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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

Pharmacovigilance is the science and activity relating to the collection, detection, assessment, monitoring, and prevention of adverse effects with pharmaceutical products. Pharmacovigilance basically targets safety of medicine. Pharmacists have crucial role in health systems to maintain the rational and safe use of medicine for they are drug experts who are specifically trained in this field. Effective use of pharmacists' workforce will improve the outcome of the pharmacotherapy as well as decreasing the global health costs.

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

Abstract

Objectives: To evaluate the impact of electronic health record (EHR) interoperability on the quality of immunization data in the North Dakota Immunization Information System (NDIIS). Methods: NDIIS doses administered data was evaluated for completeness of the patient and dose-level core data elements for records that belong to interoperable and non-interoperable providers. Data was compared at three months prior to electronic health record (EHR) interoperability enhancement to data at three, six, nine and twelve months post-enhancement following the interoperability go live date. Doses administered per month and by age group, timeliness of vaccine entry and the number of duplicate clients added to the NDIIS was also be compared, in addition to, immunization rates for children 19 – 35 months of age and adolescents 11 – 18 years of age. Results: Doses administered by both interoperable and non-interoperable providers remained fairly consistent from pre-enhancement through twelve months post-enhancement. Comparing immunization rates for infants and adolescents, interoperable providers had higher rates both pre- and post-enhancement than non-interoperable providers for all vaccines and vaccine series assessed. The overall percentage of doses entered into the NDIIS within one month of administration varied slightly between interoperable and non-interoperable providers; however, there were significant changes between the percentage of doses entered within one day and within one week with the percentage entered within one day increasing and within one week decreasing with interoperability. The number of duplicate client records created by interoperable providers increased from 94 duplicates pre-enhancement to 10,552 at twelve months post-enhancement, while the duplicates from non-interoperable providers only increased from 300 to 637 over the same period. Of the 40 core data elements in the NDIIS, there was some difference in completeness between the interoperable versus non-interoperable providers. Only middle name, sex, county, phone number, mother's maiden name, vaccine manufacturer, lot number and expiration date were significantly (>=5%) different between the two provider groups. Conclusions: Interoperability with provider EHRs has had an impact on NDIIS data quality. Timeliness of data entry has improved and overall doses administered have remained fairly consistent, as have the immunization rates for the providers assessed. There are more technical and non-technical interventions that will need to be accomplished by NDIIS staff and the vendor to help reduce the negative impact of duplicate record creation, as well as, data completeness.

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

Abstract

Most patients with chronic disease are prescribed multiple medications, which are recorded in their personal health records. This is rich information for clinical public health researchers but also a challenge to analyse. This paper describes the method that was undertaken within the Public Health Research Data Management System (PHReDMS) to map medication data retrieved from individual patient health records for population health researcher's use. The PHReDMS manages clinical, health service, community and survey research data within a secure web environment that allows for data sharing amongst researchers. The PHReDMS is currently used by researchers to answer a broad range of questions, including monitoring of prescription patterns in different population groups and geographic areas with high incidence/prevalence of chronic renal, cardiovascular, metabolic and mental health issues. In this paper, we present the general notion of abstraction network, a higher level network that sits above a terminology and offers compact and more easily understandable view of its content. We demonstrate the utilisation of abstraction network methodology to examine medication data from electronic medical records to allow a compact and more easily understandable view of its content.

