Online Journal of Public Health Informatics

High-quality research and innovation in the field of public health informatics
Volume 6 (2014), Issue 3 ISSN 1947-2579 Editor in Chief: Edward K. Mensah, PhD, MPhil

Contents

XSL•FO
RenderX

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

Abstract

Systems biology is an interdisciplinary effort to integrate molecular, cellular, tissue, organ, and organism levels of function into computational models that facilitate the identification of general principles. Systems medicine adds a disease focus. Systems epidemiology adds yet another level consisting of antecedents that might contribute to the disease process in populations. In etiologic and prevention research, systems-type thinking about multiple levels of causation will allow epidemiologists to identify contributors to disease at multiple levels as well as their interactions. In public health, systems epidemiology will contribute to the improvement of syndromic surveillance methods. We encourage the creation of computational simulation models that integrate information about disease etiology, pathogenetic data, and the expertise of investigators from different disciplines.

(Online J Public Health Inform 2014;6(3):e5571) doi:10.5210/ojphi.v6i3.5571

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5571
URL:
doi:10.5210/ojphi.v6i3.5571
PMID:25598870

XSL•FO
RenderX

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

Abstract

Though over the years, Sabah has recorded an increase of childbirth with better healthcare indicators, improving maternal and childcare has always been a major challenge. Therefore, with the aim of addressing the current issues of birthing discrepancy, delayed reporting of high risk pregnancy and maximum immunization coverage within the state of Sabah, “I-Kelahiran”: Inovasi Kelahiran: was developed in June 2012. This computerised birthing system acts not only as an online storehouse of information, it also traces data and generates reports to reduce enormous duplication, save cost and time, as well as eliminating delays and confusion on management of health information. The system also helps to overcome the issue of collecting data from rural health personnel, particularly with the extreme geographical terrain in Sabah. This paper discusses how I-Kelahiran, a health information system was developed under the Sabah Health Department and shares its experiences in implementation. The experience and feedback from this system will help to build a full-fledged system capable of handling childbirth data at the higher level in Borneo.

(Online J Public Health Inform 2014;6(3):e5528) doi:10.5210/ojphi.v6i3.5528

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5528
URL:
doi:10.5210/ojphi.v6i3.5528

XSL•FO
RenderX

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

Abstract

Objectives: Another one million community healthcare workers are needed to address the growing global population and increasing demand of health care services. This paper describes a cost comparison between two training approaches to better understand costs implications of training community health workers (CHWs) in Sub-Saharan Africa. Methods: Our team created a prospective model to forecast and compare the costs of two training methods as described in the Dalburge Report - (1) a traditional didactic training approach ("baseline") and (2) a blended eLearning training approach ("blended"). After running the model for training 100,000 CHWs, we compared the results and scaled up those results to one million CHWs. Results: A substantial difference exists in total costs between the baseline and blended training programs. Results indicate that using a blended eLearning approach for training community health care workers will provide a total cost savings of 42%. Scaling the model to one million CHWs, the blended eLearning training approach reduces total costs by 25%. Discussion: The blended eLearning savings are a result of decreased classroom time, thereby reducing the costs associated with travel, trainers and classroom costs. Additional savings can be achieved if the blended eLearning program elects to use a tablet or feature phone with Wi-Fi rather than a smartphone with data plan. Conclusion: The results of this cost analysis indicate significant savings through using a blended eLearning approach in comparison to a traditional didactic method for CHW training by as much as 67%. These results correspond to the Dalberg publication which indicates that using a blended eLearning approach is an opportunity for closing the gap in training community health care workers.

(Online J Public Health Inform 2014;6(3):e5533) doi:10.5210/ojphi.v6i3.5533

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5533
URL:
doi:10.5210/ojphi.v6i3.5533
PMID:25598868

