

# Using Data to Improve Health Care

## Connecting California to Improve Patient Care in 2012

### Practical Solutions for Health Information Exchange and Quality Analytics

Thursday, July 19, 2012

Doubletree Hotel - Sonoma Wine Country

Rohnert Park, California

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### Director

Division of Informatics Solutions and Operations (DISO)

*Prior to Leading DISO in February 2012*

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Public Health Surveillance and Informatics Program Office (PHSIPO, *Proposed*)

Office of Surveillance, Epidemiology, & Laboratory Services (OSELS)



# Disease Detection

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The New York Times

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE

Search Health 3,000+ Topics

JO TELL B

**Social Media Join Toolkit for Hunter**

By BRONWYN GARRITY  
Published: June 13, 2011

On a chilly February night in Los Angeles, attendees at the [DomainFest Global Conference](#) crushed together in a tent at the Playboy Mansion for cocktails and dancing. Two days later, Nico Zeifang, a 28-year-old Internet entrepreneur from Germany, woke up with chest pains, chills and a soaring [fever](#). Four colleagues shared his symptoms, Mr. Zeifang soon learned.

So he did what any young techie would: He logged on to Facebook and posted a status update. "Domainerflu count," it said. "Who else caught the disease at D.F.G.?"

Within hours, 24 conference attendees from around the world joined themselves to Mr. Zeifang's Facebook list; within a week, the number climbed to 80. Many of them "friended" him to get information and to compare notes on their fevers and phlegmy coughs. Almost everyone, it seemed, had a theory about the source of the infection. Many suspected the artificial fog that permeated the tent.

RECOMMEND

TWITTER

LINKEDIN

SIGN IN TO E-MAIL

PRINT

What's Popular Now

The Benefits of Bilingualism

Why I Am Leaving Goldman Sachs

"We can't turn the clock back," said Dr. Taha Kass-Hout, deputy director for information science at the C.D.C. "Given that the next SARS probably can travel at the speed of an airliner from continent to continent in a matter of hours, it just makes perfect sense to adapt the speed and flexibility of social networking to disease surveillance."

