and clinics, for use upon request (e.g. for employee monitoring)

Contextual Inquiry

Collaborative Project Development

- LHD input
- Exploratory
  - Understand desires, motivations
- Feature prioritization
  - What elements most attractive
- Competitive Analysis
  - Epi Info, Access, Excel
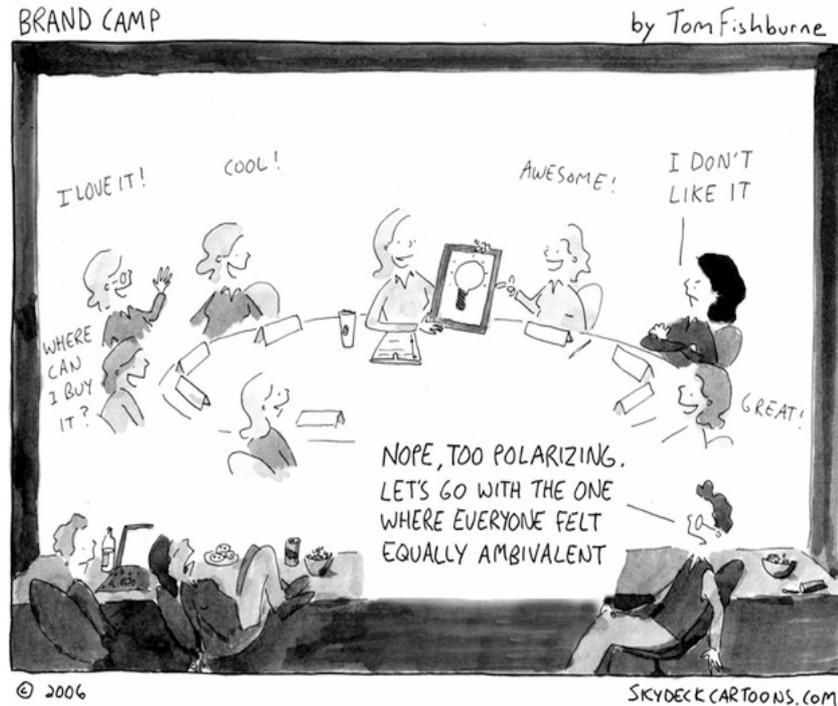
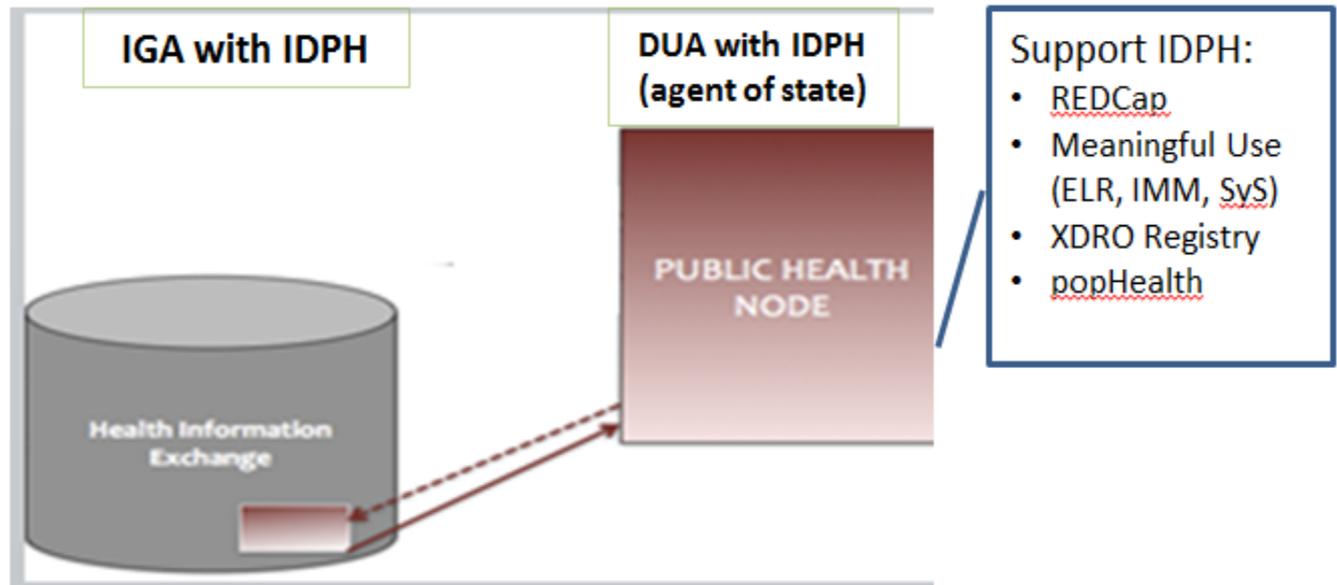# Additional feature requests

