

Florida's ESSENCE System – From Syndromic Surveillance to Routine Epidemiologic Analysis

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Objectives

- Identify ESSENCE-FL system characteristics
- Describe the different data sources included in ESSENCE-FL
- Summarize how the system is used at the state and local levels, and provide examples of how the system is used at the state and local levels
- Review our lessons learned

FDOH Background

- Florida population: ~19 million people; ~80 million tourists annually
- Bureau of Epidemiology
 - Support and guidance to county health departments
 - Surveillance system development, management, and data analysis
- 67 County Health Departments
 - Complete case investigations and associated case data entry in Merlin
 - Monitoring of reportable and syndromic surveillance data
 - Varying degree of technical expertise and understanding of surveillance goals

Surveillance Definitions

- **Public Health Surveillance:** Ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health
- **Syndromic Surveillance:** Public health surveillance emphasizing the use of near “real-time” pre-diagnostic data and statistical tools to detect and characterize unusual activity for further public health investigation

Statewide ESSENCE Implementation

- Electronic Surveillance System for the Early Notification of Community-based Epidemics
- Web-based, automated electronic data collection and analysis that is available 24/7.
- Multi-tier web-based application
 - Web app (presentation), business logic, and databases
 - Data ingestion database, detection database, web database, detection algorithms, and web application
- MS/SQL databases
 - Use of data cubes to improve performance
- Secure browser access over https/SSL

ESSENCE-FL Implementation Goals

- Initially to establish a statewide syndromic surveillance system
- Improve access to multiple public health surveillance data sources – intuitive, simple access to data for descriptive epidemiology, analysis, and report generation
 - Supporting multiple skill levels
- Make navigation of the existing ESSENCE system more efficient
- Reduce need for specialized/costly software and associated trainings
- Improve communication and community awareness by closing the public health surveillance loop
- Improve decision making related to disease control by greater access to information in a timelier manner

ESSENCE-FL Implementation Goals

- Reduced need for spending to develop other existing systems
- Flexibility
 - Ad hoc queries
 - New data sources
- Provide a common environment where epidemiologists can conduct analyses for
 - Outbreak detection to minimize impact on population health
 - Routine descriptive epidemiologic analysis
 - Monitoring morbidity and mortality trends over time, geography, and across multiple data sources