April 2, 2012

A Vegetarian Burger Bash  
March 30, 2012

Why 'Bully' Is a Family Film

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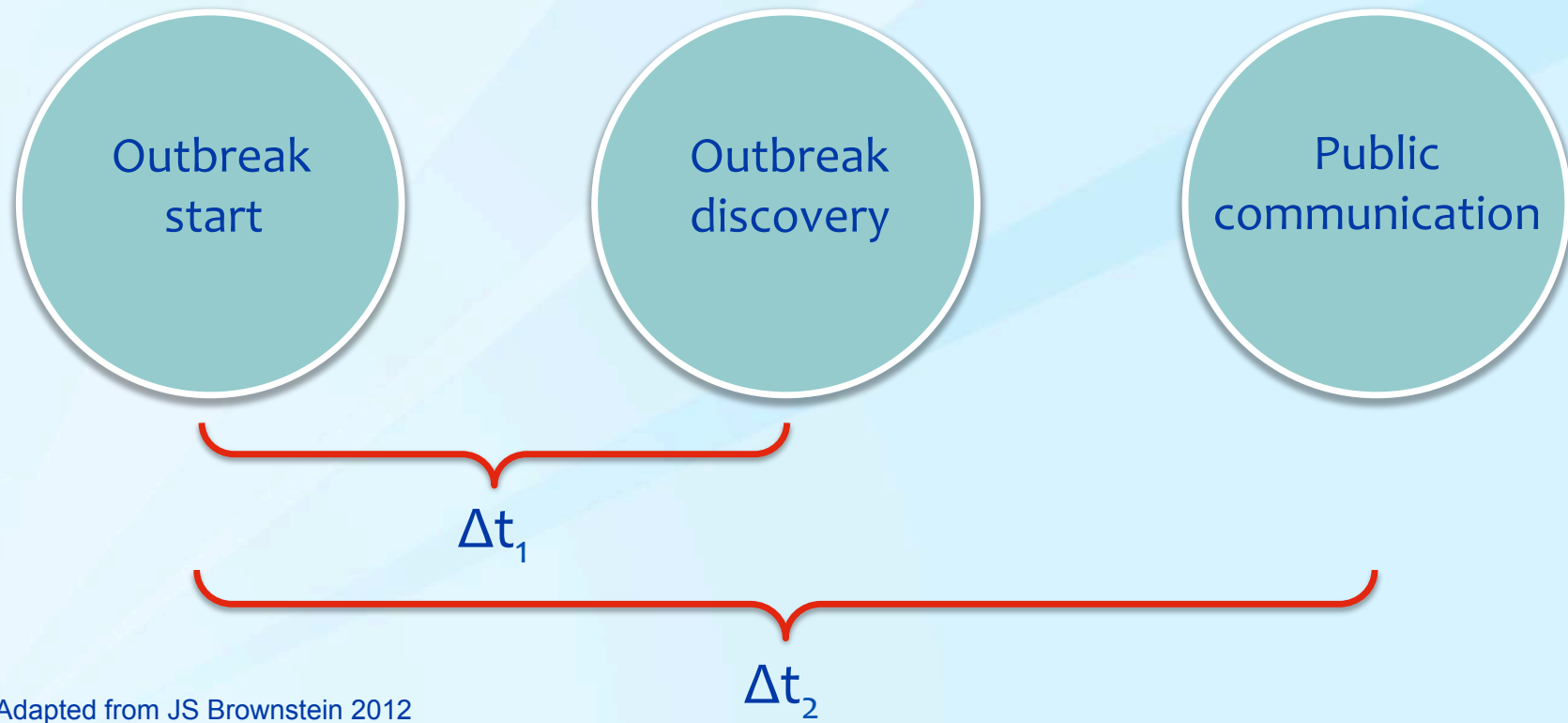
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<http://www.nytimes.com/2011/06/14/health/research/14social.html?pagewanted=all>

# Surveillance Capacity Assessment

Characterize spatial-temporal trends in the timeliness of events detection, reporting and response



Adapted from JS Brownstein 2012

# Number of days from event start to discovery



# Disease Detection

**RINGTONES RAZZ**  
**'PULL MY FINGER' RAISES A BIG STINK**  
Page 25

**BOSTON Herald**  
www.bostonherald.com

**FROM THE NY FALL FASHION SHOWS**  
**RUNWAY report P. 24**

## HEARTBREAKER

**Flu kills boy, 12,  
who lost vaccine  
permission slip**



DEBRA STATED: A fearful Sam and Tracy Papa talk about the loss of their son, Maxton, 12, who died from the flu this weekend.



**COMPLETE STORY: PAGE 4**

# Disease Detection

## Monitoring Emergency Rooms Visits Post H1N1

Google Search public data or change visualization

**Public Data**

- Emergency Department-based Community Disease Surveillance
  - Illnesses
    - ED visits due to illness/syndrome(%)

Compare by US State, County or ...

- Texas
  - Dallas County, TX
  - Denton County, TX
  - Ellis County, TX
  - Johnson County, TX
  - Parker County, TX
  - Tarrant County, TX

Clear selections

**Illness** Gastro Intestinal Illness

An Official Web Site of the United States Government

**DATA.GOV**  
EMPOWERING PEOPLE

HOME INTERACTIVE DATASETS RAW DATA APPS GEODATA COMMUNITY METRICS OPEN DATA SITES GALLERY WHAT'S NEW

**CDC BioSense: Tarrant County, Texas**  
The Tarrant County Public Health (TCPH) and Biosense collaboration is an effort to visualize TCPH health data collected by Biosense using Google Fusion 360

This data extraction tool or application is available via the link to the right

Google Search public data or change visualization

**Public Data**

- Emergency Department-based Community Disease Surveillance
  - Illnesses
    - ED visits due to illness/syndrome(%)

Compare by Patient Zipcode

County All

- 75001
- 75006
- 75007
- 75008
- 75010
- 75011
- 75014
- 75015
- 75016
- 75017
- 75019
- 75022
- 75027
- 75028
- 75029
- 75030
- 75034
- 75037
- 75038
- 75039
- 75040
- ...

