Systems for Action

Systems and Services Research to Build a Culture of Health

PHSSR Research in Progress Webinar Series
Speaker Biographies

UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

Leveraging a Health Information Exchange Innovation to Improve the Efficiency of Public Health Disease Investigation

Thursday, January 21, 2016, 1:00–2:00pm ET/10:00-11:00am PT

Presenters

Janet Baseman, PhD, MPH is Associate Professor of Epidemiology at the University of Washington (UW) School of Public Health. Dr. Baseman's research centers around applied epidemiology in public health practice, strategies for improving disease surveillance systems, and public health informatics. She is also adjunct faculty in the Department of Health Services and is a member of the Northwest for Public Health Practice (NWCPHP) Research Team. *jbaseman@uw.edu*

Debra Revere, MLIS, MA is a Research Scientist at the Northwest Center for Public Health Practice at the UW School of Public Health. Ms. Revere's research uses qualitative and mixed-methods to focus on understanding the information and communication needs of public health, including how health information exchange, associated data sources and access to information can enhance and support the work of public health practitioners. *drevere@u.washington.edu*

Ian Painter, PhD, MSc is a Biostatistician at the Northwest Center for Public Health Practice at the UW School of Public Health. Dr. Painter's areas of expertise include disease surveillance, public health informatics, public health services research, data quality, and the utilization of EMS services by limited English proficient populations. *ipainter@u.washington.edu*

Commentary

Shandy Dearth, MPH, is the Administrator of the Epidemiology Department for the Marion County Public Health Department in Indianapolis, Indiana. Since 2003, she has worked with the infectious disease and emergency preparedness programs of the Marion County Public Health Department. She concentrates on health informatics and emergency preparedness. *sdearth@marionhealth.org*

P. Joseph Gibson, MPH, PhD, is Director of Epidemiology for the Marion County Public Health Department in Indianapolis. Dr. Gibson designs and implements analytic systems and tools for use in department and the community, and collaborates with research faculty at several universities. His areas of expertise include maternal and child health, and public health informatics and preparedness. *JGibson@MarionHealth.org*

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Thursday, January 21, 2015 *1:00-2:00pm ET/ 10:00-11:00am PT*

Bridging Health and Health Care

Leveraging a Health Information Exchange Innovation to Improve the Efficiency of Public Health Disease Investigation

Note: *Download today's presentation and speaker bios from the 'Resources' box in the top right corner of the screen.*

Funded by the Robert Wood Johnson Foundation

UK UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

Agenda

Welcome: Richard Ingram, DrPH, RWJF *Systems for Action* program co-director; Assistant Professor, U. of Kentucky College of Public Health

"Leveraging a Health Information Exchange Innovation to Improve the Efficiency of Public Health Disease Investigation"

Presenters: Janet Baseman, PhD, MPH, Associate Professor, Epidemiology, U. Washington School of Public Health *jbaseman@uw.edu*
Debra Revere, MLIS, MA, Research Scientist *drevere@u.washington.edu*, and
Ian Painter, PhD, MSc, Biostatistician *ipainter@u.washington.edu*
Northwest Center for Public Health Practice

Commentary:
Shandy Dearth, MPH, Administrator, Epidemiology *SDearth@MarionHealth.org*
and **Joseph Gibson, MPH, PhD**, Director, Epidemiology *JGibson@MarionHealth.org*
Marion County Public Health Department (MCPHD), Indianapolis

Questions and Discussion

Presenters

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Public Health Practice

UNIVERSITY of WASHINGTON

Leveraging a Health Information Exchange innovation to improve the efficiency of public health disease investigation

Janet Baseman, PhD, MPH
Debra Revere, MA, MLIS
Ian Painter, PhD
University of Washington
Seattle, WA

SCHOOL OF PUBLIC HEALTH

Outline

Project Description

Natural Experiments: The need for a Plan B (and C and D…)

RWJF Project: An example of unanticipated and numerous detours with a happy ending

Lessons Learned: Conducting research to inform public health practice

Project: Impact of HIE Intervention on Public Health

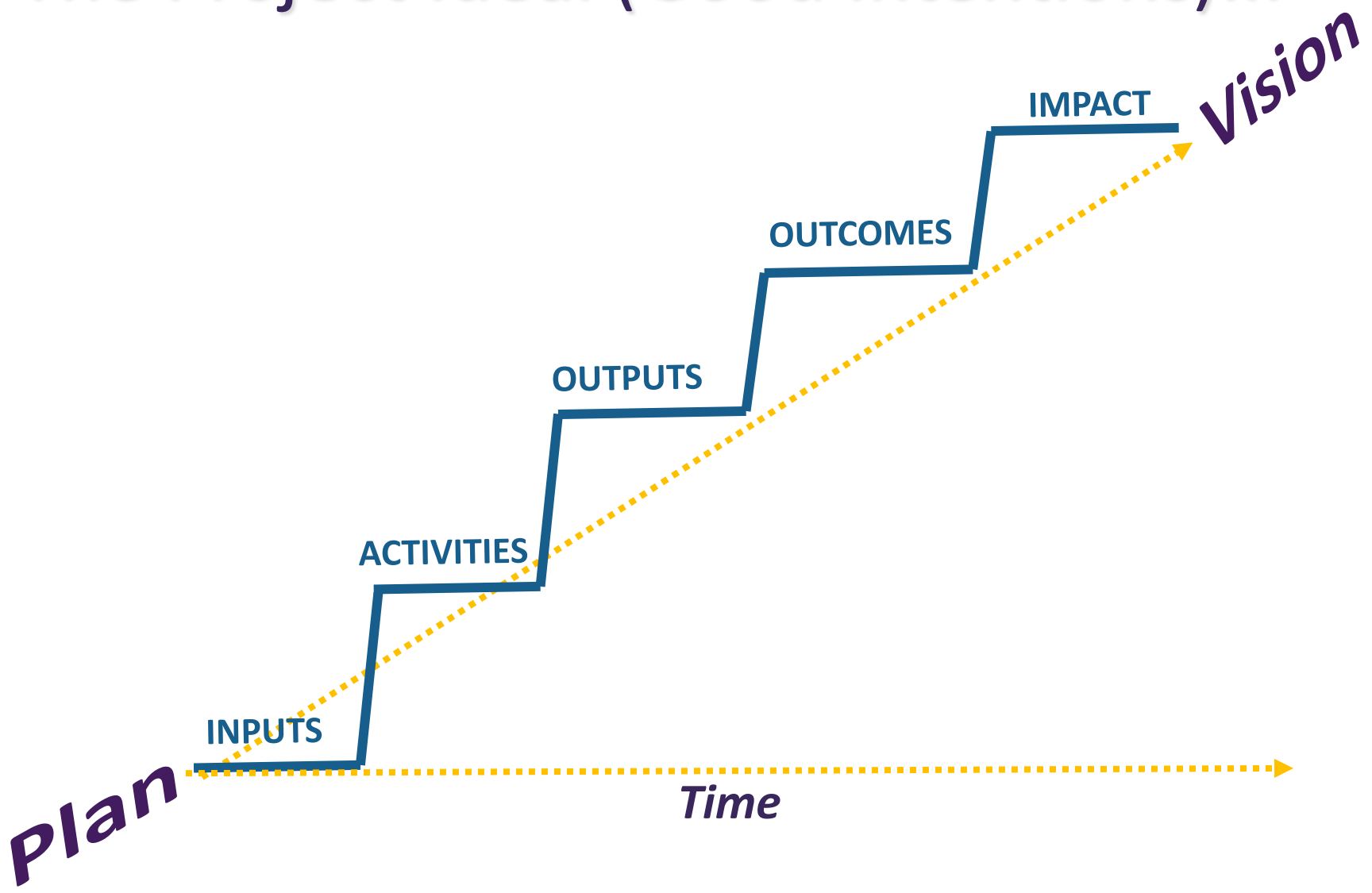
Goals of HIE Intervention:

- Streamline clinic CDR reporting process
- Reduce provider reporting burden
- Improve quality of CDR reporting data

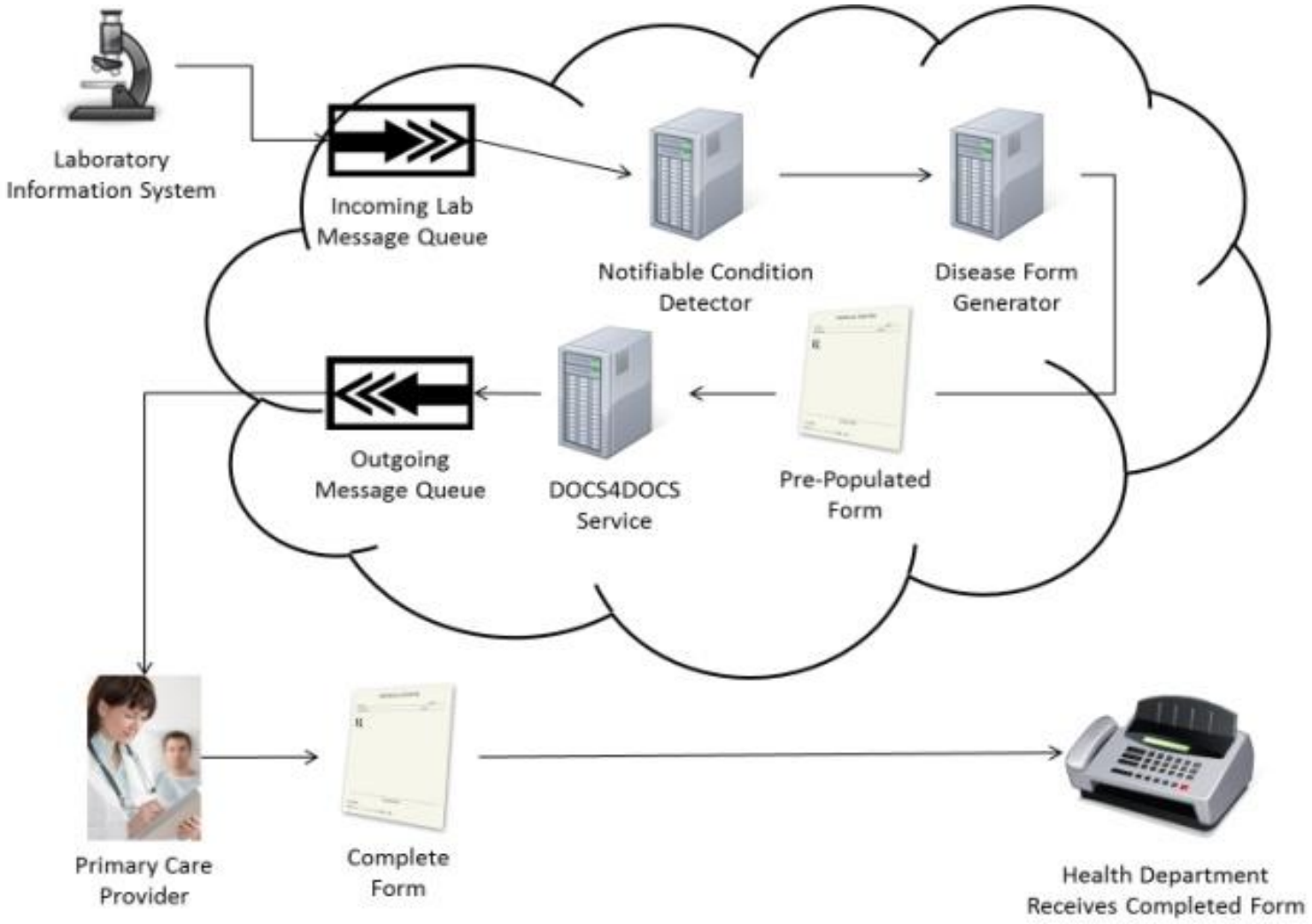
(Original) Goals of RWJF Project:

Investigate impact of the HIE reporting intervention on public health communications burden, case follow-up, investigations & system