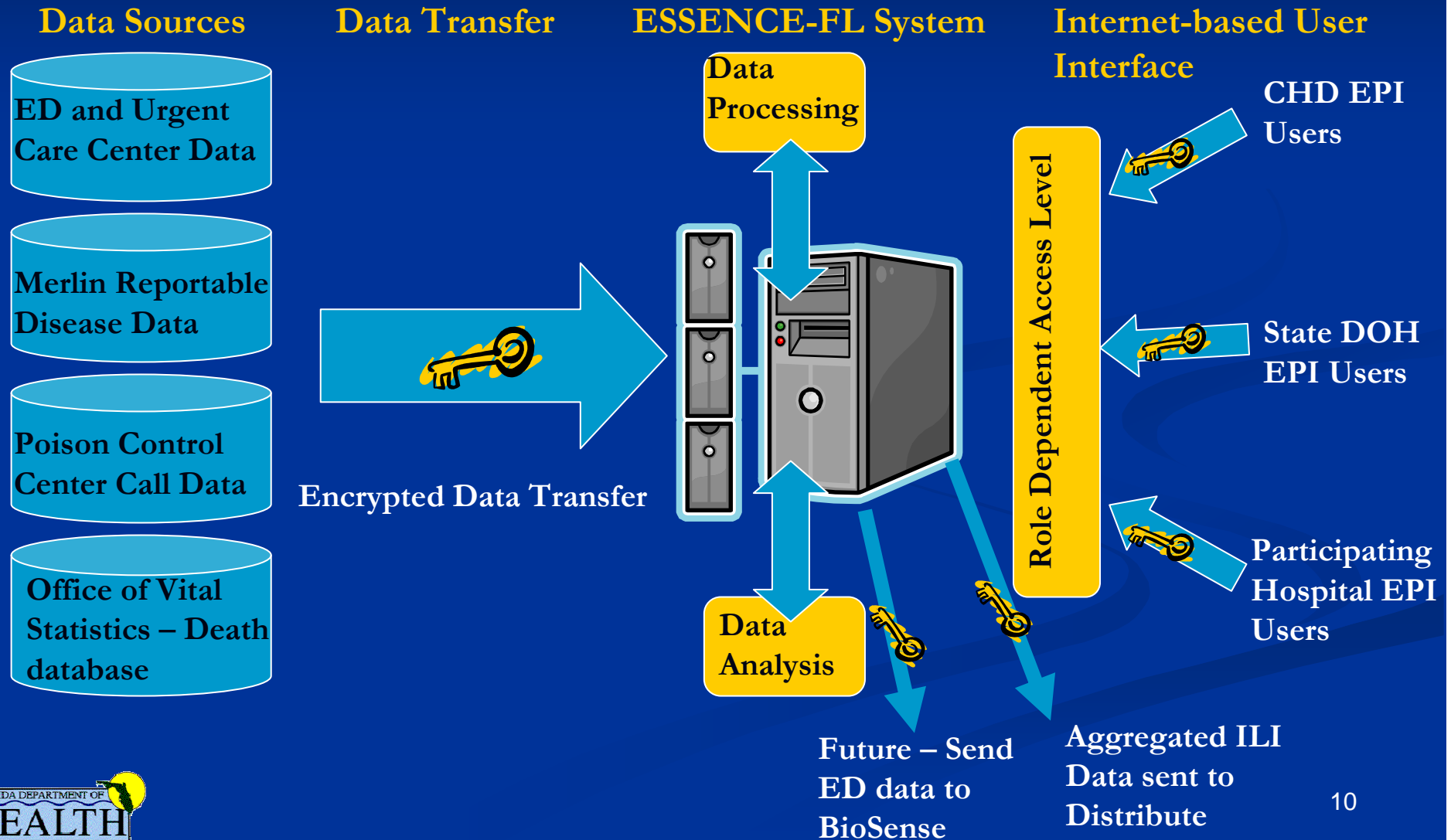
Florida ESSENCE-FL - Users

- Avg of 57 unique users log in per week
- Non-public health: 220 hospital users
- Public health users:
 - State: multiple program areas, Bureau of Epidemiology, Bureau of Environmental Public Health Medicine, Bureau of Immunizations
 - County Level Access
 - ~40 counties use the system
 - 37 counties have reporting EDs (1 to 17 reporting facilities)
 - Merlin, Vital Statistics Death data, and Poison control data are statewide data sources

