Appendix B: Content Summaries of Selected Best Papers for the 2021 IMIA Yearbook, Special Section on Managing Pandemics with Health Informatics


**Novel approach to support rapid data collection, management, and visualization during the COVID-19 outbreak response in the World Health Organization African Region: development of a data summarization and visualization tool**

*JMIIR Public Health Surveill 2020;6(4):e20355*

This paper describes the development and deployment of a regional surveillance tool in low- and middle-income countries by the World Health Organization (WHO). The tool was created to support field data collection, contact tracing follow-up, and generating epidemiological information for decision makers in a timely manner. Core functions of public health during a pandemic. The tool leveraged a wide variety of available information systems and open standards to enable each member state in the Africa region to contribute data, providing flexibility in reporting requirements. As member states submit data to the WHO, they are integrated into a data warehouse that then enables analysis. Information are visualized on a dashboard available to WHO and the Ministry of Health in each member nation. In addition, the WHO generates weekly situation reports and epidemiological updates. The paper nicely documents the various activities many clinical organizations and researchers. The article nicely summarizes the variety of data, information, process, and workflow standards necessary for development by national public health authorities to support the management of patients and populations during a pandemic.


**Cloud-based system for effective surveillance and control of COVID-19: useful experiences from Hubei, China**

*J Med Internet Res Apr 2020;22(4):e18948*

This paper describes the development and deployment of a population surveillance system in the city of Honghu located in Hubei province in China. The article details the various data sources and information systems deployed to detect, triage, screen, diagnose, and manage patients. Population questionnaires screened individuals outside of care settings, and these data were integrated with laboratory test results as well as EHR system data on patients in hospitals. A common data model was quickly developed to harmonize information into a cloud-based platform upon which analytics and modeling were deployed to inference population trends. The paper nicely illustrates the concept of integrated disease surveillance, in which health care and public health organizations work together to manage population health at the community level. The paper further discusses the facilitating factors and challenges faced by the informatics team asked to rapidly build and deploy the system within 72 hours. It was selected as a best paper, because it documents an impressive achievement and offers a schematic for how other jurisdictions might leverage health informatics systems to manage a pandemic.


**Rapid response to COVID-19: health informatics support for outbreak management in an academic health system**

*J Am Med Inform Assoc Jun 2020;27(6):853-9*

Hospitals in many nations were overwhelmed with patients affected by SARS-CoV-2. In response to the pandemic, hospitals leveraged multiple information systems to triage patients based on acuity, expand capacity to care for growing numbers of patients, and keep clinicians and other employees healthy. This case report from the University of California San Diego Health system summarizes the various activities many hospitals and health systems undertook to leverage the EHR and other information systems to manage their response to COVID-19. The case study highlights how a commercially used EHR
system was expanded to implement new order sets, triage protocols, and documentation templates rapidly. Upon establishing an Incident Command Center, the health system identified several operational areas that would benefit from expanded use of their informatics infrastructure. A dashboard streamlined access to data and information for clinical operations leaders, and a patient portal became a hub for virtual visits as ambulatory centers were closed to allow for expansion of inpatient services for those severely ill from COVID-19. The EHR played a central role in collecting data and communicating information out to leaders and clinicians. This case study is also important because it detailed the many practical challenges the health system faced in deploying technologies in the wake of the pandemic. The evidence base for screening and treating COVID-19 patients changed almost daily. Guidelines, order sets, and documentation requires rapidly changed, and there was no time to train staff on these frequent system updates. The Incident Command Center played a central role in disseminating information and identifying failures to inform iterations of the informatics tools. The lessons in this case report are important for the health system to note as the pandemic continues and preparedness begins for the next pandemic.