Clear selections

**Illness** Gastro Intestinal Illness, Upper Respiratory Illness

- Gastro Intestinal Illness
- Heat Related Illness
- Rash
- Upper Respiratory Illness

Patient Zipcode

ED visits due to illness/syndrome(%) - Gastro Intestinal Illness

ED visits due to illness/syndrome(%) - Upper Respiratory Illness

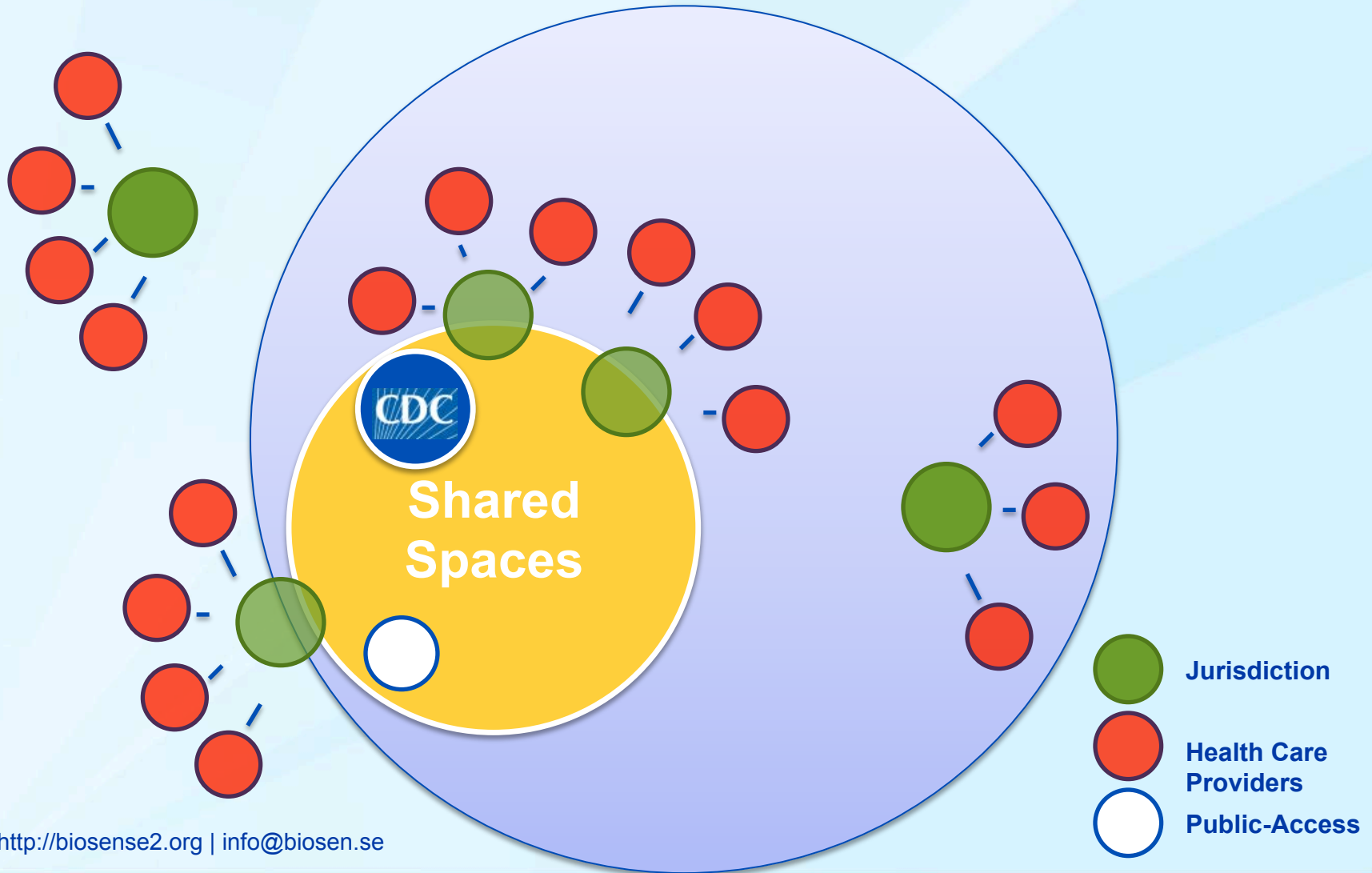
Data from Tarrant County (TX) Public Health, CDC BioSense Program Last updated: Feb 13, 2012