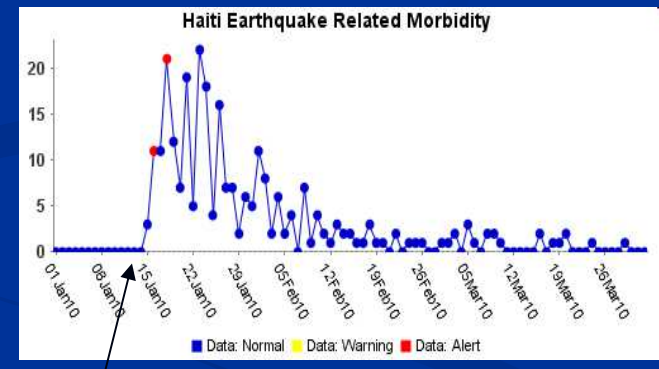
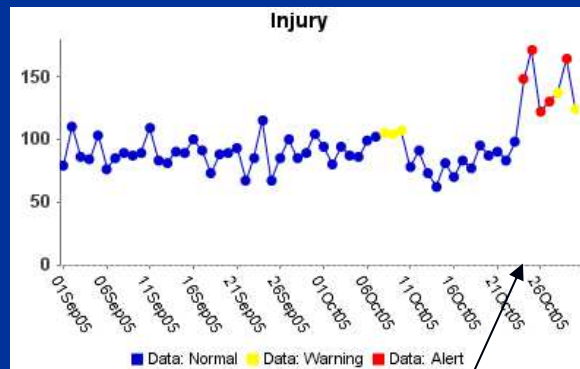
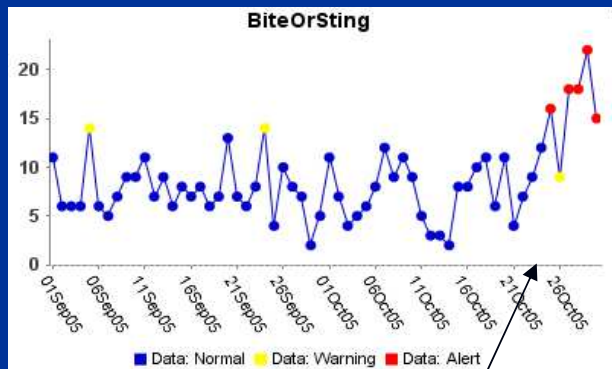
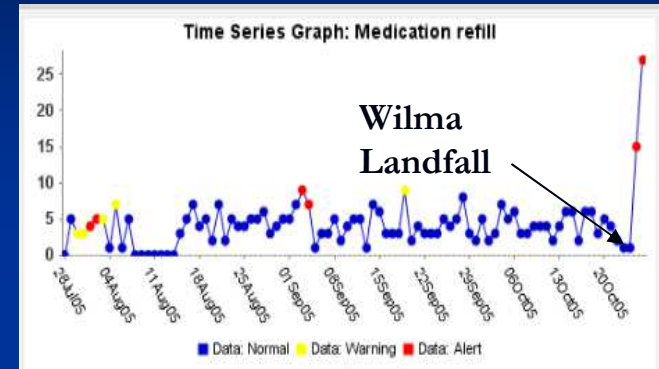
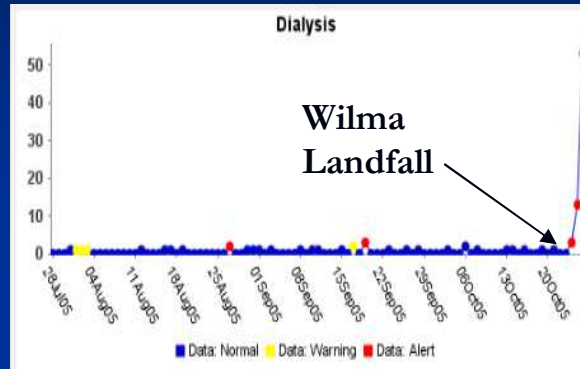
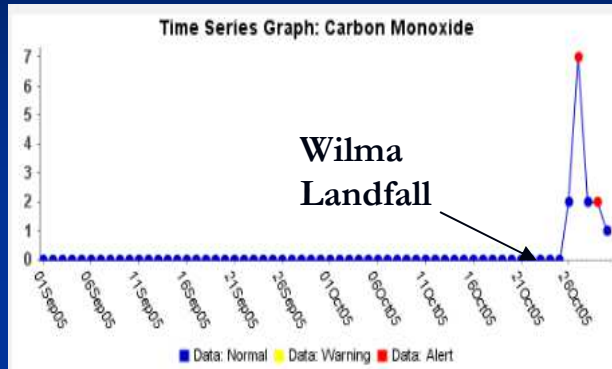
Florida ESSENCE-FL Data Sources

Data Source	Timeliness of Data Transmission	Volume	Primary Unit of Analysis
Emergency Department/Urgent Care Data	1 file each day from 175 facilities	Total: >25 million records	Syndromes, sub-syndromes, free text queries and stratifications by demographics
Merlin Data (reportable diseases)	1 file each hour	Total: ~350,000 case reports	Reportable disease cases and stratifications by demographics
Florida Poison Center Data	1 file every 20 minutes	Total: ~1.5 million calls	Major substance, minor substance, individual substance, clinical effects and stratifications by demographics
Florida Office of Vital Statistics – Mortality Data	1 file per day*	Total: ~2.1 million deaths	NCCHS cause of death groups, flexible ICD-10 and free text queries and stratifications by demographics

