

## Introduction

Population health is a new interdisciplinary area interacting among traditional public health, healthcare systems, payers, community health and individual/consumer health. Population health practice has posted new challenges to public health informatics professionals. Assessment is often the first step to plan actions for improving population health. To develop capacity for population health assessment is the logic beginning of developing population health informatics.

## Challenges

Current information systems/applications designed for conducting public health assessments are not adequate to support new and diverse information needs of population health. These challenges include, but not limited to:

- 1) Increased volume of new types of data requests from healthcare systems and other external partners that require more manual data manipulation, linking patients or communities on certain conditions, indicators, linking multiple data sources to produce a population health profile;
- 2) Transform event/disease-centric databases into person-centric data network; and
- 3) Lack of resources to timely provide customized population health data to requesters, upgrade and integrate silo legacy information systems and effectively develop interoperability with health systems to receive and send structured clinical data in real time.

Population health informatics must expand the scope of existing public health informatics' data sources, data models and management, as well as interoperation with health systems. Population health practice also requires new analytic capacity and more privacy and security controls for non-public health professional users. For example, population health practice will need additional data beyond traditional public health data. Traditional public health data reporting is disease-, case-, or event-centric. Population health practice is population-focused; population health data model needs to be at the levels of a person, population, or community. To gain comprehensive understanding of the health of a population requires that population health analytics goes beyond pre-defined standard public health indicators. We need flexible analytic applications to allow users to define and generate their own populations and measures.

## Utah Department of Health's Definition of Population Health:

The UDOH integrates its practice with health systems and payers to fully address determinants and outcomes of health in the Utah population and its sub-populations.

**Table 1. Functionality Comparison Between Public and Population Health Informatics**

Domain	Traditional Public Health Informatics	Enhanced Population Health Informatics
Data Source	Public health data	+ clinical & other sources
Data Model	Disease/event centric	+ person, people, community-centric, relational, integrated
Interoperability	Silo systems	+ linkage and real-time exchange are required
User	Public health professionals	+ diverse external users
Analytics	Standard public health measures, pre-defined conditions	+ flexible aggregations, user-defined measures & populations

## Proposal:

**Leadership:** Development of population health informatics needs nationwide collaborations. We need broad collective leadership, roadmap and coordination among the federal, state and local public health agencies, health systems, payers, academia, and communities, to:

- 1) Develop shared common framework and guidance of population health informatics addressing population health assessment, surveillance, and specific use cases;
- 2) Support enhancing/upgrading/transforming existing multi-state/federal public health assessment applications; and
- 3) Federal grantors can play a significant role in supporting population health informatics development by add informatics requirements to every population health grants.

**Technology:** Based on our limited experiences in providing population health data to our population health partners, we have identified following technical aspects in expanding public health informatics capacity to meet the population health informatics needs:

- 1) Need more functionality than current public health assessment applications with flexible self-defined populations/ communities;
- 2) Develop integrated and interoperable data models and architecture to integrate silo public health data sources into comprehensive visualizations for a selected population; and
- 3) Develop effective technical interoperable capacity with health systems to exchange authorized clinical information from Electronic Health Records or HIE.



## Conclusions

Population health practices are challenging public health informatics professionals in practice. Let's learn and work collaboratively to answer the call and make our informatics contributions to improve population health in the nation.

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