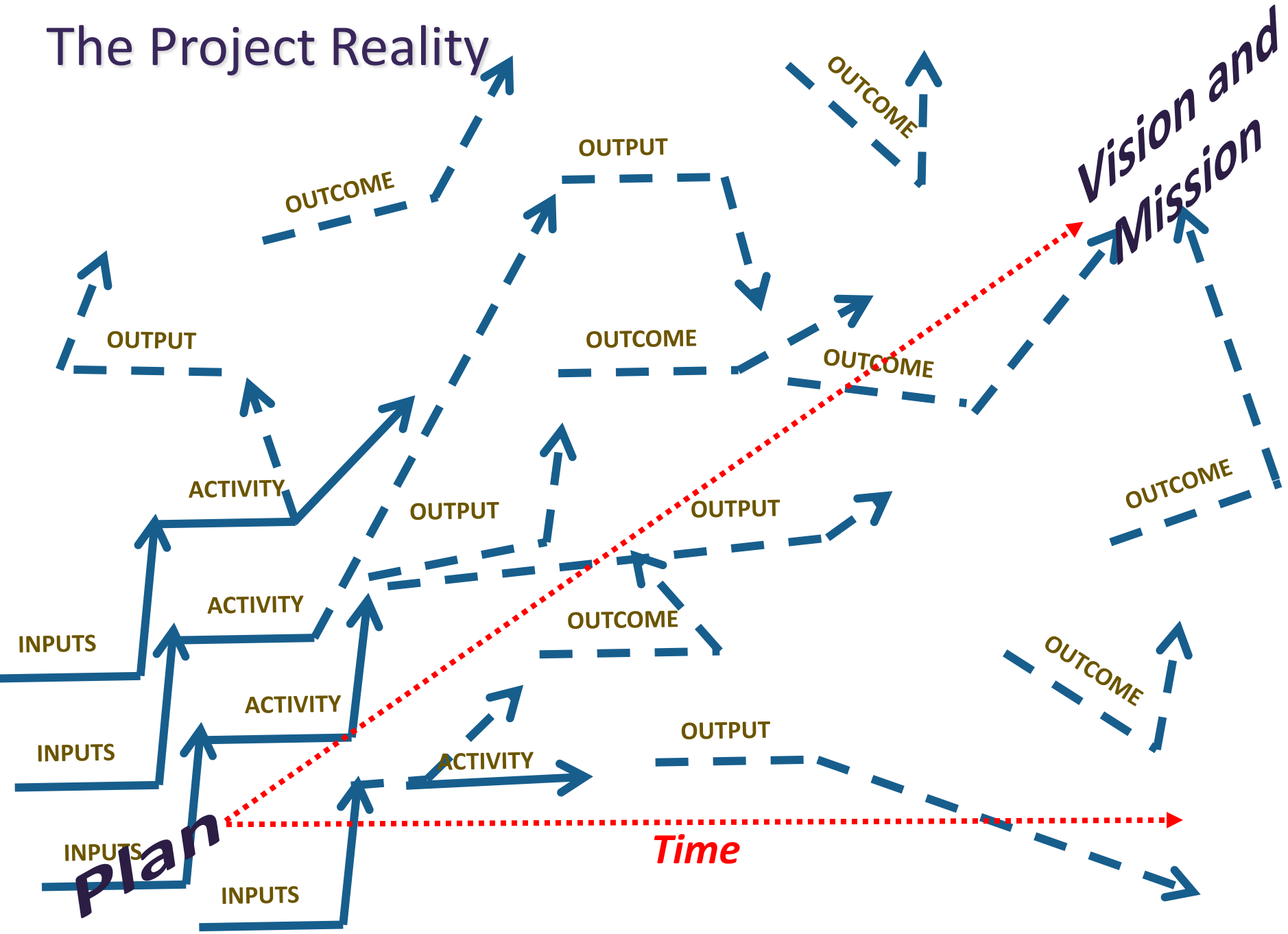
The Project Ideal (Good Intentions)…



The Concept


Laboratory Information System
Incoming Lab Message Queue
Notifiable Condition Detector
Disease Form Generator
Outgoing Message Queue
DOCS4DOCS Service
Pre-Populated Form
Primary Care Provider
Complete Form
Health Department Receives Completed Form

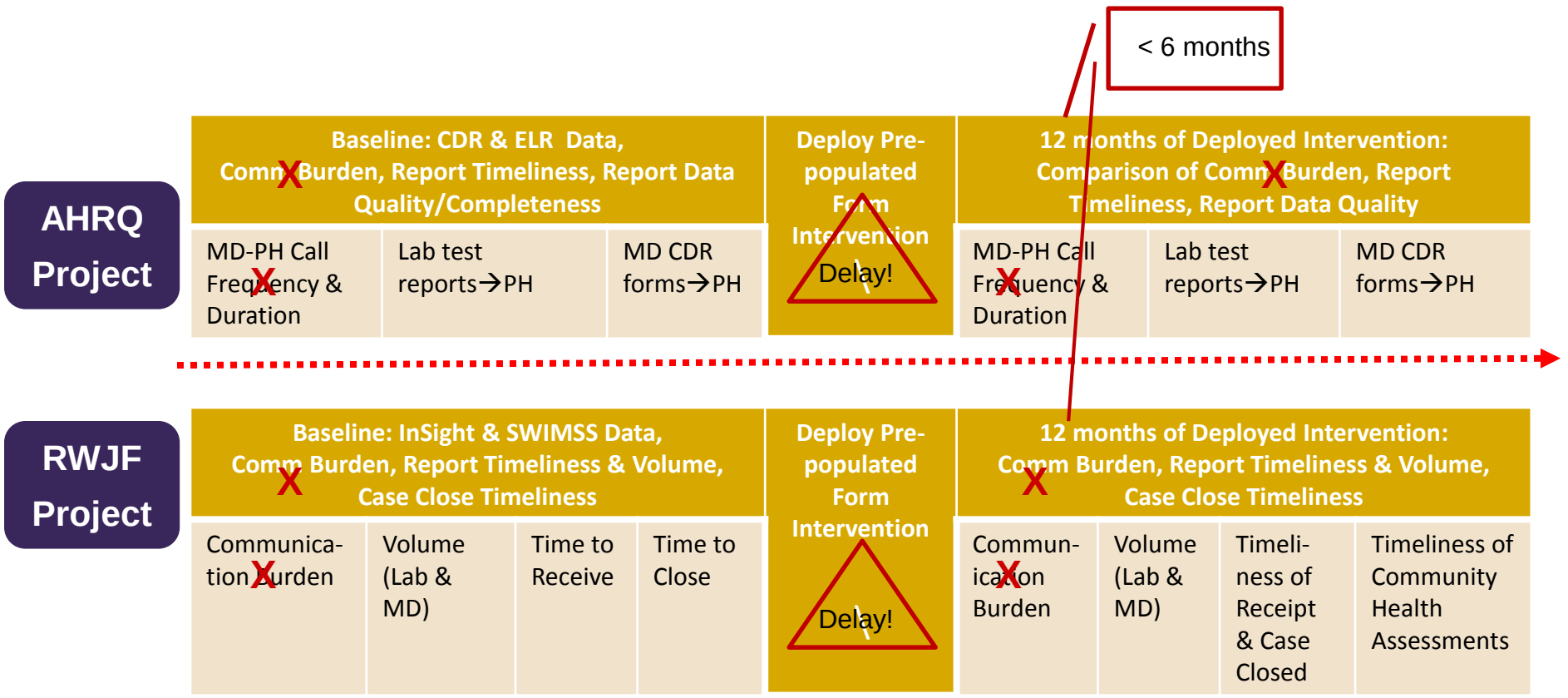
The Project Reality



RWJF Project:

An example of unanticipated and numerous detours with a happy ending

AHRQ (HIE) & RWJF (Public Health) Project Interdependencies



Project Plan D:

Baseline = 01/01/2012 – 09/15/2013
Intervention = 09/16/2013 – 03/01/2014
Post-Intervention = 03/02/2014 – 09/15/2014

Reporting Volume

Number of cases received by each public health agency (total and by condition by month)

"Time to Receipt"

Time between "notify public health" by provider or lab and receipt of report or inclusion of report into SWIMSS or InSight

"Time to Close"

Time between "Time to Receipt" and last date of activity in the record by each public health agency

Case Burden

Number of cases handled by individual public health workers at each agency

Data & Data Cleaning

InSight Data Pull

Conditions: Hep B, Hep C, Histo, Salm

Time frame: 01/01/2012 – 09/15/2014

SWIMSS Data Pull

Conditions: Chlamydia, Gono, Syphilis

Time frame: 01/01/2012 – 09/15/2014

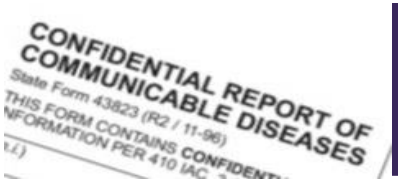
	N = 3,719 records	**N = 48,250 records**
Missing Data	325	5392
Date Anomalies	388	3121

InSight Analysis Dataset N = 3,006

SWIMSS Analysis Dataset N = 39,737

Conditions	**N**
Chlamydia	28,018
Gonorrhea	7,791
Syphilis	810
Syphilis, Reactor	3,118
Acute Hep B	563
Chronic Hep C	2,160
Histoplasmosis	73
Salmonella	210