State ESSENCE-FL System – Data Flow



Dashboard-Morbidity Post-Disaster

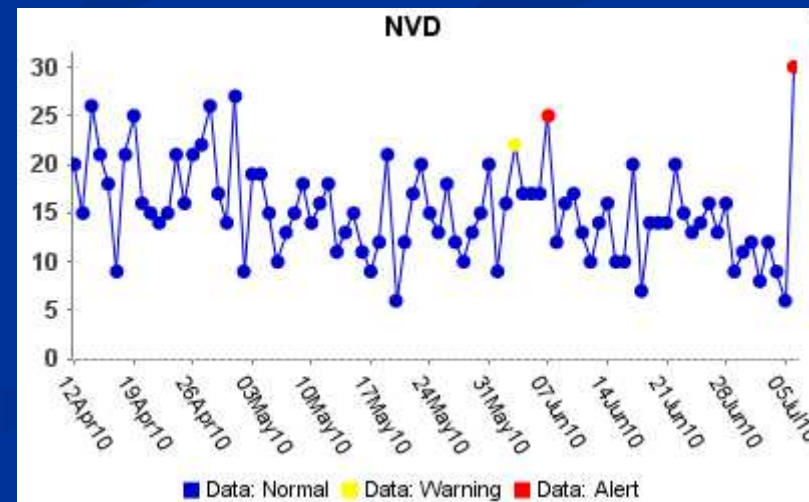
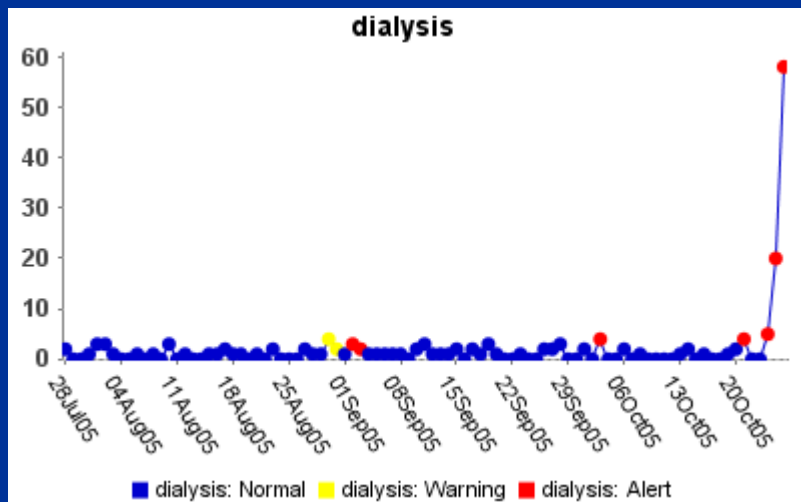
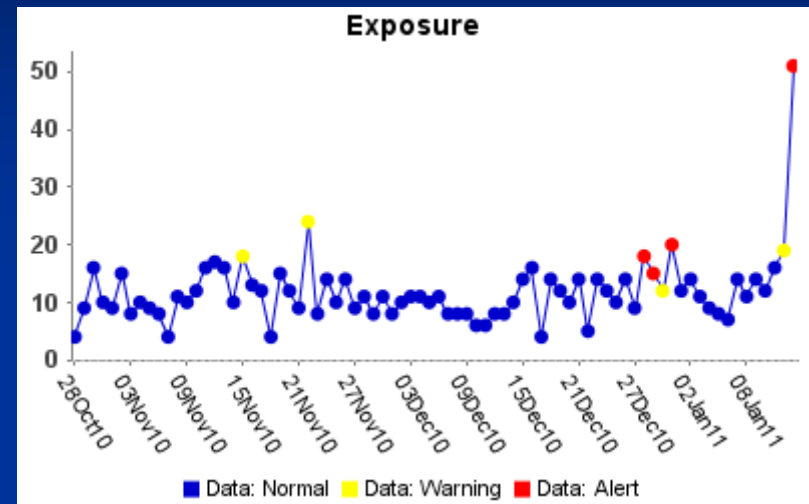
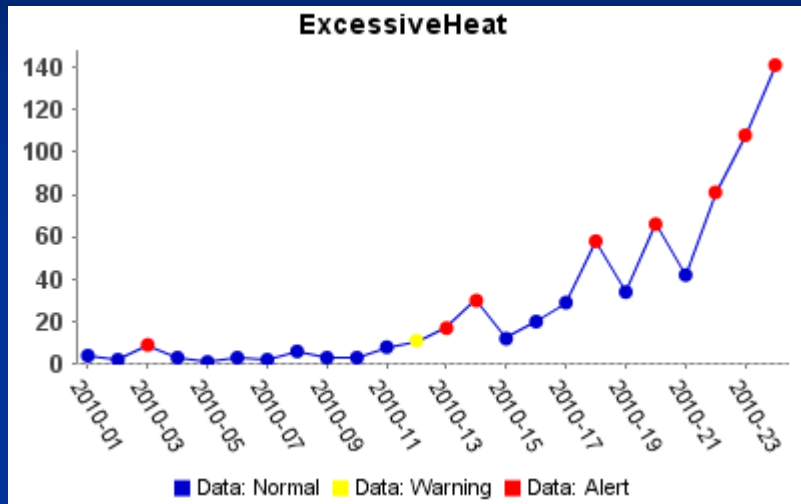