- Household-level survey – multiple individuals on one entry
- Translations to Spanish and Polish
- Vaccination history data collection tool
- Comments – free text
  - Contact IDs
  - Local health department notes
  - Caution on identifiers being entered

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

IT implementation

- Redundant - system backup

- Two instances installed
  - Public Health Node/Medical Research Analytics and Informatics Alliance (MRAIA)
  - Illinois Department of Public Health - Central Management Services (CMS)
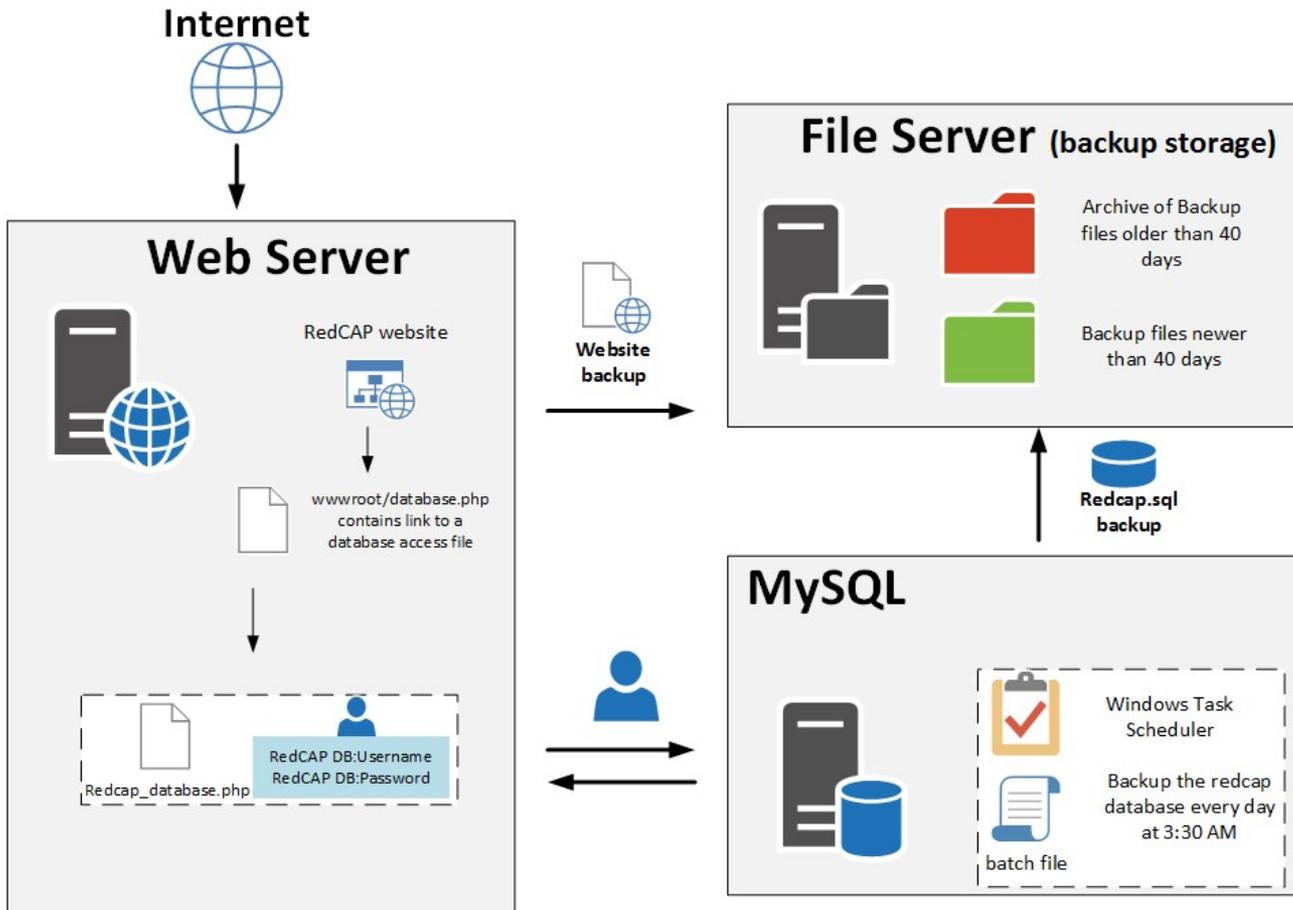
Technical resources-installation and configuration

