

## POPULATION HEALTH FORUMS

### Population Health Informatics: Challenges, Opportunities, and Case Studies

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The Fall Population Health Forum series kicked off with a fascinating presentation on population health informatics by Dr. Hadi Kharrazi, Research Director at the [Johns Hopkins Center for Population Health IT \(CPHIT\)](#) and Assistant Professor of Health Policy and Management at the Johns Hopkins School of Public Health. His research focuses on the application of informatics in risk stratification, and the effect of data type and quality in predicting utilization.

Dr. Kharrazi began with an overview of CPHIT. This mission of this center is to improve the health and well-being of populations by advancing the state-of-the-art of Health IT across public and private health organizations. It focuses on the application of electronic health records (EHRs), mobile health, and other e-health and HIT tools targeted at communities and populations.

Dr. Kharrazi described population health informatics as an emerging field and domain that directly aligns with themes related to Triple Aim: better health for the population; lower cost through improvements; and better care for individuals. In trying to define informatics, Kharrazi points out that numerous types of informatics exist such as: bio, imaging, clinical, consumer health, and

**Table 1. Population Health Informatics – National Workshop on PopHI**

#### **Population Health Definition**

Population health comprises organized activities for assessing and improving the health and well-being of a defined population. Population health is practiced by both private and public organizations. The target “population” can be a specific geographic community or region, or it may represent some other “denominator,” such as enrollees of a health plan, persons residing in a provider’s catchment area, or an aggregation of individuals with special needs. The difference between population health and public health is subtle, and there is not always a full consensus on these definitions. That said, public health services are typically provided by government agencies and include the “core” public health functions of health assessment, assurance, and policy-setting. In the United States, most actions of public health agencies represent population health, but a considerable proportion, if not the majority, of population health services are provided by private organizations.

Kharrazi et al. A proposed national research and development agenda for population health informatics: summary recommendations from a national expert workshop. *JAMIA*. 2017; 24(1):2-12.

public health informatics. Population health informatics, explains Kharrazi, is a hybrid of clinical, consumer, and public health informatics. It is important to understand many different data types in order to capture what is actually occurring in populations.

There is a spectrum of sources that affect the information captured, including: EHR, claims, mhealth apps, social networks, national data sets, computerized physician order entry (CPOE), web portals, and personal health records. The context is the relationship between physicians, practice teams, patients, family and caregivers, community, and delivery system. “If you want to really do population health informatics you need to have this milieu of different data sets,” states Kharrazi. The challenge is how to link data sources and use them efficiently, while attempting understand which one has a better value. The process overall typically involves mining the data, extracting the knowledge and finding trends, validating, and sharing.

Dr. Kharrazi described the drivers behind population health informatics, which included incentives (meaningful use, state-wide HIEs); mandates (ACA, payment reforms, MACRA etc.); and facilitation (data standards, integration and sharing).

Kharrazi went on to discuss the process of developing a definition of population health information and the outcome of that definition (Table 1), which was created at a national population health IT workshop. This workshop also attempted to define the difference between population health, public health, and clinical informatics. Some of the main differences occur between operational goals, actions, and information challenges. For example, population health Informatics tends to have goals of outreach, prevention, care integration, and disease management. Public health informatics has a focus on assessment and prevention, and clinical informatics is focused on treatment and rehabilitation. The most compelling difference, explained Kharrazi, is with key stakeholders. Stakeholders

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# Population Health *Matters*



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for population health tend to be provider and payer systems and government and community, whereas public health stakeholders are typically federal, state, and local governments and non-profits. Clinical information stakeholders tend to be health care providers and consumers.

CPHIT has over 30 different projects in process which cover a range of topics including: EHR-based utilization prediction, geriatric frailty, predicting elderly falls, VHA, obesity, opioid risk, pop-e measures, and consumer data.

As Dr. Kharrazi summarized his talk by stating that it is difficult to point out what each data source will provide. He also mentioned other challenges such as data quality, denominator, comparing models, feature reduction, temporal data, and privacy and security.