Wilma Landfall

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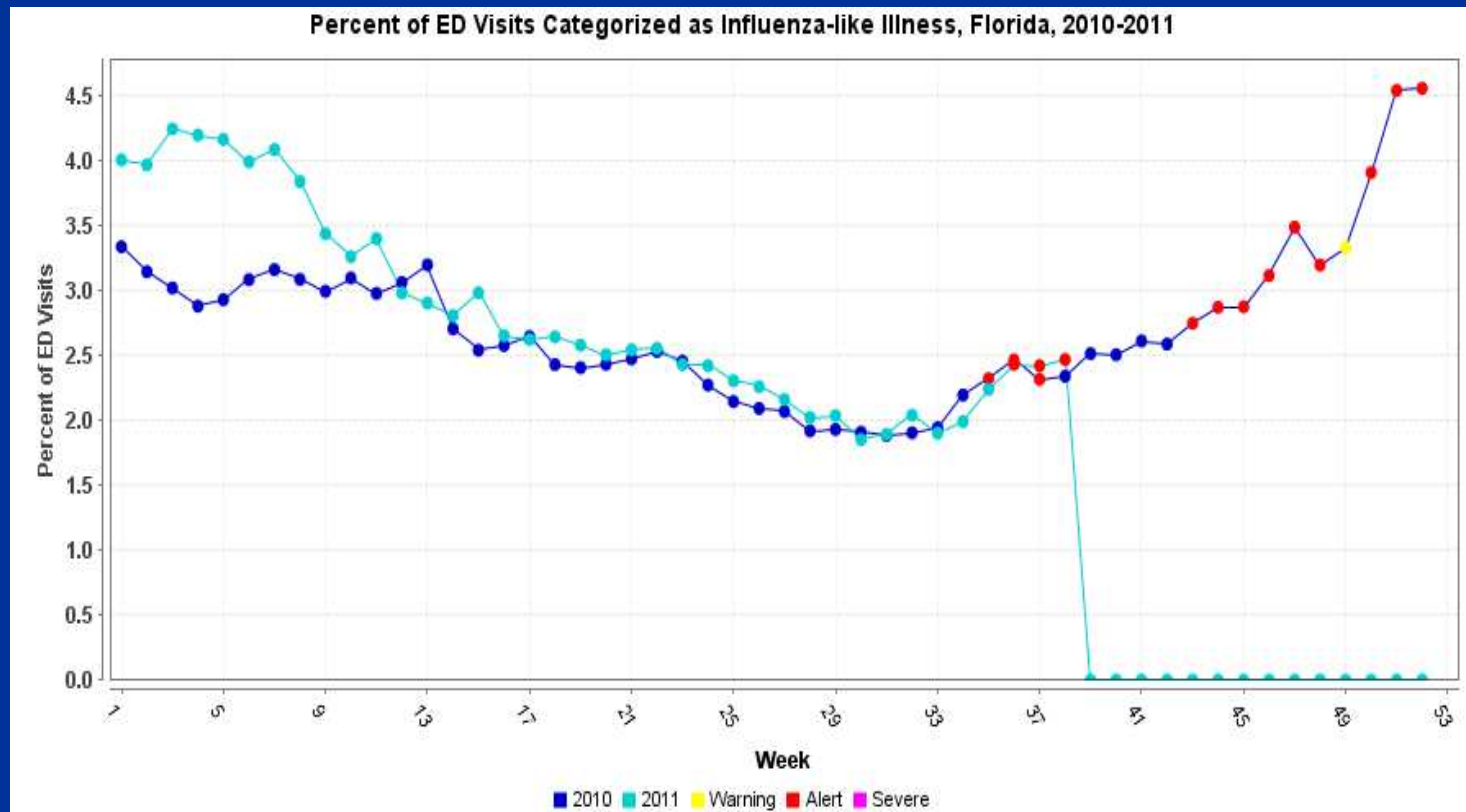
Earthquake