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

Abstract

The Health Information Technology for Economic and Clinical Health (HITECH) Act encourages health information exchange between clinical care and public health through Meaningful Use measures. Meaningful Use specifically identifies objectives to support a number of public health programs including immunizations, cancer registries, syndromic surveillance, and disease case reports. The objective is to improve public and population health. Stage 2 of Meaningful Use focused on the sending of information to public health. The Stage 3 information exchange supports the flow of information from public health back to the provider. The HITECH Act Stage 2 initiative provided incentive and motivation for the healthcare providers to encourage their Electronic Medical Record (EMR) vendors to implement data exchanges with public health, resulting in timelier awareness of population health risk. However, the real empowerment in the HITECH Act is not in the reporting of information to public health but in the ability for a provider to receive relevant information back, the Stage 3 model. There is no better example of the Stage 3 empowerment than an immunization record data exchange. The ability for public health to retain current immunization records of individuals from a variety of providers supports their program goals to increase immunization rates and mitigate the risk of vaccine-preventable disease (VPD). The ability for providers to receive at the point of service more complete immunization histories integrated with decision support supports their delivery of care and reduces the risk of their patients to VPD. Indirectly payers benefit through healthcare cost savings and when the focus is expanded from a health model to a business model, there are significant return on investment (ROI) opportunities that exponentially increase the value of a bi-directional immunization data exchange. This paper will provide descriptions of case examples to demonstrate the value added benefit of electronic data exchanges when immunization providers, specifically pharmacists, and public health work together.

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

Abstract

In the modern era, with high-throughput technology and large data size, associational studies are actively being generated. Some have statistical and clinical validity and utility, or at least have biologically plausible relationships, while others may not. Recently, the potential effect of birth month on lifetime disease risks was studied in a phenome-wide model. We evaluated the associations between birth month and 5 cardiovascular diseases in an independent dataset of 8,346 patients from Canada in 1977-2014. We compared the predictiveness of birth month vs. sex (or age) by various statistical measures, and also examined the event rate over birth months by sex. Hypertension and coronary heart disease were most prevalent in those who were born in January and April, respectively, as observed in the original paper. Other outcomes showed weak or opposite associations. Time-trends of blood pressures and of event rates by sex demonstrate inconsistent patterns, implying high randomness. As scientific importance/meaningfulness and clinical implications and practical usefulness can be different, readers would want to read the original and new papers together for more objective interpretations of the potential impacts of birth month on personal and public health.

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

Abstract

This paper reports on a specific Web-based self-report data collection system that was developed for a public health research study in the United States. Our focus is on technical outcome results and lessons learned that may be useful to other projects requiring such a solution. The system was accessible from any device that had a browser that can support HTML5. Report findings include: which hardware devices, Web browsers, and operating systems were used, the rate of survey completion, and key considerations for employing Web-based surveys in a clinical trial setting.

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

Abstract

Purpose: To validate the utility and effectiveness of a standardized tool for prioritization of information sources for early detection of diseases. Methods: The tool was developed with input from diverse public health experts garnered through survey. Ten raters used the tool to evaluate ten information sources and reliability among raters was computed. The Proc mixed procedure with random effect statement and SAS Macros were used to compute multiple raters' Fleiss Kappa agreement and Kendall"s Coefficient of Concordance. Results: Ten disparate information sources evaluated obtained the following composite scores: ProMed 91%; WAHID 90%; Eurosurv 87%; MediSys 85%; SciDaily 84%; EurekAl 83%; CSHB 78%; GermTrax 75%; Google 74%; and CBC 70%. A Fleiss Kappa agreement of 50.7% was obtained for ten information sources and 72.5% for a sub-set of five sources rated, which is substantial agreement validating the utility and effectiveness of the tool. Conclusion: This study validated the utility and effectiveness of the standardized criteria tool and was used to identify five information sources suited for use by the KIWI system for a pilot project focusing on emerging and zoonotic diseases. The tool can be used in prioritizing a plethora of information sources to improve early detection of diseases.