Establishing Overall Context: Reporting Volume



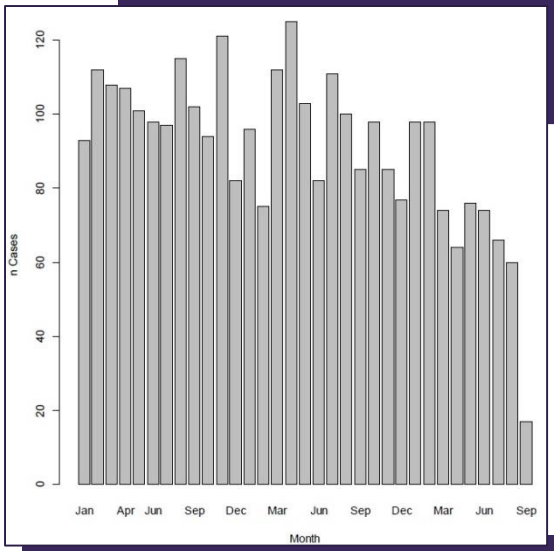
Number of cases received by each PHA between 01/01/2012 – 09/15/2014

Analyses:

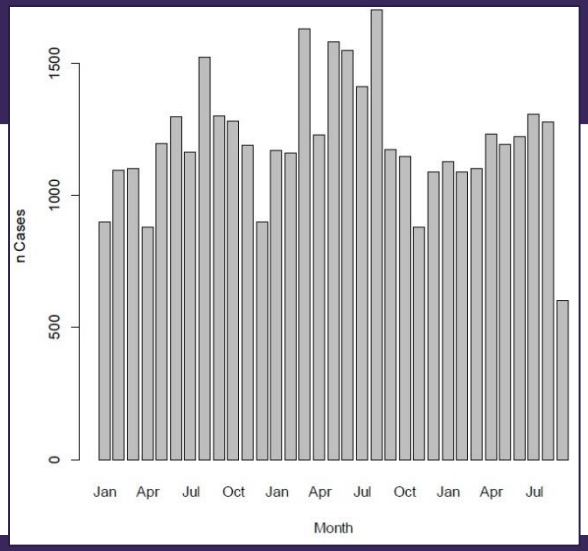
Number of cases, all conditions combined, received per month into each reporting system (SWIMSS or InSight)

Number of cases received per month by condition into each reporting system (SWIMSS or InSight)