Event Detection



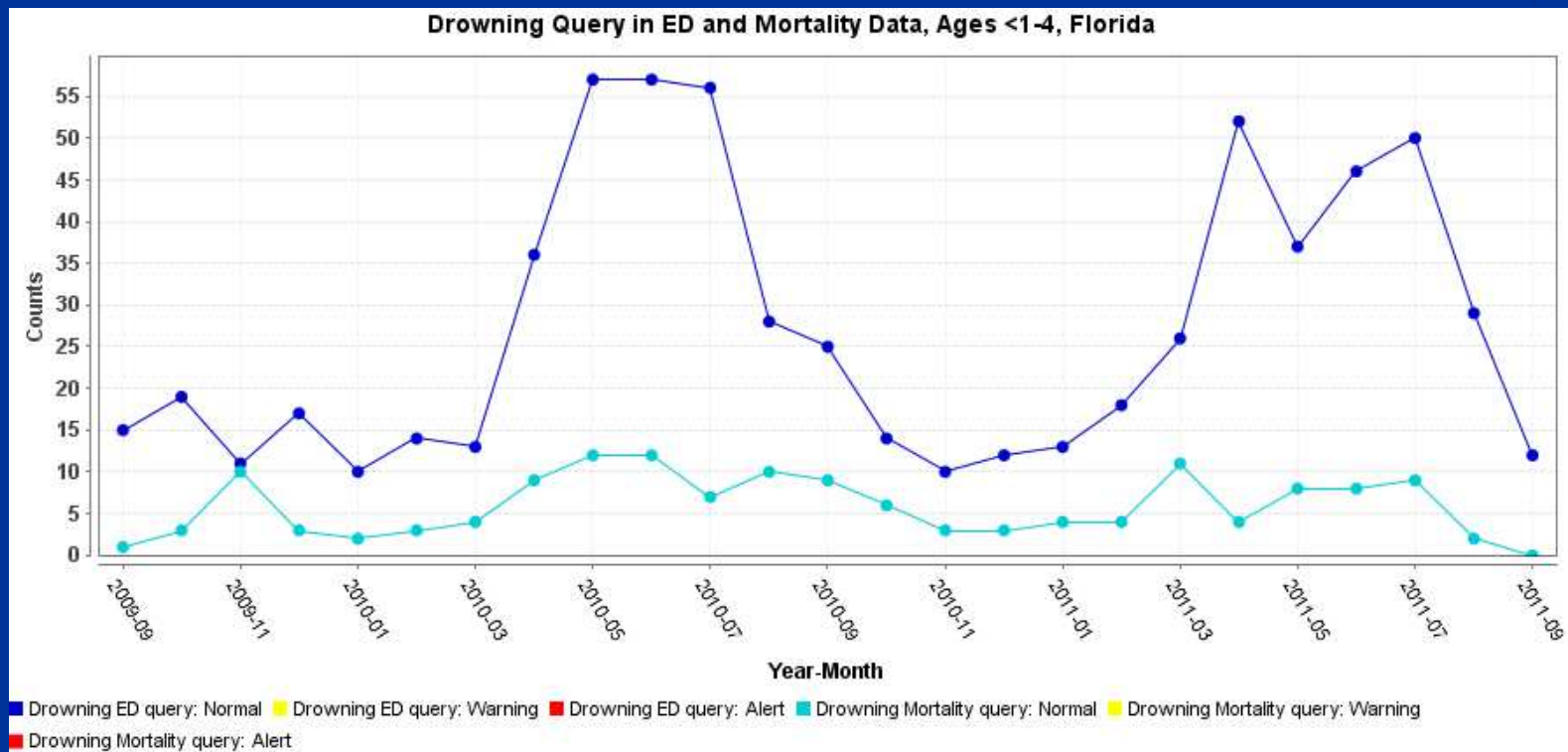
Seasonal Outbreaks - ILI

- Using the ILI syndrome to