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#### **RWJF Product Cover Page**

RWJF ID#: 71596 File Name: 71596GPmeeting01.pdf Presenters Name: Brian E Dixon Affiliation: IU Richard M Fairbanks School of Public Health, Regenstrief Institute, Department of Veterans Affairs Title: Improving Population Health through Targeted Decision Support Organization and Meeting: PHSSR: 2015 Annual PHSSR Keeneland Conference Date and Location: April 20-22, 2015; Lexington, KY



SESSION 1B: Information Technology & Social Media-Tuesday, April 21, 2015, from 2:00 to 3:30 pm

#### Brian Dixon, PhD, MPA, BA

#### Improving Population Health through Targeted Decision Support

**Co-Investiagor(s):** Zuoyi Zhang, PhD; P. Joe Gibson, PhD, MPH; Xiaochun Li, PhD; Patrick Lai, MPH; Uzay Kirbiyik, MD, MPH; Jennifer Williams, MPH, BS; Rebecca Hills, PhD; Debra Revere, MS; & Shaun Grannis, MD, MS

**Background:** Surveillance is the cornerstone of public health practice. Traditionally, health departments have relied on passive, manual reporting of communicable diseases by hospitals, laboratories and clinics. Yet passive approaches can be burdensome for reporters, producing incomplete, delayed reports which impede follow-up and delay recognition of community disease patterns and outbreaks.

**Research Objective:** We seek to understand the various sources and methods by which hospitals, labs, and clinics report communicable disease information to public health authorities.

**Data Sets and Sources:** The Indiana Health Information Exchange (IHIE) is a large, robust HIE network in which clinical messages (such as laboratory results) are electronically delivered to over 25,000 physicians. In addition, the HIE network reports positive laboratory results for communicable and infectious notifiable diseases to the Marion County Public Health Department (MCPHD), which is responsible for communicable disease surveillance for its jurisdiction.

**Study Design:** We are evaluating an intervention designed to pre-populate the official communicable disease reporting form with patient demographics, lab results, and provider information available from the IHIE electronic health record system. The pre-populated form is delivered electronically to providers. Prior to deploying the intervention, we gathered baseline reporting information from fax, paper, and electronic reports that constitute a reported case and were submitted by both providers and labs to MCPHD.

Analysis: Key data required to investigate and close cases were manually abstracted from each report. We measured the completeness of reporting data elements separately for paper, fax, and electronic reports, stratifying by report type. We also calculated reporting rates and examined the results stratified by clinical source, disease and report type.

**Principal Findings:** We collected 11,997 reports submitted to public health for 8,754 unique cases across seven conditions (chlamydia, gonorrhea, syphilis, Hepatitis C, Acute Hepatitis B, Salmonella, and Histoplasmosis). Completeness of data elements varied by report type: lab report completeness averaged 73% with a range from 2.3% to 100% while provider report completeness averaged 64% with a range from 18.6% to 100%. Lab report completeness was higher than corresponding provider report fields for 12 of 15 critical fields. Lab reporting rates also matched or exceeded the rates for provider reports across all conditions.

**Conclusions:** The rise of ELR capacity among health departments and the superior completeness of lab reports may improve disease reporting to public health agencies and decrease the amount of information collected from providers. Yet lab report completeness remains problematic in many cases. Health information exchanges may help support more complete capture and synthesis of multiple reports from labs and providers in support of surveillance practice.

**Implications for Public Health Practice and Policy PHSSR:** Contributes to PH practice by exploring not only which interventions are effective but also why they are effective. Our intervention seeks to streamline clinical and public health workflow related to notifiable condition reporting. Moving forward, we will analyze the impact of pre-populated forms on report completeness, clinical staff burden, reporting rates, and timeliness to further understand how HIE networks can support notifiable disease reporting.

### Improving Population Health through Targeted Decision Support

#### Brian E. Dixon, MPA, PhD, FHIMSS Keeneland PHSSR Conference April 21, 2015





INDIANA UNIVERSITY Indianapolis



Regenstrief Center for Biomedical Informatics

Better Health Through Informatics

## Agenda

• Population Health Decision Support

• Case Reporting Then and Now

• A Pop Health Decision Support Intervention

• Preliminary Findings





# **Clinical Decision Support**

 Computer-based clinical decision support (CDS) can be defined as the use of the computer to bring *relevant knowledge* to bear on the *health care* and *well being* of a patient.

- Greenes, 2007



Friedman, JAMIA, 2008





## How Does CDS 'Fit' into Public Health?



Office of the National Coordinator for Health IT, 2014





# **PH Decision Support**

- Public health decision support (PHDS) can be defined as the use of the computer to bring *relevant knowledge* to bear on the *health* and *well-being* of a *population*.
  - Dixon, Gamache, Grannis, 2013

- Examples:
  - Vaccine forecasting report
  - Suggestion for ordering stool culture