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2/4/12

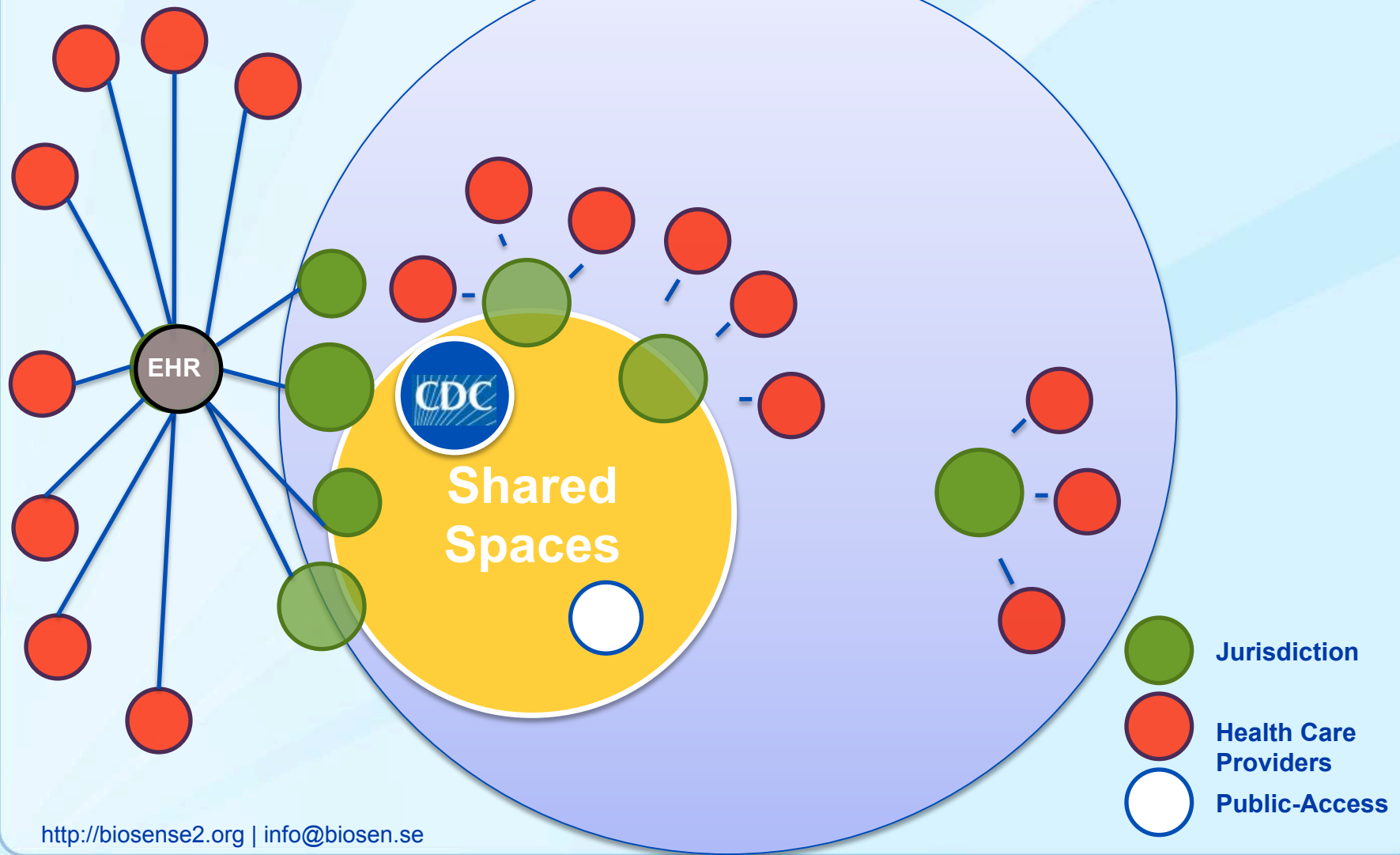
# BioSense 2.0

A Novel Model for Sharing Health Care Information and Beyond