monitor influenza season



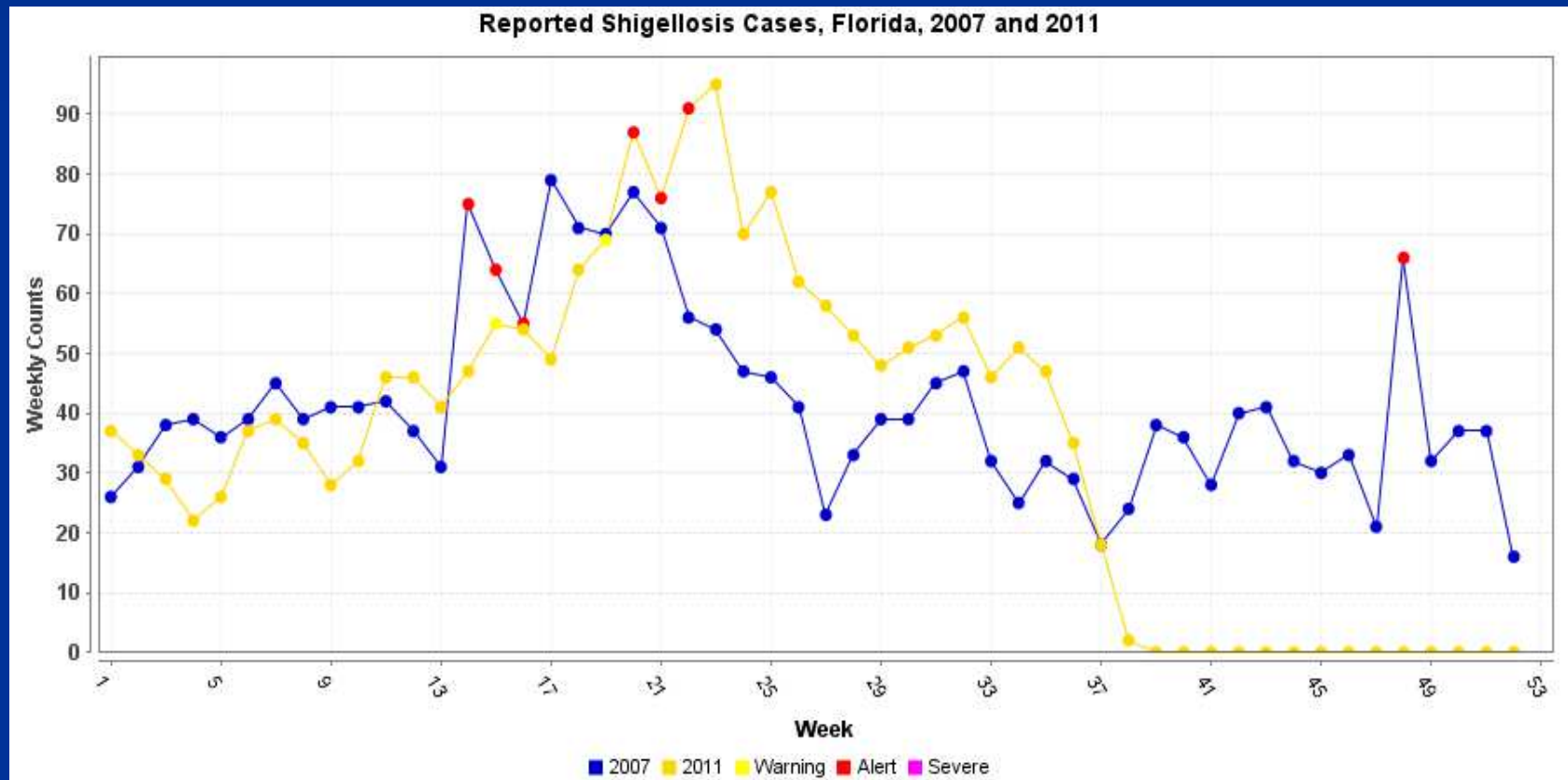
Specific Query – Drowning in those <1-4 yrs old

