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Title: Improving Vaccine-Preventable Disease Reporting through Health Information
Exchange

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AcademyHealth ARM

Title: Improving Vaccine-Preventable Disease Reporting through Health Information Exchange

Research Domain: Information and Technology

ABSTRACT – 500 Word Limit

Research Objective

Vaccine preventable disease (VPD) outbreaks require immediate, effective response. Although clinical providers are legally obliged to report VPD cases under state law, provider reporting is frequently incomplete, error-prone, and delayed. We seek to explore whether an intervention, aimed at providers and delivered electronically through a health information exchange (HIE), can improve VPD reporting rates as well as how such an intervention can be implemented in an integrated infrastructure involving heterogeneous electronic systems.

Study Design

We are evaluating an intervention designed to pre-populate the official VPD reporting form with patient demographics, lab results, and provider information available from electronic health records routinely captured in a regional HIE. The pre-populated form is delivered electronically to providers via fax, an EHR system or HIE-provided inbox based on clinic preferred workflow. 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 a local health department. We measured the completeness of key 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.

Population Studied

The Marion County Public Health Department (MCPHD) serves a population of 928,281 individuals living in 396.30 square miles. More than quarter of residents (27.6%) are African American and 9.7% are Hispanic or Latino.

Principal Findings

We collected 4,135 reports submitted to public health for 3,556 cases of Hepatitis B. Completeness of data elements varied by report type: lab report completeness averaged 67.6% with a range from 21.9% to 100% (except ethnicity which is less than 1%) while provider report completeness averaged 64.9% with a range from 20.8% to 100%. Lab report completeness was higher than corresponding provider report fields for 8 of 15 critical fields. Lab reporting rates for Hepatitis B far exceeded the rates for provider reports (100% vs. 0.67%). We have collected more than 600 additional reports for other VPD

cases, including measles, mumps, chickenpox, and pertussis. Data abstraction for these reports is ongoing but will be completed in Q1 2015; before the ARM.

Conclusions

The rise of electronic lab reporting capacity among health departments may improve assessment of disease incidence and burden. Yet data completeness remains problematic for both lab and provider reports, frequently necessitating calls to clinics to investigate and respond to VPD cases. Health information exchanges may help support more complete capture of information while reducing burden for both clinical and public health organizations.

Implications for Policy or Practice

Our intervention seeks to streamline clinical and public health workflow related to VPD 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 infrastructures can support VPD reporting and PH practice.

INVESTIGATORS

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Improving Vaccine-Preventable Disease Reporting through Health Information Exchange