RedCAP at PHN

Internet

Web Server

RedCAP website

wwwroot/database.php contains link to a database access file

Redcap_database.php — RedCAP DB:Username / RedCAP DB:Password

Website backup

File Server (backup storage)

Archive of Backup files older than 40 days

Backup files newer than 40 days

Redcap.sql backup

MySQL

Windows Task Scheduler

Backup the redcap database every day at 3:30 AM

batch file

Personnel:

- System Architect
- System Administrator
- Database Administrator

Hardware:

- WebServer (IIS and SSL certificate)
- MySQL server (REDCap Database)
- File Server (Backups and file uploads)

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Technical lessons learned

IDPH infrastructure:

- Understand that some technologies may be beyond mainstream development for the agency and central IT support services (e.g. database, application language)

- Involve networking resources early to support external REDCap link

- Involve security resource to identify LDAP/AD authentication parameters for REDCap configuration used by IDPH

- Utilize REDCap technical documentation to facilitate the installation (https://iwg.devguard.com/trac/redcap/wiki)

- Install a local, test instance of REDCap to improve troubleshooting

- Leverage technical support from REDCap to expedite deployment

- Refer to manual installation/setup instructions to address configuration and version issues with required third-party software

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

REDCap Demonstration
Symptom Monitoring of Measles Contacts

Mobile device survey access
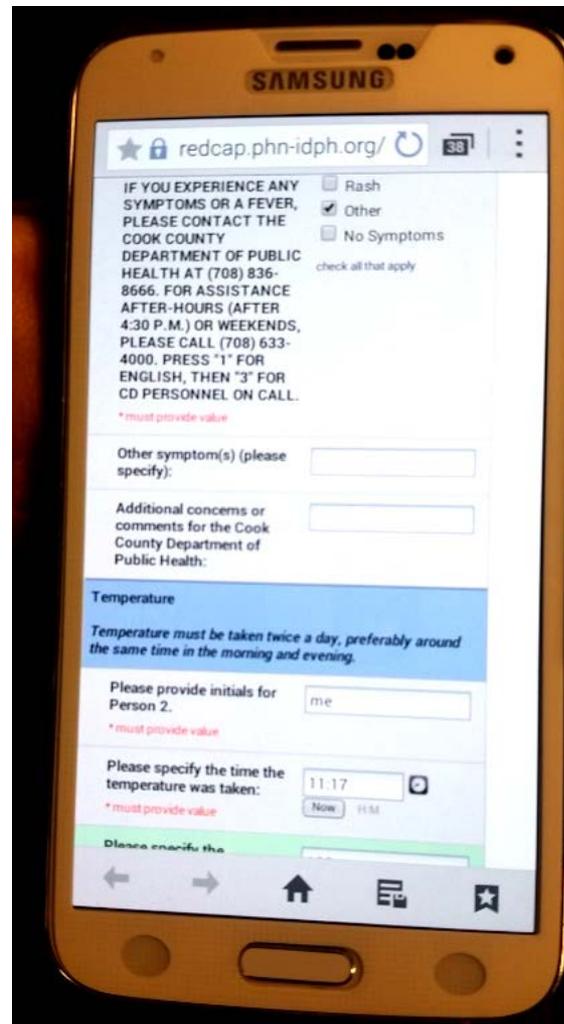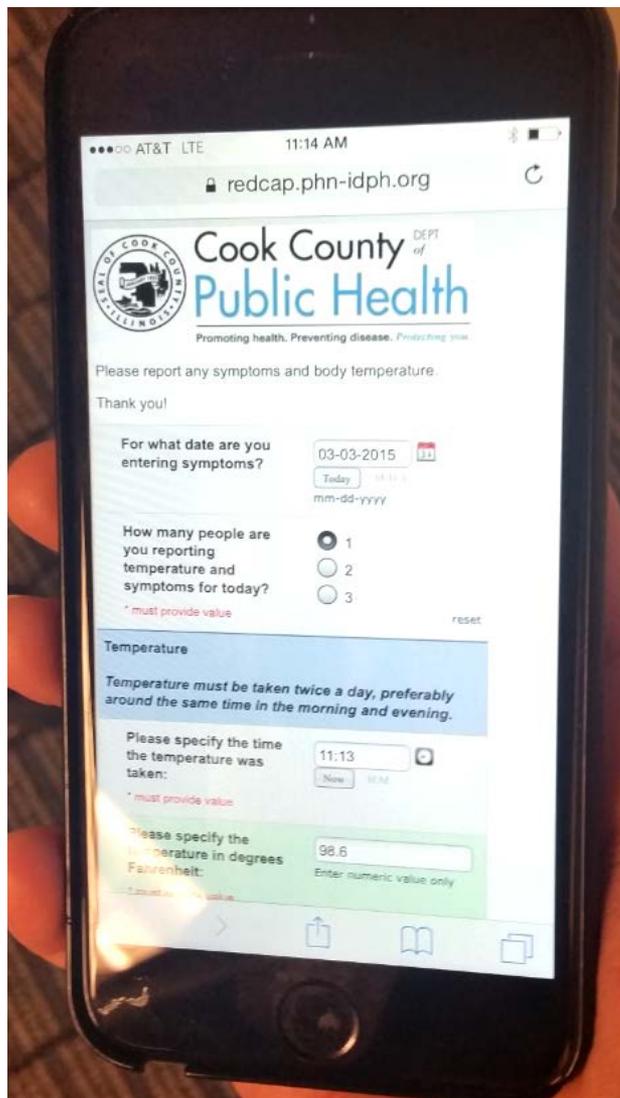
Local Experience