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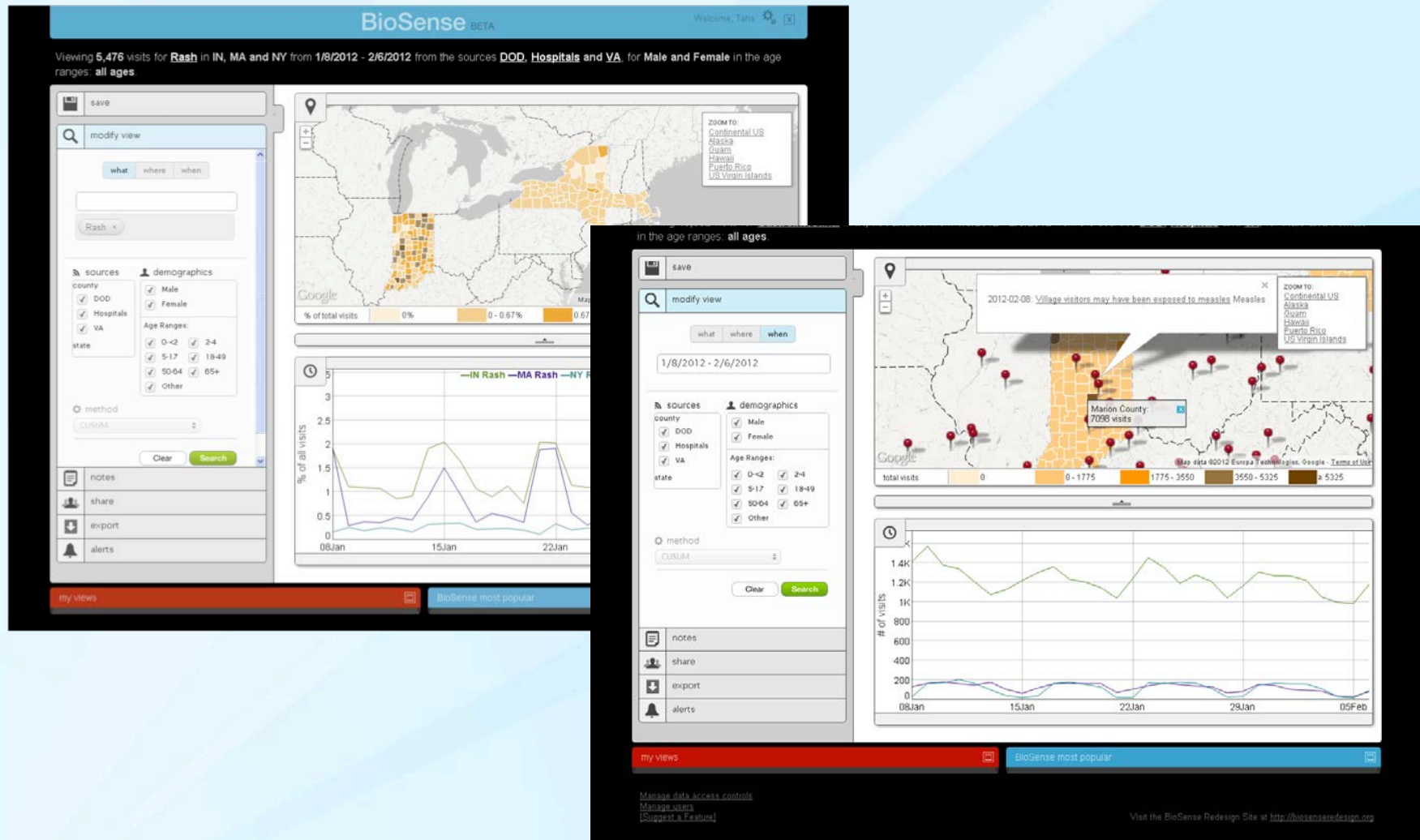
## A Novel Model for Sharing Health Care Information and Beyond



