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## Contents



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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: Continuity of operations planning focuses on an organization's ability to deliver essential services before, during and after an emergency. Public health leaders must make decisions based on information from many sources and their information needs are often facilitated or hindered by technology. The aim of this study is to provide a systematic review of studies of technology projects that address public health continuity of operations planning information needs and to discuss patterns, themes, and challenges to inform the design of public health continuity of operations information systems. Methods: To return a comprehensive results set in an under-explored area, we searched broadly in the Medline and EBSCOHost bibliographic databases using terms from prior work in public health emergency management and continuity of operations planning in other domains. In addition, we manually searched the citation lists of publications included for review. Results: A total of 320 publications were reviewed. Twenty studies were identified for inclusion (twelve risk assessment decision support tools, six network and communications-enabled decision support tools, one training tool and one dedicated video-conferencing tool). Levels of implementation for information systems in the included studies range from proposed frameworks to operational systems. Conclusion: There is a general lack of documented efforts in the scientific literature for technology projects about public health continuity of operations planning. Available information about operational information systems suggest inclusion of public health practitioners in the design process as a factor in system 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

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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 automated disease surveillance systems notify users of increases in the prevalence of reports in syndrome categories and allow users to view patient level data related to those increases. Occasionally, a more dynamic level of control is required to properly detect an emerging disease in a community. Dynamic querying features are invaluable when using existing surveillance systems to investigate outbreaks of newly emergent diseases or to identify cases of reportable diseases within data being captured for surveillance. The objective of the Advance Querying Tool (AQT) is to build a more flexible query interface for most web-based disease surveillance systems. This interface allows users to define and build their query as if they were writing a logical expression for a mathematical computation. The AQT allows users to develop, investigate, save, and share complex case definitions. It provides a flexible interface that accommodates both advanced and novice users, checks the validity of the expression as it is built, and marks errors for users.


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


## Abstract

Objective: We sought to identify and map the geographic distribution of available colorectal cancer screening resources, following identification of this priority within a needs assessment of a local community-academic collaborative to reduce cancer health disparities in medically underserved communities. Methods: We used geographic information systems (GIS) and asset mapping tools to visually depict resources in the context of geography and a population of interest. We illustrate two examples, offer step-by-step directions for mapping, and discuss the challenges, lessons learned, and future directions for research and practice. Results: Our positive asset driven, community-based approach illustrated the distribution of existing colonoscopy screening facilities and locations of populations and organizations who might use these resources. A need for additional affordable and accessible colonoscopy resources was identified. Conclusion: These transdisciplinary community mapping efforts highlight the benefit of innovative community-academic partnerships for addressing cancer health disparities by bolstering infrastructure and community capacity-building for increased access to colonoscopies.


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

## Abstract

By using cloud computing it is possible to provision on- demand resources for epidemic analysis using computer intensive applications like SaTScan. Using 15 virtual machines (VM) on the Nimbus cloud we were able to reduce the total execution time for the same ensemble run from 8896 seconds in a single machine to 842 seconds in the cloud. Using the caBIG tools and our iterative software development methodology the time required to complete the implementation of the SaTScan cloud system took approximately 200 man-hours, which represents an effort that can be secured within the resources available at State Health Departments. The approach proposed here is technically advantageous and practically possible.

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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: Real-time surveillance systems are valuable for timely response to public health emergencies. It has been challenging to leverage existing surveillance systems in state and local communities, and, using a centralized architecture, add new data sources and analytical capacity. Because this centralized model has proven to be difficult to maintain and enhance, the US Centers for Disease Control and Prevention (CDC) has been examining the ability to use a federated model based on a secure web services architecture, with data stewardship remaining with the data provider. Methods: As a case study for this approach, the American Association of Poison Control Centers and the CDC extended an existing data warehouse via a secure web service, and shared aggregate clinical effects and case counts data by geographic region and time period. To visualize these data, CDC developed a web browser-based interface, Quicksilver, which leveraged the Google Maps API and Flot, a javascript plotting library. Results: Two iterations of the NPDS web service were completed in 12 weeks. The visualization client, Quicksilver, was developed in four months. Discussion: This implementation of web services combined with a visualization client represents incremental positive progress in transitioning national data sources like BioSense and NPDS to a federated data exchange model. Conclusion: Quicksilver effectively demonstrates how the use of secure web services in conjunction with a lightweight, rapidly deployed visualization client can easily integrate isolated data sources for biosurveillance.


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


## Abstract

Health surveillance can be viewed as an ongoing systematic collection, analysis, and interpretation of data for use in planning, implementation, and evaluation of a given health system, in potentially multiple spheres (ex: animal, human, environment). As we move into a sophisticated technologically advanced era, there is a need for cost-effective and efficient health surveillance methods and systems that will rapidly identify potential bioterrorism attacks and infectious disease outbreaks. The main objective of such methods and systems would be to reduce the impact of an outbreak by enabling appropriate officials to detect it quickly and implement timely and appropriate interventions. Identifying an outbreak and/or potential bioterrorism attack days to weeks earlier than traditional surveillance methods would potentially result in a reduction in morbidity, mortality, and outbreak associated economic consequences. Proposed here is a novel framework that would enable a user and/or a system to interpret the anomaly detection results generated via multiple aberration detection algorithms with some indication of confidence. A framework that takes into account the relationships between algorithms and produces an unbiased confidence measure for identification of start of an outbreak.


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