- Uses that go beyond our typical surveillance purposes. Other program areas may also benefit.
- Example: Combining ED and Mortality data in one graph



Shigellosis Trends – Outbreak Periods

- ESSENCE graphs - Merlin data



Reports – Closing the Public Health Surveillance Loop

Duval County Epidemiology Surveillance Report
Duval County Health Department, Epidemiology Program
September 2010



ESSENCE Report for Palm Beach County
(Electronic Surveillance System for the Early Notification of
Community-based Epidemics)

Time Period: November 1- November 14, 2010

Palm Beach County Health Department/Epidemiology & Disease Control Program



http://www.doh.state.fl.us/disease_ctrl/e/pi/Morbidity_Report/amr.html



ESSENCE Report for Marion County, Florida

November 2010

KEY TERMS:

VOLUME 1, ISSUE

**2009
Florida Morbidity
Statistics**



**OCHD SURVEILLANCE REPORT
EPIDEMIOLOGY PROGRAM**

SEPTEMBER 2010



Lessons Learned

- Need high-level collaboration within agency
- Work closely with stakeholders early on in the process
 - Statewide workgroup
- System operations should be invisible to data providers and users
- Openness to a culture of change
 - Developed in an iterative process; anticipate new ideas will occur and need a process to adapt

Lessons Learned

- Manager of system needs to:
 - Define who the end user(s) are, and develop a clear understanding of end user business needs
 - Be a heavy user of the system
 - Have access to all aspects of the system
 - All data sources
 - Server access
 - Be in close communication with users and data providers
 - Understand the characteristics of the various data sources
 - Be involved in data quality checks
 - Have access to responsive IT support

Lessons Learned

- JHU/APL
 - Weekly communication between technical team (JHU) and system manager to ensure new user functions meet business needs
 - Unfettered access to servers
 - Updates
 - Bug fixes/Troubleshooting

Lessons Learned

- Flexibility when working with data providers
 - Work closely with legal to ensure MOUs meet data contributor needs
- Recruitment:
 - Be persistent – capitalize on public health events to reach new users and new data contributors
 - H1N1
 - Deepwater Horizon Oil Spill
 - Build on existing local relationships for recruitment
 - Have in-person recruitment kick off meetings with all parties at the table (local public health, hospital ICP, hospital IT, hospital leadership)
 - Partner with key associations that can encourage participation (send letters to membership, etc.) e.g. hospital associations

Standards and Meaningful Use

- System implementation was pre-standard
- International Society for Disease Surveillance (ISDS) and CDC Working group developed standard in 2010-11
- FDOH distributed FAQs to hospitals interested in meeting syndromic surveillance MU
 - Outlined requested data elements
 - Message format – HL7 2.3.1 or 2.5.1
 - CDC Implementation guide
- FDOH Data Integration Broker
 - Will use Mirth → translate HL7 to pipe-delimited text file

Where are we going?

- Exploring additional data sources
 - Prescription drug data
 - 911/EMS call data
- Receiving data from eligible providers (MU)
- New data visualizations and efficiencies
- Data quality dashboards
- Additional service oriented functions for users
 - Automated report generation
- Focus more on evaluations
- The cloud..?

Acknowledgements

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