Top 20 Conditions in BioSense 2.0 in 2012

# BioSense 2.0

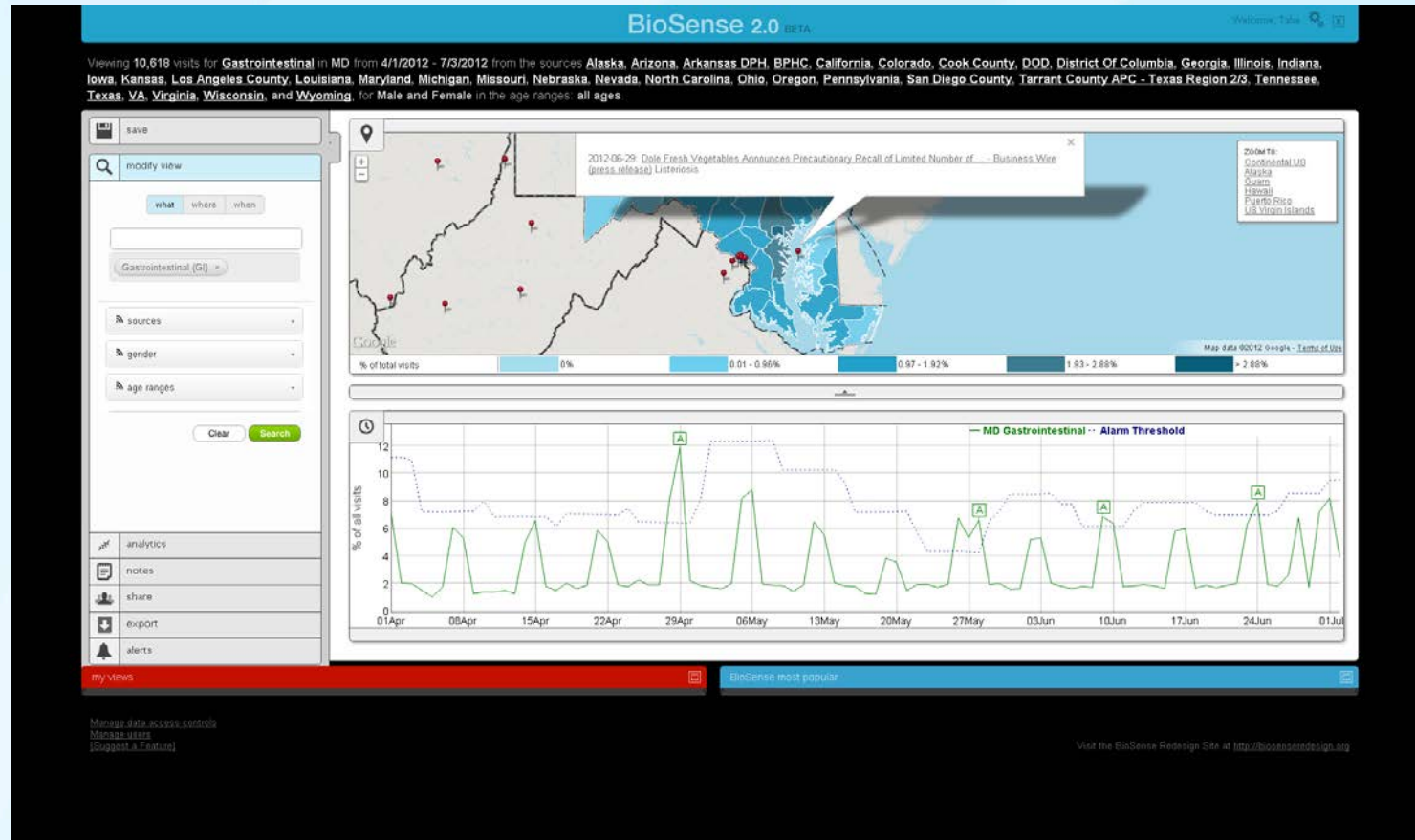
## A Novel Model for Sharing Health Care Information and Beyond