XSL•FO
RenderX

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

Abstract

Objective: Little is known about the nationwide patterns in the use of public health informatics systems by local health departments (LHDs) and whether LHDs tend to possess informatics capacity across a broad range of information functionalities or for a narrower range. This study examined patterns and correlates of the presence of public health informatics functionalities within LHDs through the creation of a typology of LHD informatics capacities. Methods: Data was available for 459 LHDs from the 2013 National Association of County and City Health Officials Profile survey. An empirical typology was created through cluster analysis of six public health informatics functionalities: immunization registry, electronic disease registry, electronic lab reporting, electronic health records, health information exchange, electronic syndromic surveillance system. Three-categories of usage emerged (Low, Mid, High). LHD financial, workforce, organization, governance, and leadership characteristics, and types of services provided were explored across categories. Results: Low-informatics capacity LHDs had lower levels of use of each informatics functionalities than high-informatics capacity LHDs. Mid-informatics capacity LHDs had usage levels equivalent to high-capacity LHDs for the three most common functionalities and equivalent to low-capacity LHDs for the three least common functionalities. Informatics capacity was positively associated with service provision, especially for population-focused services. Conclusion: Informatics capacity is clustered within LHDs. Increasing LHD informatics capacity may require LHDs with low levels of informatics capacity to expand capacity across a range of functionalities, taking into account their narrower service portfolio. LHDs with mid-level informatics capacity may need specialized support in enhancing capacity for less common technologies.

(Online J Public Health Inform 2014;6(3):e5572) doi:10.5210/ojphi.v6i3.5572

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5572
URL:
doi:10.5210/ojphi.v6i3.5572
PMID:25598871

XSL•FO
RenderX

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

Abstract

Adverse drug reactions (ADRs) represent a serious worldwide public health problem. Current post-marketing ADR detection approaches largely rely on spontaneous reports filed by various healthcare professionals such as physicians, pharmacists et.al.. Underreporting is a serious deficiency of these methods - the actually reported adverse events represent less than 10% of all cases. Studies show that two important reasons that cause the underreporting are: 1) healthcare professionals are unaware of encountered ADRs, especially for those unusual ADRs; 2) they are too busy to voluntarily report ADRs since it takes a lot of time to fill out the reporting forms. This paper addresses these two issues by developing a multi-agent ADR reporting system. The system 1) helps healthcare professionals detect the potential causal relationship between a drug and an ADR by analyzing patients' electronic records via both case-based analysis and statistical data mining approach; 2) allows healthcare professionals to add new rules to signal potential ADRs based on their medical expertise; 3) makes the reporting much easier by automatically linking the patients' electronic data with the reporting form. A functioning prototype of the system has been developed. The proposed data analysis approaches as well as the performance of the system have been tested. The results indicate that this system has a great potential to improve the spontaneous reporting rate of suspected adverse drug reactions.

(Online J Public Health Inform 2014;6(3):e5579) doi:10.5210/ojphi.v6i3.5579

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5579
URL:
doi:10.5210/ojphi.v6i3.5579

XSL•FO
RenderX

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

Abstract

Background: Immunization information systems (IIS) operate in an evolving health care landscape with technology changes driven by initiatives such as the Centers for Medicare and Medicaid Services EHR incentive program, promoting adoption and use of electronic health record (EHR) systems, including standards-based public health reporting. There is flux in organizational affiliations to support models such as accountable care organizations (ACO). These impact institutional structure of how reporting of immunizations occurs and the methods adopted. Objectives: To evaluate the technical and organizational characteristics of healthcare provider reporting of immunizations to public health in Minnesota and to assess the adoption of standardized codes, formats and transport. Methods: Data on organizations and reporting status was obtained from Minnesota IIS (Minnesota Immunization Information Connection: MIIC) by collating information from existing lists, specialized queries and review of annual reports. EHR adoption data of clinics was obtained in collaboration with informatics office supporting the Minnesota e-Health Initiative. These data from various sources were merged, checked for quality to create a current state assessment of immunization reporting and results validated with subject matter experts. Results: Standards-based reporting of immunizations to MIIC increased to 708 sites over the last 3 years. A growth in automated real-time reporting occurred in 2013 with 143 new sites adopting the method. Though the uptake of message standards (HL7) has increased, the adoption of current version of HL7 and web services transport remains low. The EHR landscape is dominated by a single vendor (used by 40% of clinics) in the state. There is trend towards centralized reporting of immunizations with an organizational unit reporting for many sites ranging from 4 to 140 sites. Conclusion: High EHR adoption in Minnesota, predominance of a vendor in the market, and centralized reporting models present opportunities for better interoperability and also adaptation of strategies to fit this landscape. It is essential for IIS managers to have a good understanding of their constituent landscape for technical assistance and program planning purposes.