Non-compliance findings

- Higher than expected preference for calls vs. email
- Frequent, incorrect spelling of email
- Lack of a first successful response as indicator of non-compliance, useful prior to full enrollment
- Potential routing of email to spam (i.e. hotmail.com)
- Key communication points
    1) Provide deadline for completion in bold in the email body
    2) Include "Please Respond" or "Response Requested" in email subject

Deployment issues

- Need to maintain separate reference document for locally-generated identifiers associated with the contacts' Record ID (reference was needed for dashboard review)
- Employ a hybrid approach: mix of self-report and manual entry by LHD staff
    – Utilize text field to track Record ID

Overall

- Excellent tool
- Cut down on staff time and effort for monitoring many low risk contacts
- After initial compliance was addressed, follow-up was easier with REDCap participants than by phone
- All data – stats and charts feature enabled quick review of survey compliance to detect problems immediately

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Future Application

- REDCap developments
  - Short survey administration and data collection / management via telephone / text messaging
  - Facilitate workflow and/or data collection
  - Currently in *testing phase*

- Hypothesis generating questionnaires
  - Food-borne outbreaks

- Influenza and Norovirus clusters
  - Long-term care settings

Acknowledgements

- Vanderbilt University
  - Paul Harris
  - Joann Elliott
  - Peter Rousos

- Tennessee Department of Public Health
  - Jennifer Ward
  - Caleb Wiedeman
  - Rendi Murphree
  - Marion Kainer

- Illinois Department of Public Health
  - Craig Conover
  - Dejan Jovanov
  - Judy Kauerauf
  - Livia Navon
  - Siva Guntupalli
  - Darrin Simmons

- Medical Research Analytics and Informatics Alliance
  - Maksym Yarema
  - Bill Trick
 - Jasmine Phua

For more information

- For more information about the global REDCap software consortium
   projectredcap.org

- Illinois Department of Public Health
  - Stacey Hoferka
    - Surveillance & Informatics Epidemiologist
    - Stacey.hoferka@illinois.gov
  - Jennifer Vahora, MPH
    - Applied Public Health Informatics Fellow
    - Jennifer.Vahora@illinois.gov

![IDPH - Illinois Department of Public Health logo]

Webinar Agenda

- Opening Remarks: Dr. Jeffrey Engel, CSTE Executive Director

- Georgia Ebola Active Monitoring System
  – Dr. Laura Edison, Georgia Department of Public Health
  – Karl Soetebier, Georgia Department of Public Health

- Implementation of REDCap for Active Monitoring of Contacts During a Measles Outbreak in Illinois
  – Stacey Hoferka, Illinois Department of Public Health
  – Jennifer Vahora, Illinois Department of Public Health