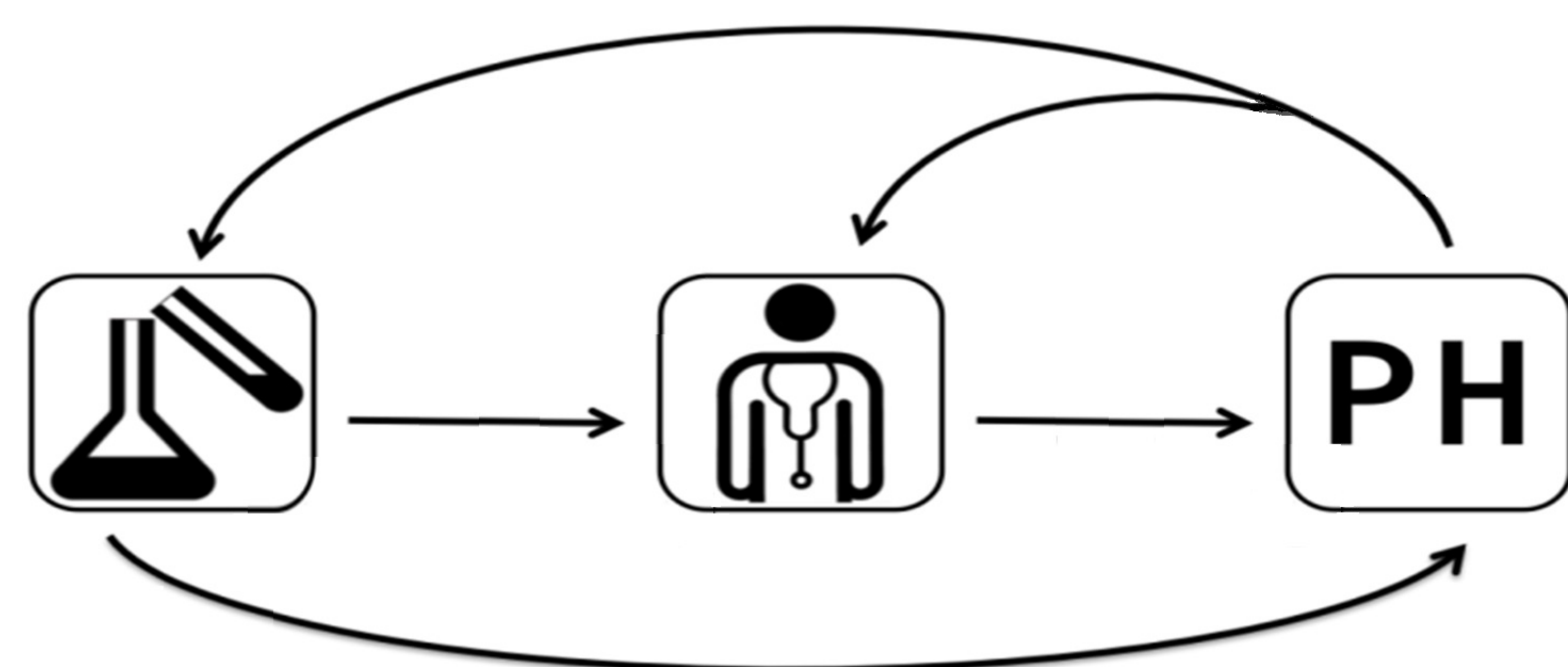
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Objective

To explore whether an intervention, aimed at providers and delivered electronically through a health information exchange (HIE), can improve disease reporting rates as well as how such an intervention can be implemented in an integrated infrastructure involving heterogeneous electronic systems.

Typical Notifiable Disease Reporting Information Flow



Methods

Setting and Population

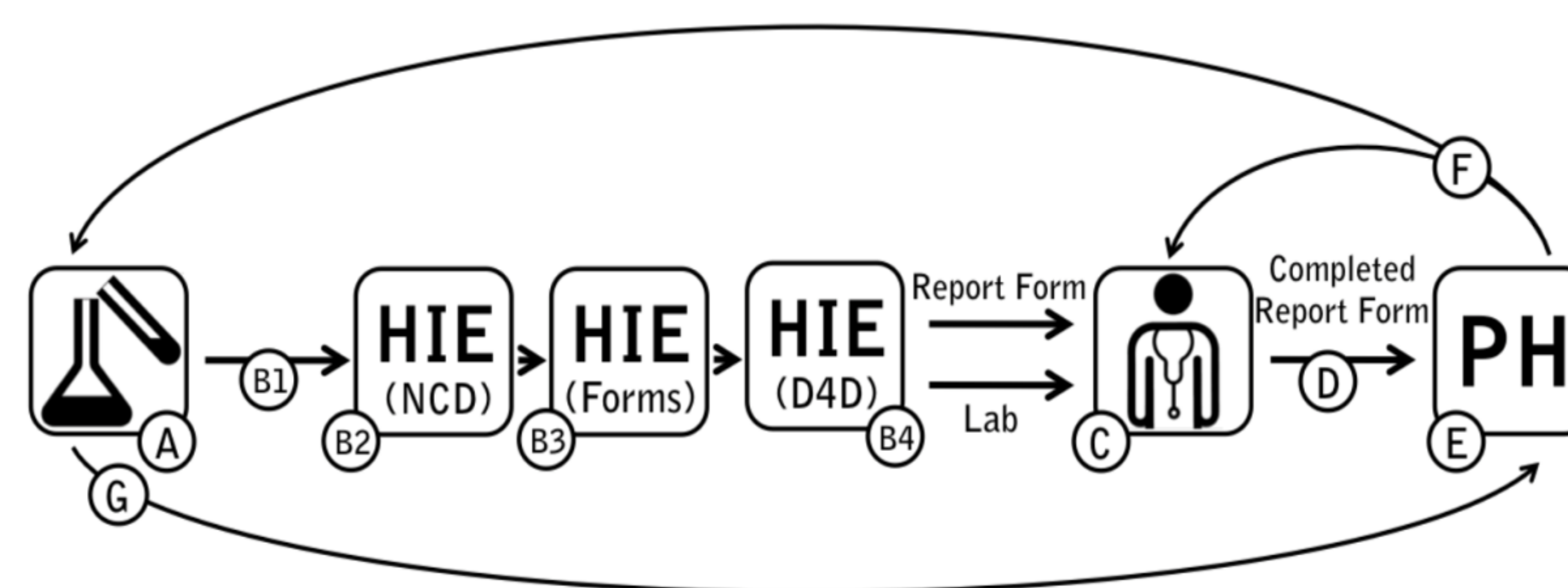
The Marion County Public Health Department (MCPHD) serves a population of over 900,000. More than a quarter of the residents (27.6%) are African American and 9.7% are Hispanic or Latino.

