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## **Population Health and Health Information Technology Framework of the Minnesota e-Health Initiative Population Health Workgroup**

The term “population health” implies different things to different people. The framework below offers definitions of population health and public health and provides a framework for how health information technology interfaces with the domains of population health: public health surveillance and response; health status and disease measurement; population based health care and quality improvement; population based research; and health education/communication. The framework will be used to guide future discussions of the MN e-Health Initiative Population Health Workgroup as it relates to a conceptual view of population health, the governmental role of public health, and the role of health information technology in improving population health.

### **Working Definitions of Population Health and Public Health**

#### ***Population Health (everyone’s responsibility)***

Population health is an approach to health that aims to improve the health of an entire population. One major step in achieving this aim is to reduce health inequities among population groups. Population health seeks to step beyond the individual-level focus of mainstream medicine and public health by addressing a broad range of factors that impact health on a population level, such as environment, social structure, resource distribution, etc. An important theme in population health is importance of social determinants of health and the relatively minor impact that medicine and healthcare have on improving health overall.

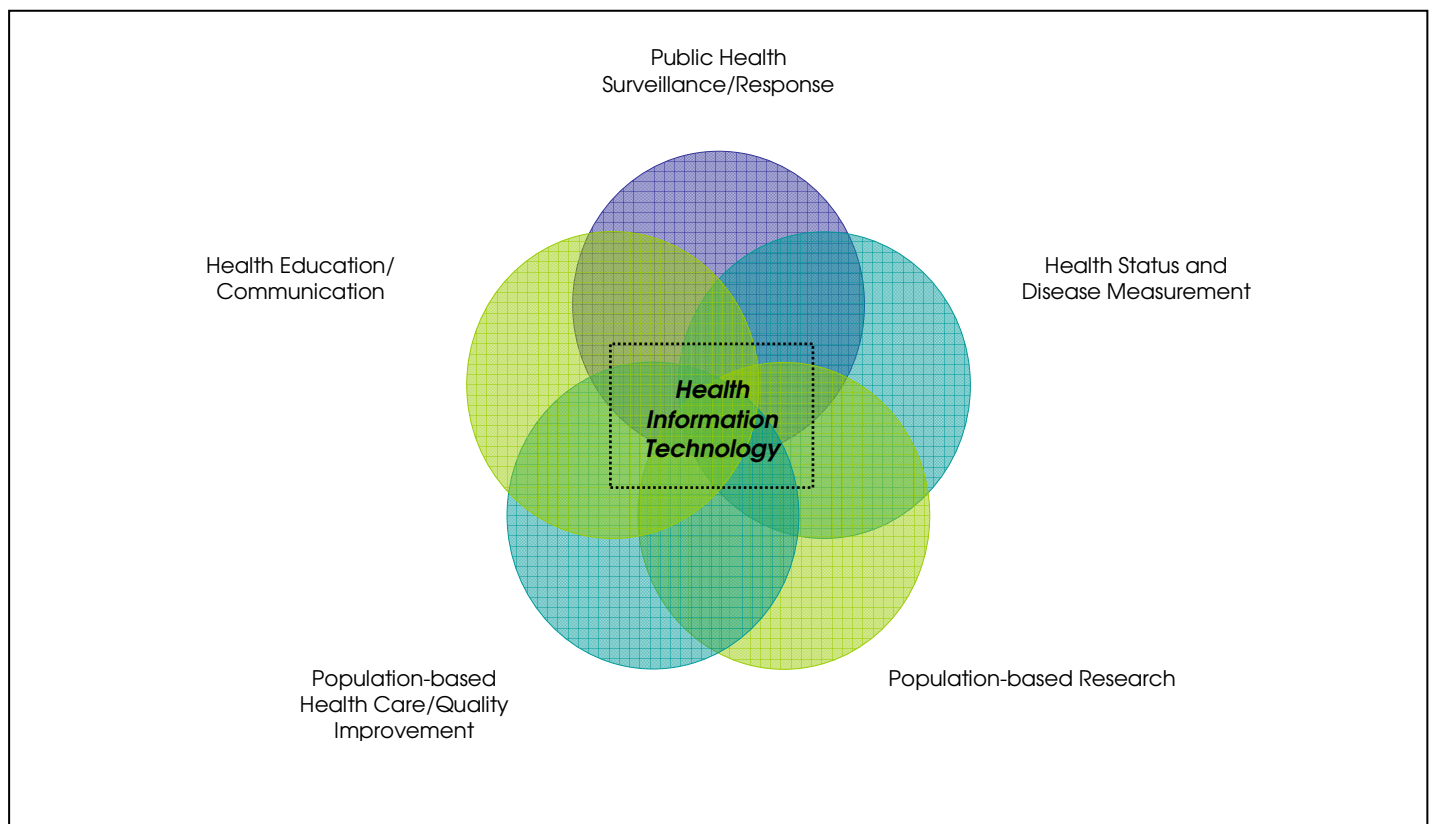
#### ***Public Health (governmental responsibility)***

