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Contents

Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Happy Holidays to all our readers, reviewers and authors; and welcome to the last issue of OJPHI in 2015. I am happy to announce that this is the 7th issue since we started publication in 2009. Congratulations to all of you for achieving this milestone of success.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Secondary use of clinical health data for near real-time public health surveillance presents challenges surrounding its utility due to data quality issues. Data used for real-time surveillance must be timely, accurate and complete if it is to be useful; if incomplete data are used for surveillance, understanding the structure of the incompleteness is necessary. Such data are commonly aggregated due to privacy concerns. The Distribute project was a near real-time influenza-like-illness (ILI) surveillance system that relied on aggregated secondary clinical health data. The goal of this work is to disseminate the data quality tools developed to gain insight into the data quality problems associated with these data. These tools apply in general to any system where aggregate data are accrued over time and were created through the end-user-as-developer paradigm. Each tool was developed during the exploratory analysis to gain insight into structural aspects of data quality. Our key finding is that data quality of partially accruing data must be studied in the context of accrual lag—the difference between the time an event occurs and the time data for that event are received, i.e. the time at which data become available to the surveillance system. Our visualization methods therefore revolve around visualizing dimensions of data quality affected by accrual lag, in particular the tradeoff between timeliness and completion, and the effects of accrual lag on accuracy. Accounting for accrual lag in partially accruing data is necessary to avoid misleading or biased conclusions about trends in indicator values and data quality.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Recently, the first comprehensive guidelines were published for pre-exposure prophylaxis (PrEP) for the prevention of HIV infection in populations with substantial risk of infection. Guidelines include a daily regimen of emtricitabine/tenofovir disoproxil fumarate (TDF/FTC) as well as condom usage during sexual activity. The relationship between the TDF/FTC intake regimen and condom usage is not yet fully understood. If men who have sex with men (MSM,) engage in high-risk sexual activities without using condoms when prescribed TDF/FTC they might be at an increased risk for other sexually transmitted diseases (STD). Our study focuses on the possible occurrence of behavioral changes among MSM in the United States over time with regard to condom usage. In particular, we were interested in creating a model of how increased uptake of TDF/FTC might cause a decline in condom usage, causing significant increases in non-HIV STD incidence, using gonococcal infection incidence as a biological endpoint. We used the agent-based modeling software NetLogo, building upon an existing model of HIV infection. We found no significant evidence for increased gonorrhea prevalence due to increased PrEP usage at any level of sample-wide usage, with a range of 0-90% PrEP usage. However, we did find significant evidence for decreased prevalence of HIV, with a maximal effect being reached when 5% to 10% of the MSM population used PrEP. Our findings appear to indicate that attitudes of aversion, within the medical community, toward the promotion of PrEP due to the potential risk of increased STD transmission are unfounded.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Background: Healthy People 2020 aims to improve population health by increasing immunization rates to decrease vaccine-preventable infectious diseases. Amongst the many strategies, role of immunization information systems (IIS) are recognized by studies and taskforce reports. IIS are unique in their offering of clinical decision support for immunizations (CDSi) which are utilized by healthcare providers. Federal initiatives such as Meaningful Use (MU) and Affordable Care Act (ACA) aim to improve immunization rates through use of technology and expanding access to immunization services respectively. MU, the Electronic Health Record (EHR) incentive program includes use of IIS CDSi functionality as part of Stage 3. It is essential to understand access and use patterns of IIS CDSi, so as to utilize it better to improve immunization services. **Objectives:** To understand the utilization of clinical decision support for immunizations (CDSi) offered by immunization information system in Minnesota and to analyze the variability of its use across providers and EHR implementations. **Methods:** IIS in Minnesota (Minnesota Immunization Information Connection: MIIC) offers CDSi that is accessed through EHRs and branded as Alternate Access (AA). Data from MIIC and technical documents were reviewed to create details on organizations which implemented AA functionality. Data on EHR adoption in clinics and local health departments was obtained from Minnesota eHealth assessment reports. Data on access were tracked from January 2015 through mid-October 2015 through weekly specialized reports to track the queries by organization, volume and day of the week. Data were analyzed, findings were synthesized and reviewed with subject matter experts. **Conclusion:** High EHR adoption offers a great opportunity to promote use of IIS CDSi at point of care. Analysis did not track use at individual clinic level and how the queries were being generated. Additional research is needed to understand the provider level use of this CDSi and other organizational and technical factors which influence access to IIS. This is essential for IIS as they execute projects to improve population-level immunization rates, plan provider outreach and prioritize their system enhancements to meet federal requirements.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Introduction: We document a funded effort to bridge the gap between constrained scientific challenges of public health surveillance and methodologies from academia and industry. Component tasks are the collection of epidemiologists' use case problems, multidisciplinary consultancies to refine them, and dissemination of problem requirements and shareable datasets. We describe an initial use case and consultancy as a concrete example and challenge to developers. **Materials and Methods:** Supported by the Defense Threat Reduction Agency Biosurveillance Ecosystem project, the International Society for Disease Surveillance formed an advisory group to select tractable use case problems and convene inter-disciplinary consultancies to translate analytic needs into well-defined problems and to promote development of applicable solution methods. The initial consultancy's focus was a problem originated by the North Carolina Department of Health and its NC DETECT surveillance system: Derive a method for detection of patient record clusters worthy of follow-up based on free-text chief complaints and without syndromic classification. **Results:** Direct communication between public health problem owners and analytic developers was informative to both groups and constructive for the solution development process. The consultancy achieved refinement of the asyndromic detection challenge and of solution requirements. Participants summarized and evaluated solution approaches and discussed dissemination and collaboration strategies. **Conclusions:** A solution meeting the specification of the use case described above could improve human monitoring efficiency with expedited warning of events requiring follow-up, including otherwise overlooked events with no syndromic indicators. This approach can remove obstacles to collaboration with efficient, minimal data-sharing and without costly overhead.

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Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review

Abstract

Background: There are a variety of challenges to health workforce planning, but access to data is critical for effective evidence-based decision-making. Many agencies and organizations throughout Mississippi have been collecting quality health data for many years. Those data have historically resided in data silos and have not been readily shared. A strategy was developed to build and coordinate infrastructure, capacity, tools, and resources to facilitate health workforce and population health planning throughout the state. **Objective:** Realizing data as the foundation upon which to build, the primary objective was to develop the capacity to collect, store, maintain, visualize, and analyze data from a variety of disparate sources -- with the ultimate goal of improving access to health care. Specific aims were to: 1) build a centralized data repository and scalable informatics platform, 2) develop a data management solution for this platform and then, 3) derive value from this platform by facilitating data visualization and analysis. **Methods:** We designed and constructed a managed data lake for health data from disparate sources throughout the state of Mississippi. A data management application was developed to log and track all data sources, maps and geographies, and data marts. With this informatics platform as a foundation, we use a variety of tools to visualize and analyze data. **Results:** Samples of data visualizations that aim to inform health planners and policymakers are presented. Many agencies and organizations throughout the state benefit from this platform. **Conclusion:** The overarching goal is that by providing timely, reliable information to stakeholders, Mississippians in general will experience improved access to quality care.

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