Intervention and Study Design

Using the Indiana Network for Patient Care, automatically pre-populate communicable disease reporting forms based on triggers from electronic lab reports. The forms are electronically delivered to primary care clinics where they act as a decision support “reminder” to clinic staff. Upon completion at the clinics, the forms are submitted to the local public health department.

Prior to implementation, we gathered baseline completeness of key reporting data elements separately for paper, fax, and electronic reports, stratifying by report type. We also calculated reporting rates and stratified by clinical source, disease, and report type.

HIE-based Intervention



Results

Complete Dataset

The baseline dataset includes 9016 unique cases for 7 diseases, including 3718 cases for Hepatitis B (41.2%). Of the total cases, 6777 (75.2%) contained an electronic lab report, 2496 (27.7%) contained a report from a provider, and 1188 (13.2%) contained a fax-based report from the lab or health system.

115 cases (1.3%) contained a report from all three sources; and 1215 cases (13.5%) contained reports from two sources.

Completeness of Information Submitted to Public Health

	Provider (All)	Fax-based Lab (All)	ELR (All)	Provider (HBV)	Fax-based Lab (HBV)	ELR (HBV)
patient first name	100%	100%	100%	100%	100%	100%
patient last name	100%	100%	100%	100%	100%	100%
patient date of birth	98%	96%	97%	90%	100%	97%
patient gender	93%	98%	100%	95%	100%	100%
patient address	63%	61%	77%	65%	63%	65%
patient zip code	60%	61%	75%	65%	63%	64%
patient phone	56%	63%	76%	70%	53%	65%
patient race	57%	15%	74%	65%	58%	63%
patient ethnicity	40%	15%	0%	25%	58%	0%
provider first name	58%	84%	83%	95%	84%	74%
provider last name	60%	89%	99%	100%	84%	99%
provider address	49%	90%	41%	45%	47%	29%
provider zip code	35%	89%	25%	35%	47%	22%
provider phone	48%	81%	38%	25%	26%	30%
lab test name	77%	99%	100%	90%	100%	100%

Conclusions

While the implementation of electronic lab reporting (ELR) may improve the timeliness and completeness of case identification, the completeness of information necessary for public health business processes remains challenging. This necessitates calls to clinics to investigate suspected cases, burdening busy clinic staff. Health information exchanges may help support more complete capture of information while reducing burden for both clinical and public health organizations.

Future Directions

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 infrastructures can support disease reporting and public health practice.

We further plan to evaluate more disease-specific forms that have the potential to yield greater insight into disease burden and outcomes.

Currently most public health departments are receiving case information via fax. We therefore plan to pilot electronic case reporting methods in line with the proposed Case Reporting measure defined in Meaningful Use Stage 3 Objective 8.

Acknowledgements

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