Public health is concerned with threats to the overall health of a community based on population health analysis. Governmental public health agencies provide the backbone to the public health infrastructure, but this infrastructure is also dependent on other entities such as the health care delivery system, the public health and health sciences academia, and other sectors that are heavily engaged and more clearly identified with health activities. Public health also plays a legal regulatory role (e.g., conducting restaurant inspections).

## Health Information Technology Interface with Population Health

The figure below depicts the five interrelated and overlapping domains of population health: public health surveillance and response; health status and disease monitoring; population-based research; population-based clinical care; and health education/ communications. Health information technology (HIT) is represented in the rectangular box in the middle of the diagram and it supports, interacts with, and underlies the other five areas. HIT is at the core of the overlapping domains of population health, implying the core function of interoperability between the systems that support these domains. HIT includes technologies such as electronic health records, personal health records, technologies of the National Health Information Network, disease registries, repositories, automated survey tools, and clinical decision support systems.

### Population Health and HIT Model





# Population Health and the Public Health Information Systems Work Group

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## Population Health Domain Definitions and Examples

### **Public health surveillance and response**

On-going systematic collection, analysis and interpretation of public health data essential to the planning, implementation and evaluation of public health practice closely integrated with the timely dissemination of these data to those responsible for prevention and control, and management of the appropriate response.

Examples include:

- Event detection, including outbreaks, epidemics and pandemics
- Notifiable condition reporting (e.g., communicable disease, cancer reporting)
- Active surveillance (e.g., for unexplained deaths or for disease)
- Response management (e.g., outbreak management, countermeasure allocation, distribution, and administration)

### **Health status and disease measurement**

Accurate, periodic assessment of community and patient level health status, identification of health risks (determinants of health and functional status), and determination of health service needs.

Examples include:

- Environmental monitoring (e.g., asthma levels and air quality)
- Collection of health and functional status data of relevance to communities
- Monitoring for environmental hazard and potential environmental risk exposures (e.g., lead, asbestos or radiation)
- Monitoring chronic conditions such as obesity and diabetes and their risk factors (e.g., diet, physical activity, smoking, etc.)
- Evaluating trends in disease virulence and antimicrobial resistance, including emerging pathogenic agents
- Monitoring mental health status of a population (e.g., youth)
- Identify and address the needs of vulnerable populations (e.g., high-risk pregnant women, mothers, children, frail elderly, persons with mental illness, and people experiencing health disparities)

### **Population based health care/quality improvement**

Assuring health and functional status for populations of people (e.g., income based, ethnicity based, age based, gender based, others defined as needed).

Examples include:

- Provision of care
  - Identifying populations with barriers to health and related services (e.g., jail health, elderly services)
  - Identifying health and health-related services
  - Assuring the linkage of people to appropriate health and related services through coordination of provider services and development of interventions that address barriers to care (e.g., MN Children with Special Needs)
- Health disparities determinants
- Chronic disease management



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### ***(Population based health care examples, continued)***

- Genomics and population health
- Vaccination programs (e.g., pneumococcal and influenza vaccines)
- Evidence-based clinical/health care
  - Developing evidence-based guidelines for individual episodes and systems of care
  - Delivering evidence to the point of care (clinical decision support)
  - Measuring quality/efficiency for patients, practitioners and health care systems
  - Measuring disparities in care for defined populations across specialties and/or care sites

### ***Population based research***

Research for new insights and innovative solutions to health problems on a population level to ensure that all people, especially those who experience health disparities, will achieve their optimal lifespan and experience the best possible health in every stage of life.

Examples include:

- Field-based efforts to foster improvements in public health practice and other population health management activities
- Infrastructure, policies and internal capacity to perform timely population-based, epidemiologic and economic analyses and conduct needed health informatics and health services research
- Evaluations to determine the effectiveness of strategies and interventions on health services and systems (e.g., improvements in diabetes health indicators)
- Research to develop indicators to measure disparities in quality of care
- Evaluation of social marketing campaigns designed to influence health behaviors to identify effective communications strategies

### ***Health education/communication***

Inform, educate and empower providers, consumers and others about health and wellness issues by providing health information, health education, and health promotion activities designed to reduce health risk, promote better health, and improve and/or maintain health and functional status using methods such as health alerts, websites, collaboration forums, and risk communications.