(Online J Public Health Inform 2014;6(3):e5587) doi:10.5210/ojphi.v6i3.5587

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5587
URL:
doi:10.5210/ojphi.v6i3.5587
PMID:25598866

XSL•FO
RenderX

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

Abstract

Nationwide positivity rates of high-risk human papillomavirus for the United States before and since the introduction of a Human Papillomavirus (HPV) vaccine in 2006 would provide insight into the population impact of HPV vaccination. Data for high-risk HPV testing results from January 1, 2004 to June 1, 2013 at a national reference laboratory were retrospectively analyzed to produce 757,761 patient records of women between the ages of 14 and 59. Generalized linear models and finite mixture models were utilized to eliminate sources of bias and establish a population undergoing standard gynecological screening. Unadjusted positivity rates for high-risk HPV were 27.2% for all age groups combined. Highest rates occurred in women aged 14 to 19. While the positivity rates decreased for all age groups from 2004 to 2013, the higher age categories showed less downward trend following vaccine introduction, and the two age categories 20 to 24 and 25 to 29 showed a significantly different downward trend between pre- and post-vaccine time periods (-0.1% per year to -1.5% per year, and 0.4 % per year to -1.5% per year, respectively). All other age groups had rates of change that became less negative, indicating a slower rate of decline. In evaluating the surveillance tool, we find that it is important to consider many sources of heterogeneity, e.g., age, type of test, location, and type of testing center, and also consider quantitative methods of adjustment and distribution assessment to construct a useful surveillance tool. Further studies should expand on this methodology. The results of the surveillance tool indicate a downward trend in vaccine-appropriate age groups consistent with uptake of the HPV vaccine. The pre-post rate changes were in direct contrast between the age-appropriate groups and the groups too old for the HPV vaccine, further indicating the surveillance tool may be detecting the impact of the HPV vaccine over time. After refinement, this surveillance tool should remain in place to observe the future impact of the HPV vaccine.

(Online J Public Health Inform 2014;6(3):e5593) doi:10.5210/ojphi.v6i3.5593

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5593
URL:
doi:10.5210/ojphi.v6i3.5593
PMID:25598867

XSL•FO
RenderX

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

Abstract

Background: Epidemics pose major threats in resource-poor countries, and surveillance tools for their early detection and response are often inadequate. In 2007, a sentinel surveillance system was established in Madagascar, with the aim of rapidly identifying potential epidemics of febrile or diarrhoeal syndromes and issuing alerts. We present the health and process indicators for the five years during which this system was constructed, showing the spatiotemporal trends, early-warning sign detection capability and process evaluation through timely analyses of high-quality data. Methods: The Malagasy sentinel surveillance network is currently based on data for fever and diarrhoeal syndromes collected from 34 primary health centres and reported daily via the transmission of short messages from mobile telephones. Data are analysed daily at the Institut Pasteur de Madagascar to make it possible to issue alerts more rapidly, and integrated process indicators (timeliness, data quality) are used to monitor the system. Results: From 2007 to 2011, 917,798 visits were reported. Febrile syndromes accounted for about 11% of visits annually, but the trends observed differed between years and sentinel sites. From 2007 to 2011, 21 epidemic alerts were confirmed. However, delays in data transmission were observed (88% transmitted within 24 hours in 2008; 67% in 2011) and the percentage of forms transmitted each week for validity control decreased from 99.9% in 2007 to 63.5% in 2011. Conclusion: A sentinel surveillance scheme should take into account both epidemiological and process indicators. It must also be governed by the main purpose of the surveillance and by local factors, such as the motivation of healthcare workers and telecommunication infrastructure. Permanent evaluation indicators are required for regular improvement of the system.

(Online J Public Health Inform 2014;6(3):e5400) doi:10.5210/ojphi.v6i3.5400

###Reviewer names will be inserted here### published 14.

Please cite as:
Roles of Health Literacy in Relation to Social Determinants of Health and Recommendations for Informatics-Based Interventions: Systematic Review
Online J Public Health Inform 2014;6(3):e5400
URL:
doi:10.5210/ojphi.v6i3.5400
PMID:25598869

XSL•FO
RenderX

Publisher:
JMIR Publications
130 Queens Quay East.
Toronto, ON, M5A 3Y5
Phone: (+1) 416-583-2040
Email: support@jmir.org

XSL•FO
RenderX