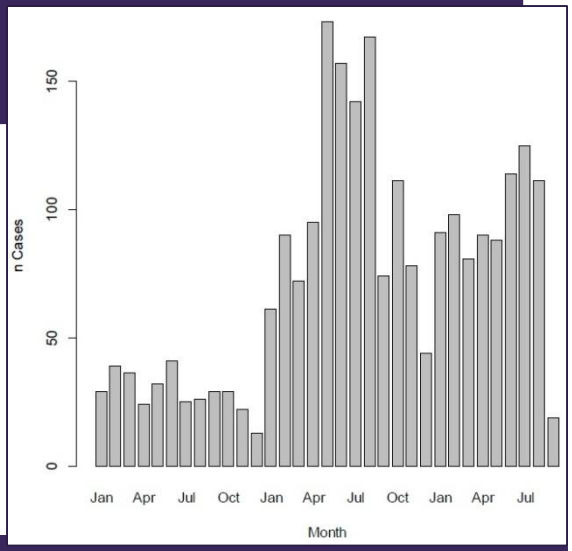
Findings: Descriptive



InSight #cases/month

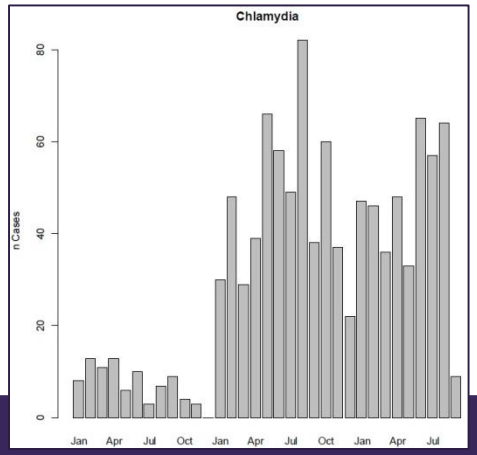


SWIMSS #cases/month

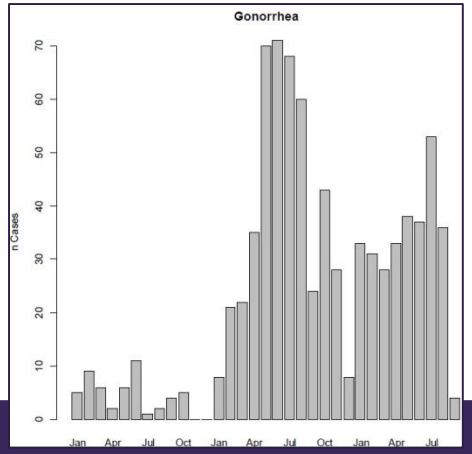


SWIMSS #cases with interview/mo

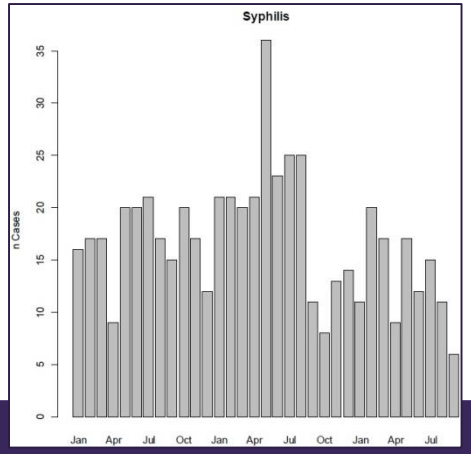
Reporting Volume by Condition/Month



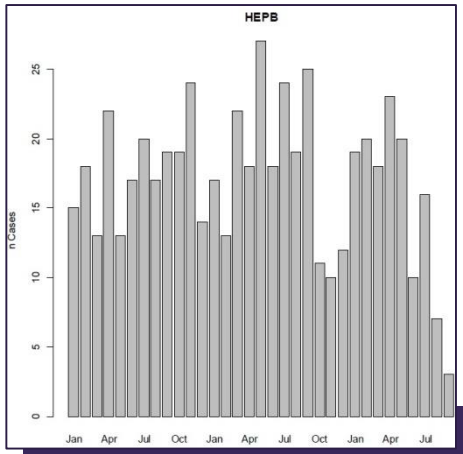
Chlamydia w/interview



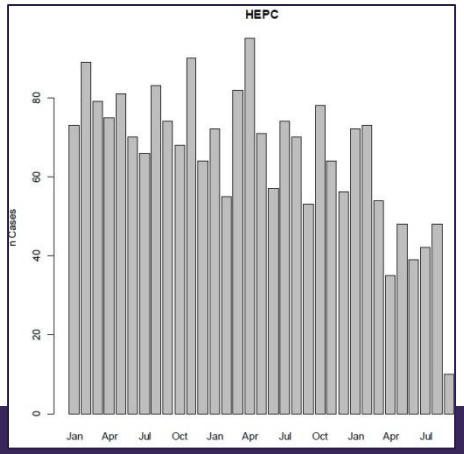
Gonorrhea w/interview



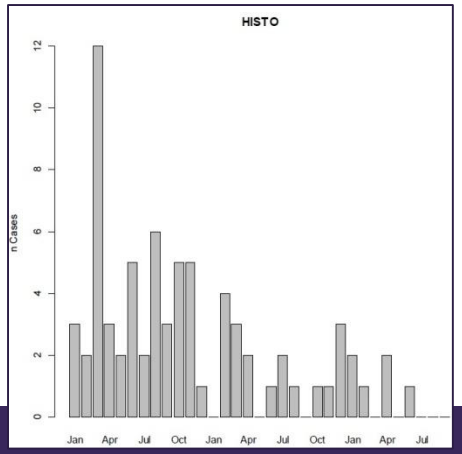
Syphilis w/interview



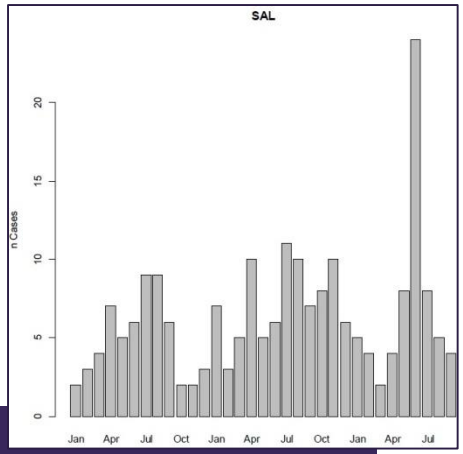
Hep B



Hep C

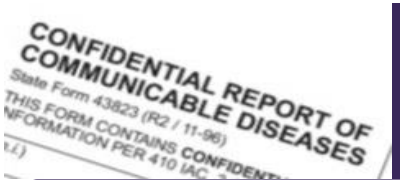


Histoplasmosis



Salmonella

Establishing Individual Context: Case Burden



Number of report cases handled by individual PH workers at each PHA

Analyses:

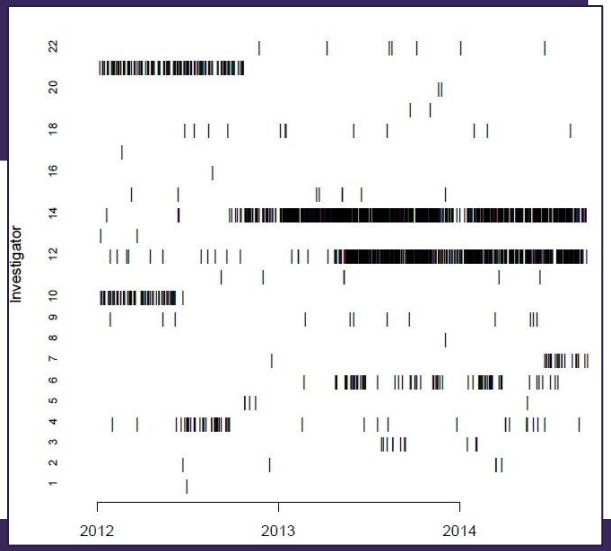
Number of cases assigned to each PH investigator over time

Number of cases assigned to each PH investigator over time by condition

Findings: Descriptive

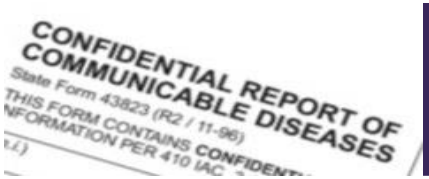
Little consistency in case assignment over time

Few investigators assigned cases uniformly over time



SWIMSS/BF Investigators w interview

Outcome: “Time to Receipt”


CONFIDENTIAL REPORT OF COMMUNICABLE DISEASES
State Form 43823 (R2 / 11-96)
THIS FORM CONTAINS CONFIDENTIAL INFORMATION PER 410 IAC

Time lapse between "notify public health" status for reporters and receipt of report or inclusion of the report into its respective reporting system

Analyses:

Difference in calendar days between the date of lab test result and the earliest date of any PH activity

Difference between earliest date of provider or lab report and time to inclusion into the reporting system by condition by work days (i.e., days PHAs are open, excluding holidays)

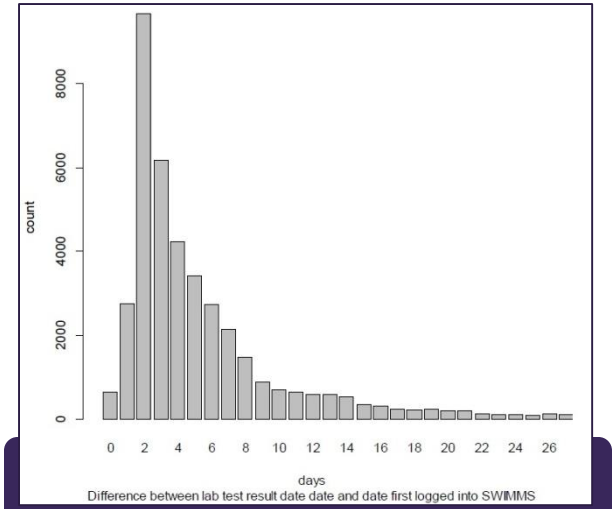
Difference between earliest date of provider or lab report and time to inclusion into the reporting system by day of the week

Findings:

Over 95% of the time the first notification to PH of a reportable condition was the lab report

Month-to-month variation in reporting timeliness could not be explained by changes in rates of disease reporting

Systematic differences observed in reporting timeliness depending on condition and day of the week

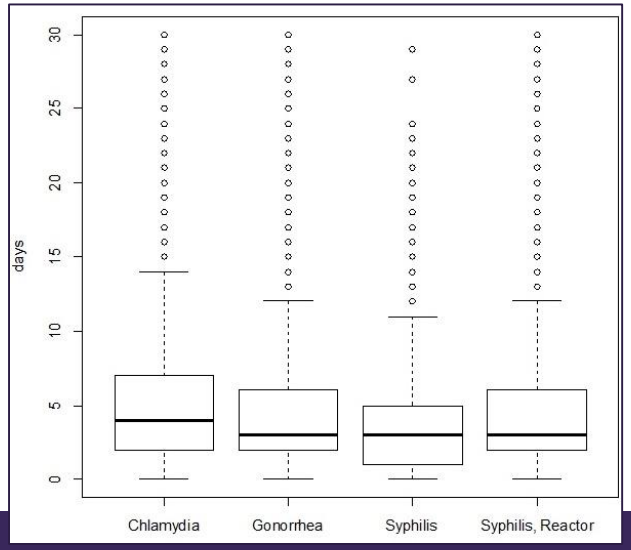


SWIMSS

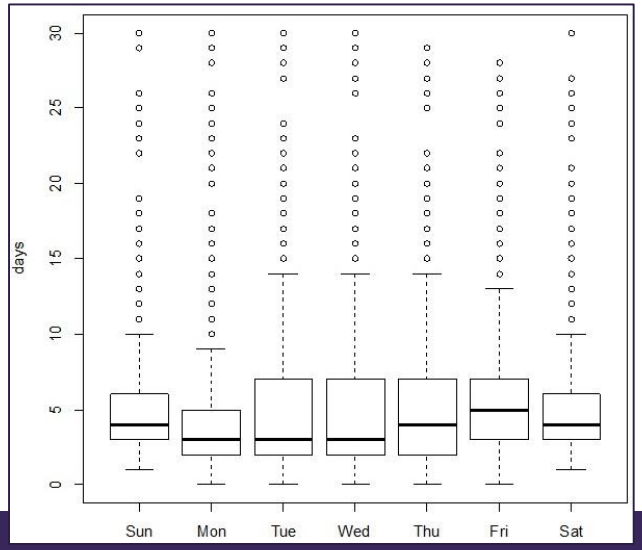
Reporting Timeliness: Calendar Days

SWIMSS ONLY

Time, in calendar days, between laboratory test result date and date received by PH by:



Condition *



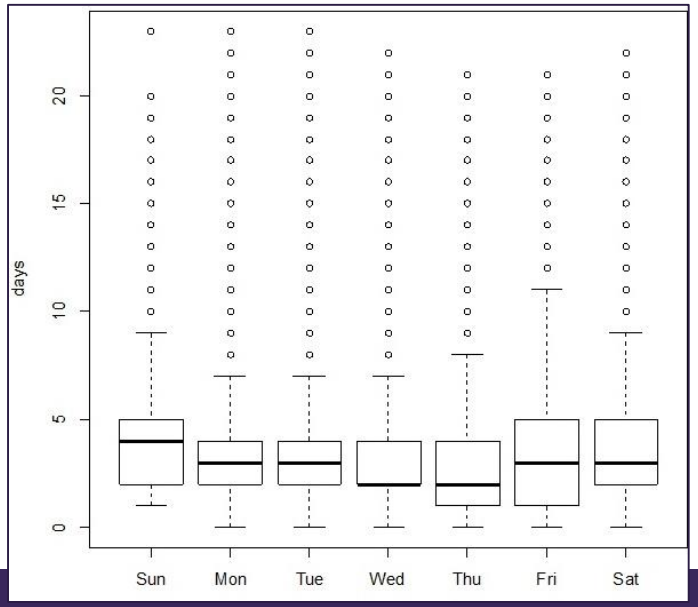
Day of the Week of Lab Result *

	Chlamydia	Gonorrhea	Syphilis	Syphilis, Reactor
Sunday	0.69	0.25	0.00	0.05
Monday	0.71	0.19	0.02	0.08
Tuesday	0.71	0.20	0.02	0.07
Wednesday	0.69	0.19	0.02	0.10
Thursday	0.72	0.19	0.02	0.08
Friday	0.70	0.20	0.02	0.08
Saturday	0.71	0.24	0.01	0.05

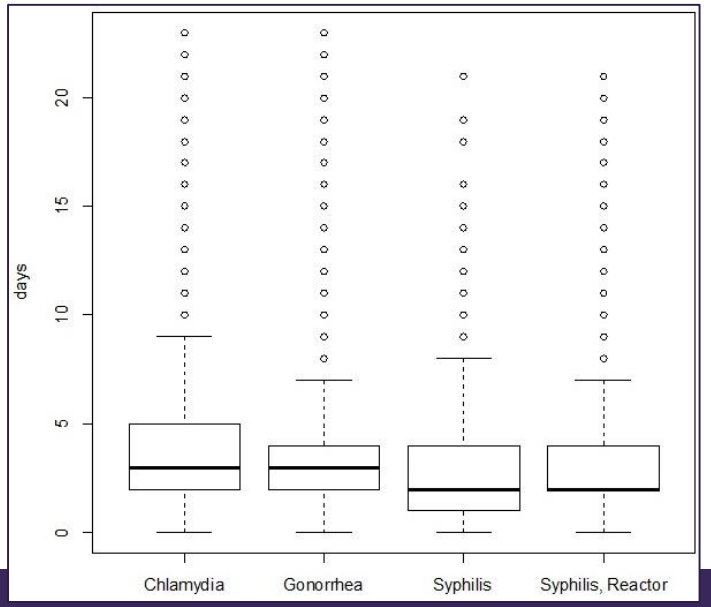
* Statistically significant, $p<0.01$, Kruskall-Wallis test

Reporting Timeliness: Work Days

SWIMSS ONLY:
Number of work days between laboratory test result date and date received by PH by day of the week and by:



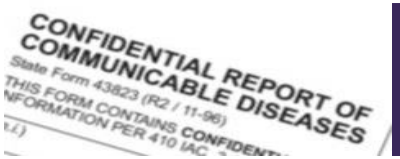
Test Result*



Condition*

* Statistically significant, p<0.01, Kruskall-Wallis test

Outcome: “Time to Close”



Time lapse between "Time to Receipt" and last date of activity in the record by each PHA

Analyses:

Number of work days from date a case was assigned to an investigator to date the case was closed

Number of work days to close a case by condition; by day of the week; by day of the week of lab test result

Additional SWIMSS analyses:

Number of work days to close a case with interview

Number of work days to close a case with interview by investigator

Case burden: Number of work days to close a case with interview by investigator case load

Findings:

Possible co-variates on case completion rates:

- Condition
- Investigator
- Day of the week
- Caseload

Case Closed in Work Days – InSight Data

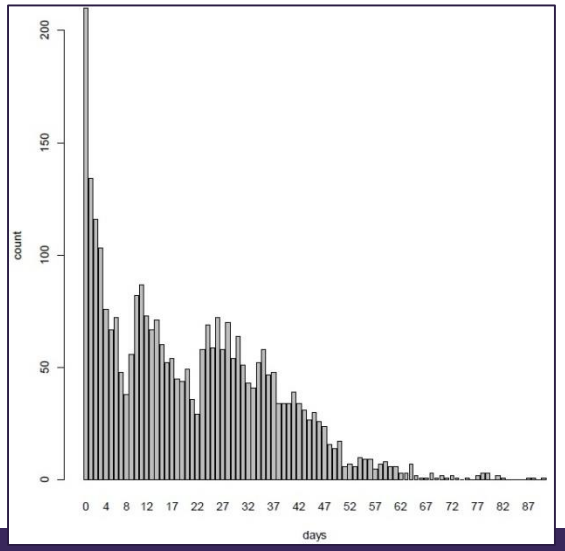
Findings:
48.8% of InSight cases closed within 17 work days

Median case close time in work days varied by condition

Median case close time in work days varied by investigator

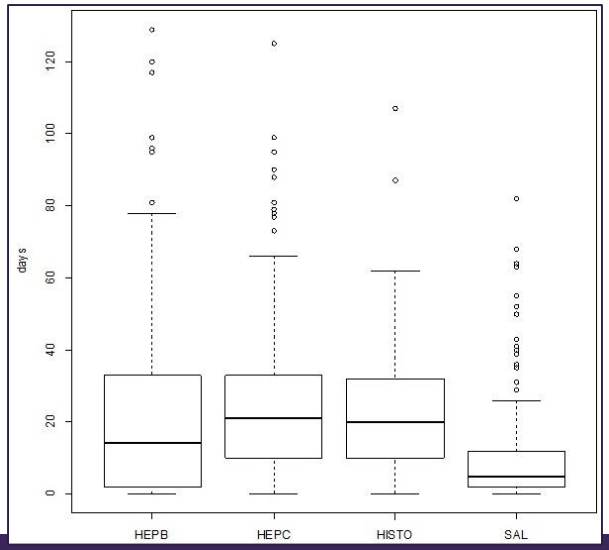
Median case close time in work days did not vary by day of the week