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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: Developing countries are increasingly strengthening national health information systems (HIS) for evidence-based decision-making. However, the inability to report indicator data automatically from electronic medical record systems (EMR) hinders this process. Data are often printed and manually re-entered into aggregate reporting systems. This affects data completeness, accuracy, reporting timeliness, and burdens staff who support routine indicator reporting from patient-level data. Method: After conducting a feasibility test to exchange indicator data from Open Medical Records System (OpenMRS) to District Health Information System version 2 (DHIS2), we conducted a field test at a health facility in Kenya. We configured a field-test DHIS2 instance, similar to the Kenya Ministry of Health (MOH) DHIS2, to receive HIV care and treatment indicator data and the KenyaEMR, a customized version of OpenMRS, to generate and transmit the data from a health facility. After training facility staff how to send data using the module, we compared completeness, accuracy and timeliness of automated indicator reporting with facility monthly reports manually entered into MOH DHIS2. Results: All 45 data values in the automated reporting process were 100% complete and accurate while in manual entry process, data completeness ranged from 66.7% to 100% and accuracy ranged from 33.3% to 95.5% for seven months (July 2013-January 2014). Manual tally and entry process required at least one person to perform each of the five reporting activities, generating data from EMR and manual entry required at least one person to perform each of the three reporting activities, while automated reporting process had one activity performed by one person. Manual tally and entry observed in October 2013 took 375 minutes. Average time to generate data and manually enter into DHIS2 was over half an hour (M=32.35 mins, SD=0.29) compared to less than a minute for automated submission (M=0.19 mins, SD=0.15). Discussion and Conclusion: The results indicate that indicator data sent electronically from OpenMRS-based EMR at a health facility to DHIS2 improves data completeness, eliminates transcription errors and delays in reporting, and reduces the reporting burden on human resources. This increases availability of quality indicator data using available resources to facilitate monitoring service delivery and measuring progress towards set goals.

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

Abstract

Objectives. Changes to the Canadian Census in 2010 led to the creation of the National Household Survey (NHS). The voluntary nature of the NHS has important implications to health research in Canada, as the validity of its data used for socioeconomic status (SES) index creation, especially income variables, is questionable. This study sought to determine the appropriateness of replacing census income information with tax filer data to produce SES neighbourhood indices. Methods. Census and taxfiler data for Guelph, Ontario were retrieved for the years 2005, 2006, and 2011. Data were extracted for eleven income and non-income SES variables. Principal component analysis was utilized to identify significant principal components from each dataset and weights of each contributing variable. Variable-specific factor scores were applied to standardized census and taxfiler data values to produce SES scores. Results. The substitution of taxfiler income variables for census income variables yielded SES score distributions and neighbourhood SES classifications that were similar to SES scores calculated using entirely census variables. Combining taxfiler income variables with census non-income variables also produced clearer SES level distinctions. Conclusion. Identifying socioeconomic disparities between neighbourhoods is an important step in assessing the level of disadvantage of communities, and the presented method can be adapted to other locales for such a purpose. The ability to replace census income information with taxfiler data to develop SES indices will increase the versatility of public health research and planning in Canada, and contribute to the improvement of SES measurement and calculation methods.

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

Abstract

BackgroundMaster facility lists (MFL) maintain an important standard (unique identifier) in country health information systems that will aid integration and interoperability of multiple health facility based data sources. However, this standard is not readily available in several low and middle income countries where reliable data is most needed for efficient planning. The World Health Organization in 2012 drew up guidelines for the creation of MFLs in countries but this guideline still requires domestication and process modeling for each country adopting it. Nigeria in 2013 published a paper-based MFL directory which it hopes to migrate to an electronic MFL registry for use across the country. ObjectiveTo identify the use cases of importance in the development of an electronic health facility registry to manage the MFL compiled in Nigeria. MethodsPotential use cases for the health facility registry were identified through consultations with key informants at the Federal Ministry of Health. These will serve as input into an electronic MFL registry development effort. ResultsThe use cases identified include: new health facility is created, update of status of health facility, close-out, relocation, new information available, delete and management of multi-branch health facility. ConclusionDevelopment of an application for the management of MFLs requires proper architectural analysis of the manifestations that can befall a health facility through its lifecycle. A MFL electronic registry will be invaluable to manage health facility data and will aid the integration and interoperability of health facility information systems.

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