Feature: Ad-hoc sharing among multiple jurisdictions during a sporting event (e.g., Super Bowl 2012)

# BioSense 2.0

## A Novel Model for Sharing Health Care Information and Beyond



Feature: Anomaly detection during heat-wave season

# Preventative Care Value of Health Information Exchanges

- **Demonstrate how current Health Information Exchange standards and capabilities (such as the Nationwide Health Information Network (NwHIN) and the ARRA Meaningful Use (MUse) criteria) can help quantify the benefits of preventive care interventions**
  - Focused on the ABCDs of preventive health
  - Partnering with a public health jurisdiction and a mature Health Information Exchange (HIE) serving the jurisdiction
  - Transmitting National Quality Measures through NwHIN CONNECT



## ABCDs of Preventive Health

- **Low cost preventions that can have a high impact on the overall health of a population**
  - A – Aspirin Therapy
  - B – Blood Pressure monitoring
  - C – Cholesterol Screening
  - D – Diabetes monitoring
  - S – Smoking Cessation



## Pilot Site

- ❑ **Identified 13 Meaningful Use Data Measures to be used in the collection of ABCDs-related data**
  - Supported by the CMS
  - Required for Stage 2 MUse Compliance
- ❑ **Partnered with Maine Center for Disease Control and Prevention (Maine's HD) and HealthInfoNet (a Maine-based HIE)**
  - Covers 77% of Maine's population
  - Provides 4-year baseline
- ❑ **Established communications between HealthInfoNet and the HD thru NWHIN CONNECT**
- ❑ **Actively searching for second HIE**



## ABCDs-related Meaningful Use Measures

NQF Measure Number	Clinical Quality Measure Title
NQF 0013	Hypertension: Blood Pressure Measurement
NQF 0018	Controlling High Blood Pressure
NQF 0024	Weight Assessment and Counseling for Children and Adolescents
NQF 0027	Smoking and Tobacco Use Cessation, Medical assistance
NQF 0028	Preventive Care ABCDs related Meaningful Use Measures and Screening Measure Pair: a) Tobacco Use Assessment, b) Tobacco Cessation Intervention



## ABCDs-related Meaningful Use Measures *Cont*

NQF Measure Number	Clinical Quality Measure Title
NQF 0059	Diabetes: HbA1c Poor Control
NQF 0061	Diabetes: Blood Pressure Management
NQF 0064	Diabetes: LDL Management & Control
NQF 0068	Ischemic Vascular Disease (IVD): Use of Aspirin or another Antithrombotic
NQF 0075	Ischemic Vascular Disease (IVD): Complete Lipid Panel and LDL Control
NQF 0421	Adult Weight Screening and Follow-Up





## Measures Calculated as of June 2012

- ❑ **NQF 0027:** % patients 18 years of age and older who were current smokers or tobacco users, who were seen by a practitioner during the measurement year and who received advice to quit smoking or tobacco use or whose practitioner recommended or discussed smoking or tobacco use cessation medications, methods or strategies
- ❑ **NQF 0028a:** % patients aged 18 years or older who have been seen for at least 2 office visits, who were queried about tobacco use one or more times within 24 months
- ❑ **NQF 0059:** % patients 18–75 years of age with diabetes (type 1 or type 2) who had HbA1c >9.0%
- ❑ **NQF 0064:** % of patients 18–75 years of age with diabetes (type 1 or type 2) who had LDL-C <100mg/dL



## Information Exchanges with Maine HD

- ❑ Exchanges established over CONNECT, an open source software solution that supports health information exchange – both locally and at the national level. CONNECT uses Nationwide Health Information Network (NwHIN) standards and governance to make sure that health information exchanges are compatible with other exchanges being set up throughout the country