Case close differences could not be explained by investigator case burden or changes in rates of disease reporting

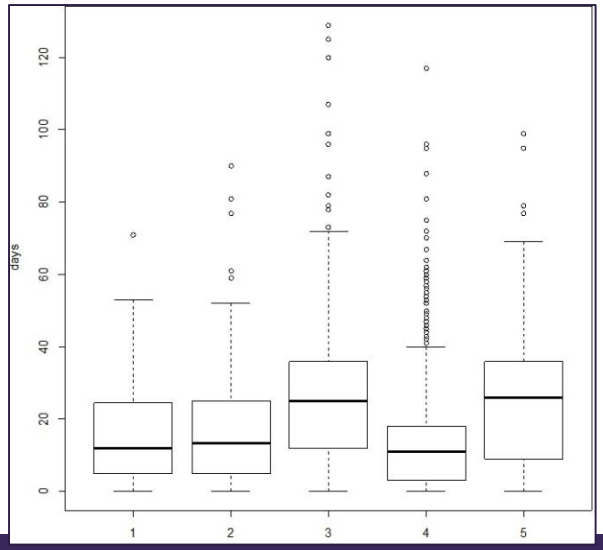


Time to close in work days

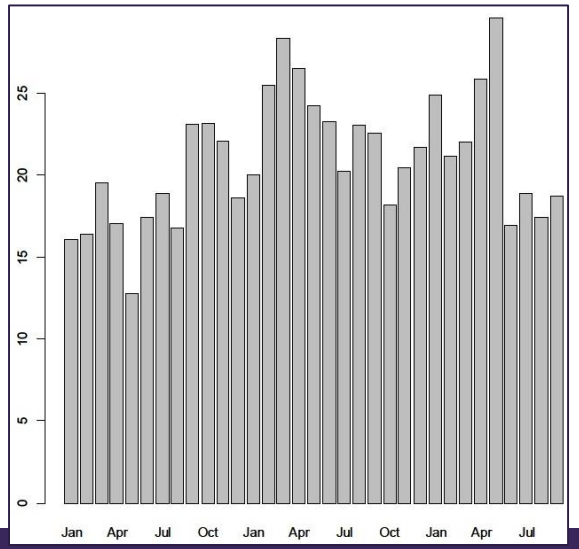
Case Closed in Work Days – InSight Data



Time to close by condition*



Time to close by investigator*



Mean time to close by month$

*statistically significant, p<0.01, ANOVA F test
$statistically significant, p<0.01 ANOVA for generalized linear models

Case Closed in Work Days – SWIMSS Data

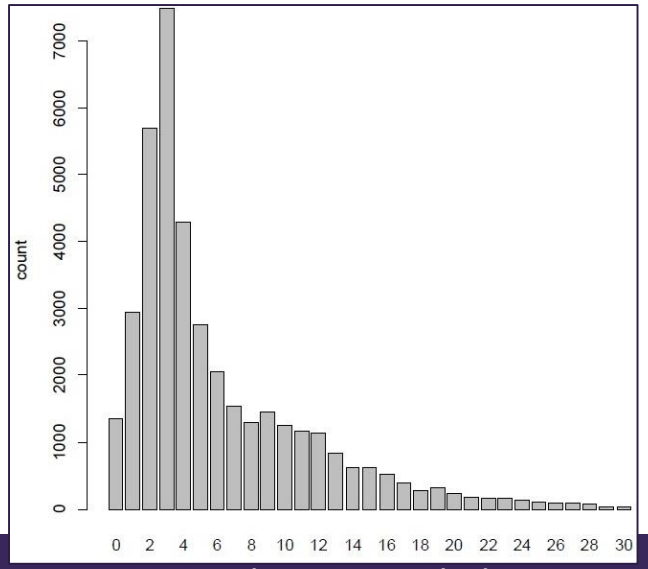
Findings:
54.7% of SWIMSS cases closed within 4 work days

Median case close time in work days varied by month and showed a clear decline from 10 days in 2012 to 5 days in 2014

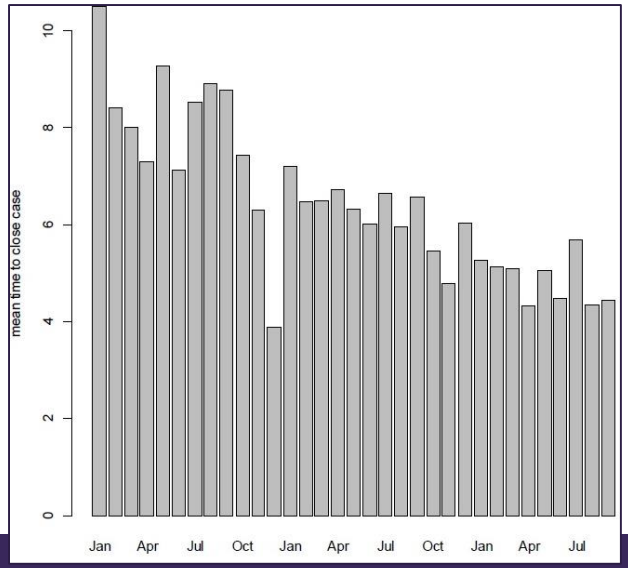
The majority (>77%) of SWIMSS cases did not have interviews

For cases w/o interviews: statistically significant effects between "time to close" and condition, public health investigator, day of week, and mean number of cases per week

For cases w/o interviews, interaction effect between condition and investigator



Time to close in work days



Mean time to close in work days by month*

*statistically significant, p<0.01, F test for Poisson regression model

Case Closed in Work Days – SWIMSS Data

Statistically significant associations in “time to close” w/o interview and:

Condition

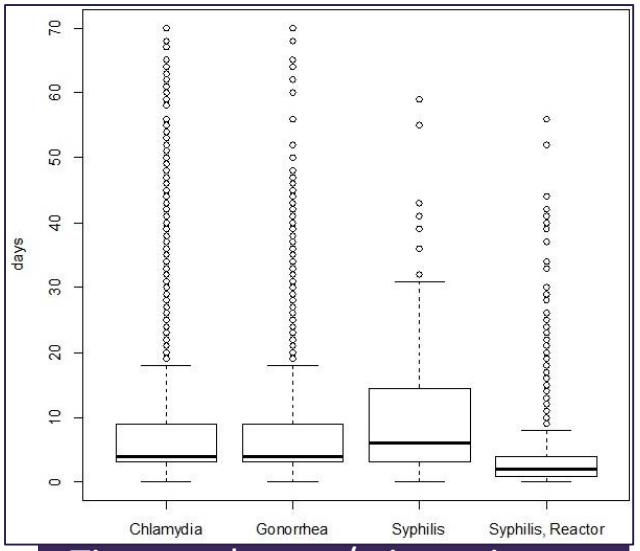
Individual investigator

Caseload per investigator/week

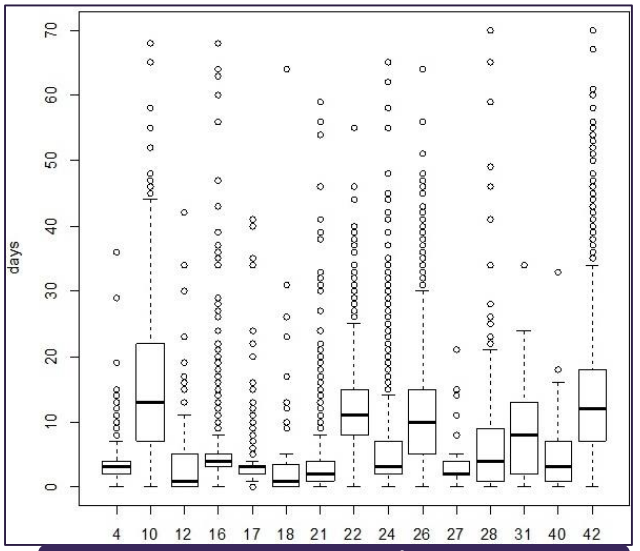
Day of the week

Day of the week & mean number of cases per investigator/week

Providers who reported 50 or more cases



Time to close w/o interview by condition*



Time to close w/o interview by investigator*

*statistically significant, p<0.01 ANOVA F test

Case Closed in Work Days – SWIMSS Data

Statistically significant associations in “time to close” w interview and:

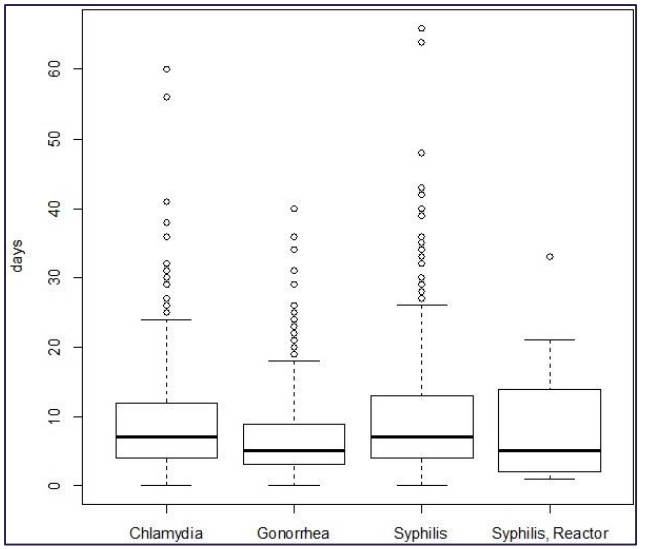
Condition

Individual investigator

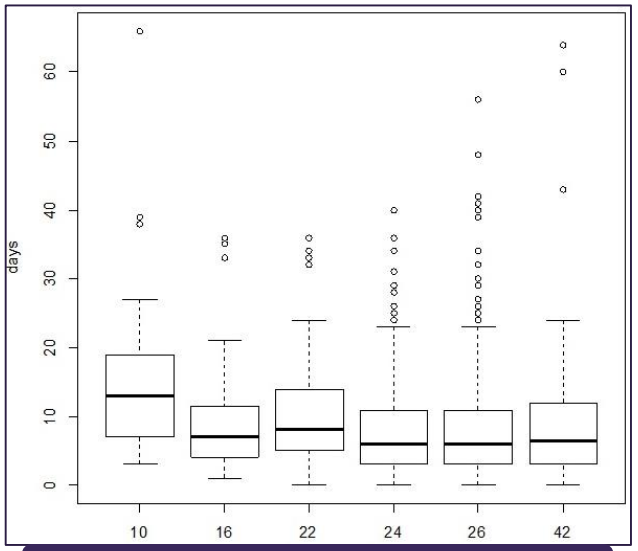
Caseload per investigator/week

Day of the week

Day of the week & mean number of cases per investigator/week



Time to close w interview by condition*



Time to close w interview by investigator*

*statistically significant, p<0.01 ANOVA F test

Intervention Matched Analysis

25 pre-populated forms sent to PH between 09/16/2013 – 03/01/2014

Matched intervention to non-intervention/control cases during same time period by:
condition, time to receipt, reporter, day of week of receipt

13 pre-pop cases could be matched to at least one control case

Used multiple level hierarchical random effects model to compare difference in days between controls and pre-pop cases

Findings:

Lower "time to receipt" in work days for pre-pop cases (2.4 days) than controls
Lower "time to close" in work days for pre-pop cases (1.3 days) than controls

	Estimated mean difference in days [$]	Std Error	p value
Time to receive case*	2.4	1.04	0.02
Time to close case	1.3	0.82	0.12

[*] statistically significant, ANOVA F test
[$] Time difference = controls – pre-pop cases

Lessons Learned:

Conducting research to inform public health practice

Unexpected Benefits

New perspectives on day-to-day public health work:

- Seeing workflow delays could inform organizational level modifications in policies and protocols
- Day-of-the week analyses provided insights into which days are busiest which could inform changes in staffing to accommodate known workload issues
- Stratifying by individual investigators could be a new baseline for assessing quarterly or yearly workload

Opportunity for PH to voice concerns about reporting

Keeping research “real”


X
DETOUR
DETOUR
DETOUR
Y
WARNING
CHALLENGES
AHEAD

Acknowledgements

RWJF Project Team

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Thank You!

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Questions and Discussion

Webinar Archives

http://www.publichealthsystems.org/phssr-research-progress-webinars

Upcoming Webinars

Wed, Feb 3 (12-1p ET/9-10a PT)

INTER-ORGANIZATIONAL COLLABORATION IN LOCAL PUBLIC HEALTH SYSTEMS: IMPLICATIONS FOR COSTS, IMPACT, AND MANAGEMENT CAPACITY *[MULTI-PBRN DIRECTIVE STUDY]*

Justin Marlowe, PhD, MPA, and Betty Bekemeier, PhD, MPH, RN, U. of Washington and WA Public Health PBRN

Wed, Feb 10 (12-1p ET)

IMPLEMENTATION AND DIFFUSION OF THE NEW YORK CITY MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE SYSTEM

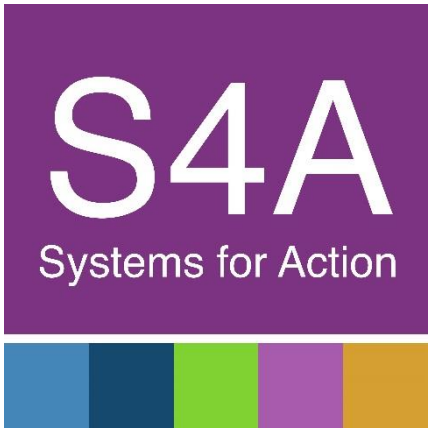
Katharine H. McVeigh, PhD, MPH, NYC Department of Health and Mental Hygiene

Thurs, Feb 18 (1-2p ET/ 11a-12p MT)

STATE DISSEMINATION AND IMPLEMENTATION STRATEGIES ON LOCAL HEALTH DEPARTMENT ACCREDITATION READINESS AND QUALITY IMPROVEMENT MATURITY

Adam J. Atherly, PhD, Colorado School of Public Health, & Lisa N. VanRaemdonck, MPH, MSW, Colorado Association of Local Public Health Officials

Thank you for participating in today's webinar!



For more information about the webinars, contact:

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