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Presenters Name: Brian E Dixon

Affiliation: IU Richard M Fairbanks School of Public Health, Regenstrief Institute,
Department of Veterans Affairs

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Assessing the Feasibility of Using Electronic Health Records for Community Health Assessments

Brian E. Dixon, MPA, PhD^{a,b,c}, P. Joseph Gibson, PhD^d, Karen Frederickson Comer^e,
Marc Rosenman, MD^{b,f}

^a Indiana University School of Informatics and Computing, Department of BioHealth Informatics

^b Regenstrief Institute, Center for Biomedical Informatics

^c Veterans Health Administration, Health Services Research and Development Service

^d Marion County Public Health Department

^e Indiana University-Purdue University Indianapolis, Polis Center

^f Indiana University School of Medicine, Department of Pediatrics
Indianapolis, IN

Abstract

Assessment is a core function of public health. Comprehensive clinical data may enhance community health assessment activities by providing up-to-date, representative information used in the development or application of public health programs and policies. Greater access to clinical data is possible with electronic health record (EHR) systems. Yet public health stakeholders often question the reliability, timeliness, and accuracy of EHR data. We developed a matrix to support assessment of EHR data quality across a range of common community health assessment indicators. The matrix was found to be useful and helped identify target indicators for a single assessment project. We hope the matrix can be used and improved by others to support greater use of EHR data for community health assessment activities within provider organizations as well as health departments.

Introduction

Community health assessments (CHAs) provide information for population health problem and asset identification as well as public health policy and program formulation, implementation, and evaluation. Comprehensive healthcare encounter data may enhance CHAs with up-to-date, representative information for improved development and application of effective public health programs and policies. Traditionally CHAs have been performed using a limited set of information available through public data sets, behavioral surveys, and paper-based disease reporting. Given greater availability of electronic health record (EHR) systems, public health departments might leverage new, electronic data sources to support community assessment processes.

Methods

We designed a multidimensional matrix to assess the feasibility of using routinely collected EHR data captured by clinical organizations for CHAs. The matrix rates aspects of EHR data quality, such as reliability, timeliness, and accuracy, across a number of common CHA indicators, including disease prevalence, health outcomes measures, and health service performance measures. The matrix is designed to be used by a group of public health stakeholders when defining information needs for a specific use case as outlined in (1). We used the matrix with and gathered feedback from a group of public health informatics researchers and stakeholders in a metropolitan area.

Results

Prevalence of chronic diseases as well as several “high-profile” quality and health service performance measures were believed to be feasible to incorporate into CHAs in a “Most Wired” area of the country. However, comprehensive assessment must include integration across currently fragmented clinical and public health data silos. For example, colorectal cancer screening data are available electronically, but only a few providers make these data available to the regional health information exchange restricting analysis to localized areas.

Conclusion

As health departments plan and implement electronic data feeds from clinical organizations, they should consider how to aggregate data across silos for more effective CHA. In addition, health departments should consider how other EHR data sources might be leveraged to improve health planning and policy activities. The matrix was useful in choosing CHA measures which local stakeholder perceived as available through EHRs.

References

1. Dixon BE, Rosenman M, Xia Y, Grannis SJ. A vision for the systematic monitoring and improvement of the quality of electronic health data. *Studies in health technology and informatics*. 2013;192:884-8.

Background:

- Community Health Assessment is a core public health function.
- Assessment enables health departments to measure disease incidence, identify community assets, and evaluate public health policies and programs.
- Assessment requires comprehensive, representative information.
- Traditional methods have relied on the following data sources
 - Public data sets
 - Behavioral surveys
 - Paper-based disease reporting
- Electronic health record (EHR) and health information exchange (HIE) systems present an opportunity to improve community health assessment processes as well as quality

Methods:

We iteratively designed a multidimensional matrix to assess the feasibility of using routinely collected EHR data captured by clinical organizations for community health assessment.

The matrix rates aspects of EHR data quality, such as reliability, timeliness, and accuracy, across a number of common indicators, including disease prevalence, health outcomes measures, and health service performance measures.

