Introduction to Health Cyberinfrastructure: Applications and Technologies for Population Health and Health Services Minitrack

Thomas A. Horan            Abdul Shaikh                   William Chismar         Sue S. Feldman
Claremont Graduate University           National Institutes of Health University of Hawai‘i at Mānoa Claremont Graduate

tom.horan@cgu.edu shaikhab@mail.nih.gov chismar@hawaii.edu sue.feldman@cgu.edu

Realizing the full potential of health information technology (Health IT) to impact and transform public health requires breaking down the often vertical structures within which vital scientific and medical information currently reside, allowing for widespread sharing, analysis, and application within and across disciplines. Obtaining this goal entails establishing interfaces that link the existing islands of surveillance, community and population data, scientific research, clinical and even personal health data maintained by consumers themselves. Such collaborative access, analysis, and communication requires that future technology deployments be designed and implemented in a manner that ensures the highest level of interoperability, such as the use of open source technologies and the Internet. Furthermore, it requires innovation in the way data is collected, shared, accessed, communicated, analyzed, and ultimately, used by seemingly disparate factions of the public health and health services domain. Such innovation would serve to improve anticipation of and response times to developing health issues with the goal of averting health crises and benefiting the population as a whole.

A cyberinfrastructure is comprised of complementary components including high performance computing infrastructure, data, analysis and visualization, virtual organizations for distributed communities, and learning and workforce development, all connected by an interoperable suite of software services and tools. Relevant to the notion of data use, cyberinfrastructure also pertains to the burgeoning growth of applications that use both established data sources, such as surveillance, research, administrative, biological, and genomic/proteomic data, and emerging data sources, such as, EHRs/PHRs, mobile devices, web 2.0, and data.gov, for public health impact.

This mini-track highlights some of the health cyberinfrastructure applications and technologies for population health and health services. It will feature the following papers:

- A Seeded Cloud Approach to Health Cyberinfrastructure: Preliminary Architecture
- Public Health Informatics: Increasing Use and Access
- The PALMS Cyberinfrastructure: A Modern Coevolution of Community and Computing
- Towards Symatically-Enabled Next Generation Community Health Information Portals: The PopSciGrid Pilot
- Use of, Preferences for, and Expectations Regarding Personal Health Records among People Affected by Cancer: Results of a LIVESTRONG Survey and the 2008 Health Information National Trends Survey

These research papers address technical, behavioral, social and health issues, with topics ranging from high performance computing topics concerning the extraction of knowledge from various data collections, data acquisition and analysis in a data intensive health science world, and open technological advancements. A particular emphasis in several of the papers is the building of cyberinfrastructure to prevent, monitor, and manage cancer.

Researchers should explore opportunities for innovation for clinical intervention in a variety of forms and settings across a cyberinfrastructure. As an example of continued attention in this area, the US Department of Health and Health Services recently invited entrepreneurs, developers, and health scientists to develop creative, innovative, and engaging applications for data harmonization, analysis, and visualization for cancer prevention and control. This is but one example of continued interest in this important topic.