Examples include:

- Prevention guidelines (e.g., flu, diabetes, obesity, asthma, etc.)
- Vaccination schedules, guidelines, and warnings
- Case definitions, syndrome definitions, diagnostic guidelines and criteria
- Notifications of disease outbreaks or environmental hazards and potential environmental risks
- Promotion of healthy communities and healthy behaviors (e.g., physical activity, nutrition, tobacco, alcohol and other drug use, unintentional pregnancy, sexually transmitted diseases, mental health, maternal and child health, and the prevention of injury and violence)
- Inform and educate different audiences (e.g., general public, providers, policy leaders) about creating and supporting healthy communities and population health status (e.g., social marketing campaigns, policy advocacy, risk communications on environmental hazards and potential environmental risks)



## **Principles for Improving Population Health through Acceleration of Health Information Technology Adoption**

Principles for improving population health lay the groundwork for the future policy development in the acceleration of health information technology adoption. Below are a set of principles for adoption by the Minnesota e-Health Initiative Population Health and Public Health Information Systems Workgroup (adapted from the eHealth Initiative Blueprint: Building Consensus for Community Action: October 2007).

### **1) The use of electronic clinical data is beneficial and necessary to improve population health.**

The use of electronic clinical data that is derived from the care delivery process is both beneficial and necessary for improving population health, including but not limited to the following critical areas:

- Improving the quality, safety, efficiency and effectiveness of healthcare
- Monitoring, detecting and responding to hazards and threats to protect the public's health
- Expanding knowledge about disease, diagnosis and appropriate treatments and services
- Providing patient access to personal health records and patient prevention resources
- Addressing health disparities in order to reduce health inequities among population groups

### **2) The use of electronic population health data is beneficial and necessary to improve the health of individuals.**

Just as it is beneficial and necessary for clinical data to be available for the purposes of improving population health, population health data is beneficial and necessary to be available to clinicians for the improvement of care. The sharing of clinical and population health data is mutually beneficial for multiple stakeholders, including public health, healthcare, population health research, and consumers. For example,

- Consumers having access to their own personal health records allows for better personal decision making
- Healthcare providers and consumers are more fully informed about health benefits and risks in the community such as:
  - Child lead exposure
  - Patterns of infectious disease or new outbreaks
  - Multi-drug resistant tuberculosis
  - Spread of Lyme disease
  - Risks for methicillin-resistant *Staphylococcus aureus* (MSRA) bacterial infections)
  - Health risks affecting disparate populations



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- 3) Everyone who uses clinical data for population health purposes should abide by a common set of principles and policies.**

Everyone who utilizes clinical data derived from the care delivery process for population health purposes should, in addition to abiding by current federal and statewide laws (including privacy and security laws), rules and regulations, agree to and comply with a common set of principles and policies developed through a transparent, open process involving multiple stakeholders, including but not limited to consumers, providers, payers, purchasers, and researchers to build trust and confidence in the use of such data.

- 4) Those who use clinical data for population health purposes should be transparent about their principles, policies and practices.**

Those who utilize clinical data derived from the care delivery process for population health purposes should clearly disclose, in a transparent, easily accessible and understandable way, how the data is being used, as well as the principles and policies by which they abide.

- 5) Healthcare organizations should support the use of a common set of data derived directly from electronic clinical data systems for the purpose of measuring population health.**

Agreement on and widespread implementation of a set of common data elements, standards for interoperability, policies for data sharing that build trust, and agreed upon business models will accelerate the use of data to support population health and other purposes.

- 6) Population health functional components are an essential part of electronic health records.**

In order for clinical data to be useful for population health purposes, electronic health records must contain essential population health functional specifications (e.g., ability to generate specific reports on patients with diabetes, high cholesterol, or hypertension for quality measurement/improvement or for other population health purposes; ability to provide acute disease surveillance reporting).

- 7) Financial or other incentives will be necessary to accelerate the use of clinical data for population health purposes.**

While the results of improving population health include increases in healthcare quality, efficiency, and safety, such benefits do not always translate to financial benefits to the healthcare organizations that capture the data. Therefore, widespread use of clinical data will not occur without the creation and implementation of financial or other incentives (e.g., increases in market share, lessening the administrative burden, and enabling providers to more readily perform well in a pay for performance environment).