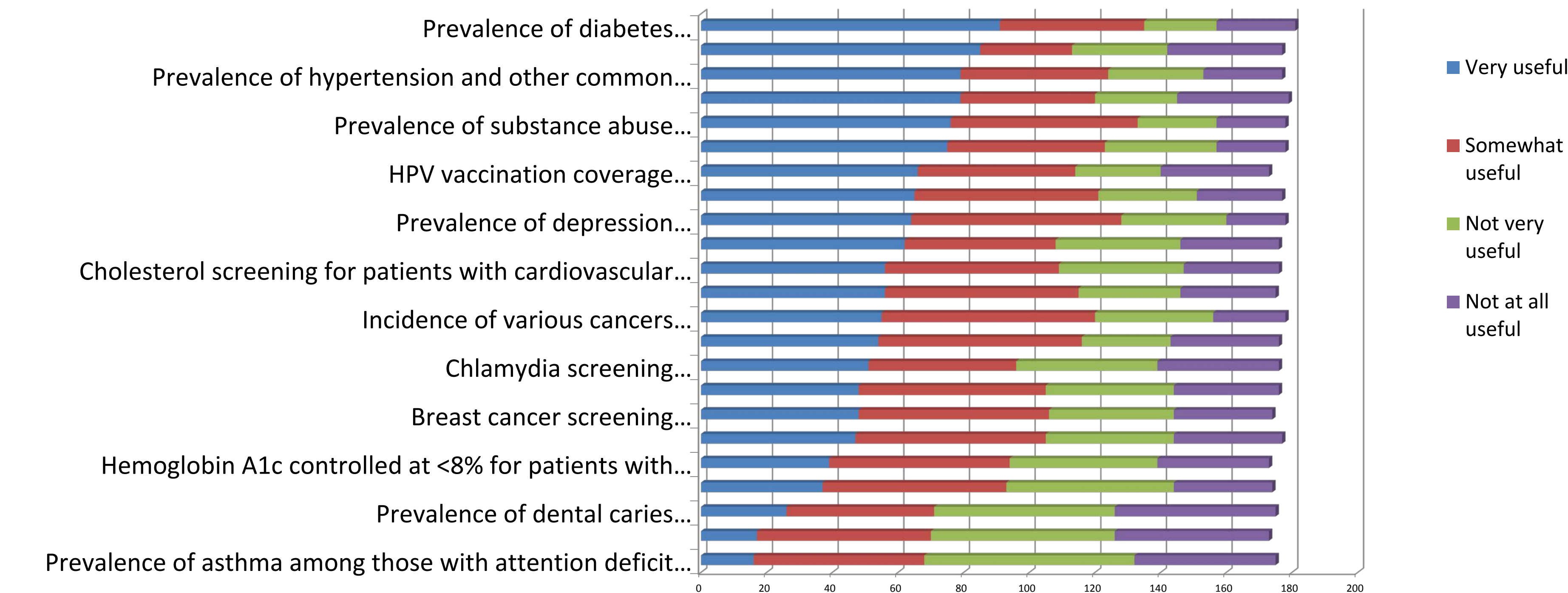
The matrix is designed to be used by public health stakeholders when defining information needs for a specific use case.

We employed the matrix with and gathered feedback from a group of public health informatics researchers and stakeholders in a metropolitan area to define indicators for a project involving a health information exchange.

Matrix with Examples

Measure or Indicator	Likelihood of Electronic Capture in an EHR or PH System	Availability within a RHIO or IT Systems Accessible to Public Health	Prevalence of Disease or Occurrence per 1000 Population	Percentage of Health Care Market / Providers Contributing Data	Geographic Granularity, Enabling Use at Small Scales
Context for PEDAL	Captured in INPC Member Institutions	Transmitted to INPC by Member Institutions	Varies by Disease; Marion County, Indiana	~95% of Marion County	YES for PEDAL since data available at high quality (X,Y) coordinates
Prevalence of diabetes	10 - very likely; captured in structured format	9 - Available and likely from nearly all institutions	93	85%	10 - can definitely scale down to the smallest levels
HbA1c Controlled at <8% for Patients with Diabetes	10 - very likely; captured in structured format	10 - definitely available and likely all institutions		95%	10 - can definitely scale down to the smallest levels
LDL-C Screening for Patients with Cardiovascular Conditions	10 - very likely; captured in structured format	9 - Available and likely from nearly all institutions		95%	10 - can definitely scale down to the smallest levels
Emergency Room Utilization for People With Asthma	10 - very likely; captured in structured format	10 - definitely available and likely all institutions	48.8	95%	10 - can definitely scale down to the smallest levels
Vaccination coverage for school age children (2-dose (MMR) Measles, Mumps, Rubella; DTaP; 2 dose varicella)	7 - likely	5 - may or may not; unsure		60%	10 - can definitely scale down to the smallest levels
Flu vaccination coverage	7 - likely	5 - may or may not; unsure	341	30%	10 - can definitely scale down to the smallest levels
HPV vaccination coverage (single dose & completed series)	7 - likely	3 - unlikely to be available	97.2 (male) 384.3 (female)	10%	10 - can definitely scale down to the smallest levels

Stakeholder Engagement



Results

Stakeholders provided a wealth of information on indicators they currently utilize for community health assessment and feedback on which of our proposed indicators would be of highest interest.

While we would like to meet all of their highest priority needs, some data in either the EHR or HIE are unfit for use or missing.

Future Directions

Using the feasible/green indicators (plus some others that don't fit on the poster), we will calculate metrics using the HIE at various levels of geography granularity (e.g., zip code, census tract, neighborhood). We will assess each metric for validity and reliability using internal (statistical models) and external (compare with local BRFSS data) methods. Calculated metrics will also be shared with local public health stakeholders for further review and feedback on utility.

Acknowledgements

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