- **Q&A and Discussion: Presenters and Participants**

To Ask a Question

- **Click on the blue question mark tab on the top right panel of your screen**

- **This will open the Q&A box on the bottom right panel on your screen**

- **Type a question**

- **Send questions to All Panelists**
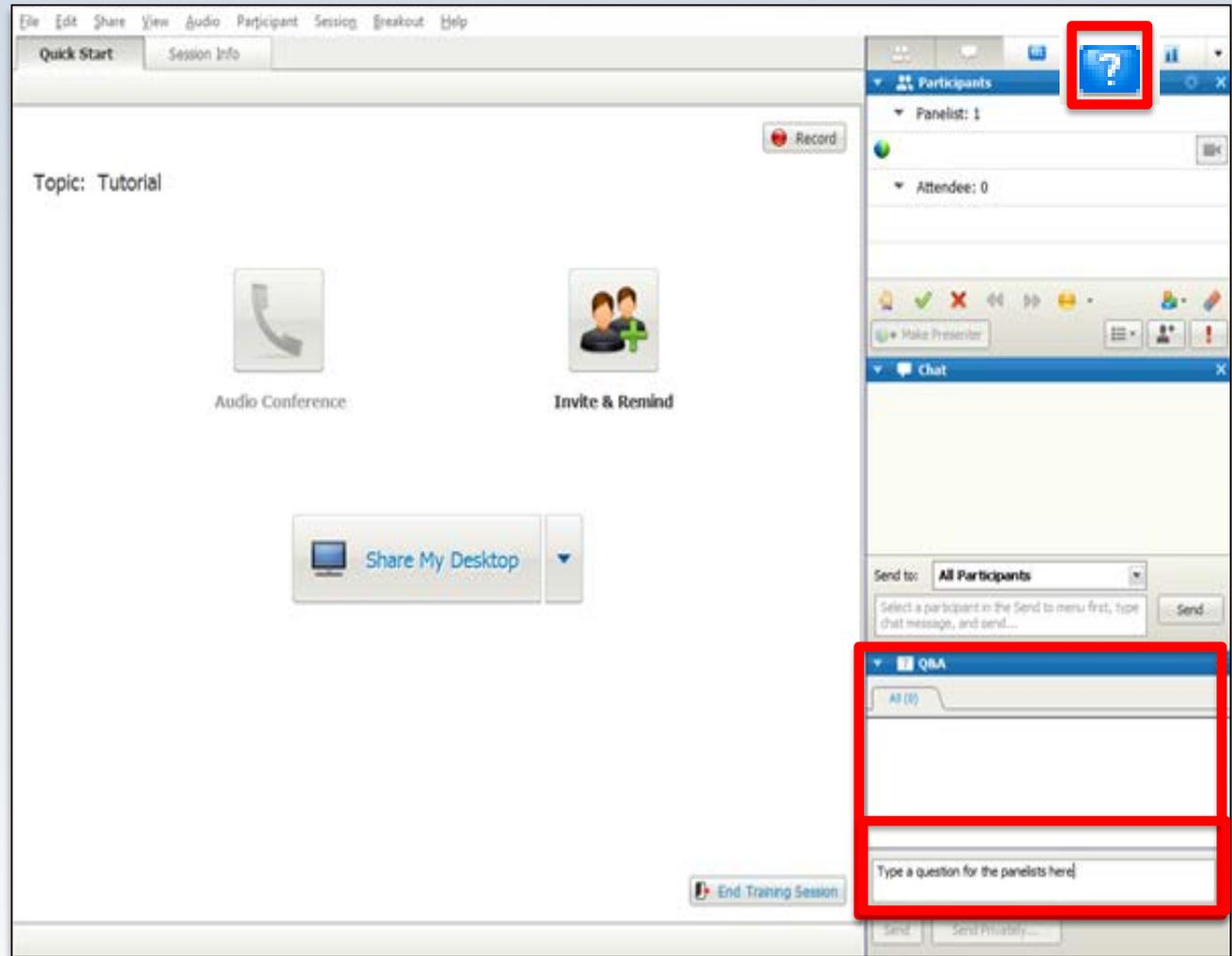
Thank you for your participation!

- Please complete the webinar evaluation:
  https://www.research.net/s/CSTE_Preparedness_March15

- The webinar recording and presentation slides will be available in CSTE's Webinar Library shortly: http://www.cste.org/?page=WebinarLibrary