# Traditional Case Reporting Workflow







#### **Official State CDR Form**

	Name (kast, first, r	ONFIDENTIA OMMUNICAE ate Form 43823 (R2 / 41S FORM CONTAINS FORMATION PER 411 n.i.)	L REPORT BLE DISEAS 11-96) CONFIDENTIAL 0 IAC 3.1-2-18.	OF SES	]	
patient Information Name Address Phone# DOB Gender Race/ethnicity	If child, partie of p Ar press (number City, ZIP code County Date of birth (mon SEX Bate Pregnant? Unknown Etbiologic agent Date of diagnosic	arent ( <i>last, first, m.i.</i> ) and street) th, day, year) <b>RACE</b> Black Unknown Other Multi-Racial	Age ETHNICI Hispanic Unknown St	Telephone number         (Not Required For STD's)         Check all that apply:         Health Care Worker         Food Service         School (student / staft)         IV         Day Care (attence / staft)         nc         Name of school / day care?         Part of an outbreak?         Yes         No         Unknown         age (syphilis only)		lab
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provider Information Physician name Physician address Phone# Reported by Report date	Reporting Facilit Name of physician Name of physician Date of report	y Code (see of see of s	Te DEPART	Interpretation in the second number of the second n		Treatment initiation date Treatment (drugs)





# Enhanced Case Reporting Workflow







# Enhancement Builds Upon Core Infrastructure

- Automated case detection
  - Identification of cases that must be reported
- Clinical messaging
  - Getting information to its recipient in a way that is integrated into workflow
- Public health communication pathways
  - Electronic laboratory reporting
  - Fax communications





# The Notifiable Condition Detector







# **Triggers for Case Detection**

ICD-9 / ICD-10 / SNOMED CT

- Clear signal of clinical or lab confirmed diagnosis

- LOINC
  - Clear signal of test that examines PH condition
  - Yet the "result" can be hard to confirm
- Natural Language Processing

   Hard but necessary as labs "dump" results into standard messages





## Clinical Messaging/Public Health Communication







## Login Screen

ntact IHIE • FAQs • Log In	
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helpdesk@ihie.org	Password:
317.644.1752	Log in
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	Reviewed and Electronically signed by: JAMES PEARCE MD d: Sep 10 2007 12:07A		<u>v</u>

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# So What Happens Next?

 Today clinics must print these forms, complete them manually, and submit them to local health departments using Fax

Some use electronic fax

 In the future, we hope to work with SHA to deliver completed forms electronically directly into the state NEDSS system





# **ARF Project Status**

- Baseline data collection completed
  - Existing counts of disease cases, data quality, and processes within public health department
  - Continuing to analyze baseline numbers
- Intervention went live in Sept 2013
  - Turned on intervention in clinics using a rolling approach through end of 2013
  - Collecting post-intervention data
  - Beginning analysis of post-intervention data





# **Baseline Completeness**

- 12,309 reports for 8,353 unique patients
  - Chlamydia, gonorrhea, syphilis, Hepatitis C, Acute
     Hepatitis B, Salmonella, and Histoplasmosis
- Data Completeness (Not NULL)
  - Provider: 65% mean (Range 33.6% 100%)
  - Fax-based Lab: 75% mean (Range 14.2% 100%)
    - ELR: 73% mean (Range 0.01% 100%)
  - ELR completeness higher for 11 of 15 fields
    - Lab higher compared to provider except race and ethnicity
  - Similar patterns across all conditions





# **Completeness Discussion**

- What can lab reports not provide?
  - Ethnicity; sometimes race
  - Treatment: was order written; med dispensed?
  - Clinical symptoms

- Strategies for getting these data electronically — CPOE, eRx and Pharmacy systems
  - Direct EHR access for PH workers





# Timeliness Results\*

Most cases are reported within 1 day
 – >80% reported within 3 days

For nearly all cases, lab is the \*first\* signal
 Only 11% cases have provider report at all

Lab report types
 – ELR, Fax, PH clinic, NEDSS





## Next Steps

- Enhanced form generation
  - Currently developing enhanced forms across the various condition groups
  - Turn on enhanced form in mid-2015

- Analysis and dissemination
  - Continue to analyze baseline, post-intervention
  - Synthesize qualitative data
  - Publish findings





# Acknowledgements

- Key folks supporting my work
  - Shaun Grannis (IUSM and Regenstrief)
  - Zuoyi Zhang (Regenstrief)
  - Jennifer Williams (Regenstrief)
  - P. Joe Gibson (Marion Co. Public Health Dept.)
  - Debra Revere and Becky Hills (U. Washington)
  - Patrick Lai, MPH (SOIC) and Uzay Kirbiyik (FSPH)
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Brian E. Dixon, MPA, PhD, FHIMSS Assistant Professor, IU Fairbanks School of Public Health; Research Scientist, Regenstrief Institute; Health Research Scientist, Department of Veterans Affairs

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## References

- Dixon BE, Grannis SJ, Revere D. Measuring the impact of a health information exchange intervention on provider-based notifiable disease reporting using mixed methods: a study protocol. BMC Medical Informatics and Decision Making 2013; 13:121.
- Revere D, Hills RA, Williams J, Grannis SJ, Dixon BE. Leveraging health information exchange to improve population health reporting processes: Lessons in using a collaborative-participatory design process. eGEMs (Generating Evidence & Methods to improve patient outcomes). 2014; 2(3):12. doi: 10.13063/2327-9214.1082