## Measurement Tool – popHealth

- ❑ **Open source tool that calculates all 44 Stage I MUse Clinical Quality Measures**
  - Imports HL7 Continuity of Care Documents (CCDs) for each patient
  - Performs the calculations and generates an xml file with the results
  - Generates result file conforms to the CMS Physician Quality Reporting Initiative (PQRI) specifications



# PopHealth Measure Summary

pop health Fort Defiance Health > Adam, Gino Welcome, popHealth | [help](#) | [account](#) | [providers](#) | [logout](#)

**▼ Core Measures**

- Preventive Care And Screening: Tobacco
- Adult Weight Screening And Follow-Up
- Hypertension: Blood Pressure Measurement
- \*\* Childhood Immunization Status
- \*\* Preventive Care And Screening: Influenza Immunization For Patients >= 50 Years Old
- \*\* Weight Assessment And Counseling For Children And Adolescents

\*\* core alternate measures

**▼ Alternate Measures**

- ▶ Heart Conditions
- ▶ Cancer
- ▶ Miscellaneous
- ▶ Women's Health
- ▶ Diabetes

PROVIDER: **Adam, Gino**

REPORTING PERIOD: 07/31/2010 - 10/31/2010 [export report](#)

# OF PATIENTS: 49

**measures** | comparison

■ numerator 
 ■ denominator 
 ■ reporting patients 
 ■ exclusions

**CORE MEASURES**

<u>Preventive Care and Screening: Tobacco</u>	Use	<b>69%</b>	$(\frac{18}{26})$		<a href="#">parameters</a> <a href="#">patients</a>
	Cease	<b>66%</b>	$(\frac{4}{6})$		<a href="#">parameters</a> <a href="#">patients</a>
<u>Adult Weight Screening and Follow-Up</u>	65+	<b>44%</b>	$(\frac{4}{9})$		<a href="#">parameters</a> <a href="#">patients</a>
	18-64	<b>8%</b>	$(\frac{2}{24})$		<a href="#">parameters</a> <a href="#">patients</a>
<u>Hypertension: Blood Pressure Measurement</u>		<b>50%</b>	$(\frac{1}{2})$		<a href="#">parameters</a> <a href="#">patients</a>

**CORE ALTERNATE MEASURES**

<u>Childhood Immunization Status</u>	DTAP	<b>100%</b>	$(\frac{3}{3})$		<a href="#">parameters</a> <a href="#">patients</a>
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# PopHealth – Individual Measure

pop health Fort Defiance Health » NQF0028a » parameters Welcome, popHealth | help | account | providers | logout

**75%** ( **213** / **284** )

MEASURE NAME: NQF0028 Preventive Care and Screening: Tobacco - (a) Use Assessment

REPORTING PERIOD: 07/31/2010 - 10/31/2010

DESCRIPTION: Percentage of patients aged 18 years or older who have been seen for at least 2 office visits, who were queried about tobacco use one or more times within 24 months. If identified as tobacco users, patient received cessation intervention.

**DENOMINATOR (284)**

patient characteristic age >= 18

and

encounter >= 2 counts of health and behavior assessment or occupational therapy or office visit or psychiatric and psychologic

or

encounter >= 1 count of preventive medicine services 18 and older

or

encounter >= 1 count of preventive medicine other services

or

encounter >= 1 count of preventive medicine individual counseling

or

encounter >= 1 count of preventive medicine group counseling

**NUMERATOR (213)**

patient characteristic tobacco user

or

patient characteristic tobacco non-user



# Acknowledgment

## ▣ Partners

- Office of the National Coordinator for Health Information Technology  
U.S. Department of Health & Human Services (ONC)
- CSTE, ASTHO, and NACCHO
- DoD and VA
- LabCorp and Quest
- Amazon (AWS under contract to ASTHO)
- Division for Heart Disease and Stroke Prevention, NCCDPHP
- Maine Center for Disease Control and Prevention (Maine's HD)
- Mitre (popHealth Project <http://projectpophealth.org>) (under contract with ONC)
- NIST

## ▣ Contractors

- AgileX
- RTI International
- RelayHealth
- HealthInfoNet

# Thank YOU!

**Taha A. Kass-Hout, MD, MS**

**Director**

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[@kasshout](#)

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