

Short Communication

Public Health, Population Health, Population Health Management, and Describing a Role for Data Analytics: Ideas for Health System Administrators

Gregory Fant, PhD, MSHS, MPA, MACE, IPFPH*

US Department of Veterans Affairs, VHA/Patient Care Services, Population Health Services (10P4V), Washington, DC 20420, USA

*Corresponding author

Gregory Fant, PhD, MSHS, MPA, MACE, IPFPH

Public Health Epidemiologist, US Department of Veterans Affairs, VHA/Patient Care Services, Population Health Services (10P4V), Washington, DC 20420, USA; Tel. +1.202.266.4568; Fax. +1.202.495.5955; E-mail: Gregory.fant2@va.gov

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ABSTRACT

Some clinical medicine, public health, and health systems administration professionals recognize the role of data in identifying conditions that could be used in the diagnosis and treatment of individuals, as well as, in the development of public health policies or allocation of resources to prevent disease and promote health in populations. Data is important to assess the efficacy of a public health or health system program. In this short communication, key terms of public health, population health, and population health management are defined and, then, a role for data analytics is described to help health system administrators with population health management activities.

Keywords

Public health; Population health; Population health management; Data analytics; Health system administration.

INTRODUCTION

As the cost of medical care continues to increase in many developed countries (e.g., United States), as well as in some developing nations, with no or little improvement in population-level health indicators (e.g., infant mortality), the limits to curative, clinical medicine becomes apparent. As a result, public health leaders and health system administrators turn to consider the roles that disease prevention and health promotion might play for improving population-level health status.¹ The difference between clinical medicine and public health is not surprising.² Some clinical medicine, public health, and health systems administration professionals recognize the role of data in identifying conditions that could be used in the diagnosis and treatment of individuals and the role of data in the development of public health policies or allocation of resources to prevent disease and promote health in populations. In this short communication, key terms of public health, population health, and population health management are defined and a role for data analytics is described to help health system administrators in thinking about population health

management activities.

DEFINITION OF TERMS

Public Health

The meaning and practice of “public health” is not the provision of medical services to a member of the public. The academic study of “public health” and its practice stem from the following definition:

Public health: The science and art of preventing disease, prolonging life, and promoting health through organized efforts of society. The programs, services, and institutions involved emphasize the prevention of disease and the health needs of the population as a whole. Public health activities change with changing technology and social values, but the goals remain the same: to reduce the amount of disease, premature death and disease-produced discomfort and disability in the population. Public health is thus a social institution, a discipline, and a practice.³

Examples of the practice of public health include the efforts of a locality to assure that eating establishments are operating in a clean and healthy manner or a state government taking steps to make immunizations and other preventive public health services available to its poor residents.

Population Health

Recently, the concept of “population health” has been gaining popularity. This concept focuses on community-level activities that explicitly acknowledge and work with the social determinants of health to bring about and monitor improvements in the health of a population.⁴ From this context, the definition of “population health” follows:

Population health: The health of the population measured by health status indicators; it is influenced by physical, biological, social, and economic factors in the environment, by personal health behavior, and by access to and effectiveness of health care services. The prevailing or aspired level of health in the population of a specified country or region or in a defined subset of that population. Population health describes the condition of the population.³

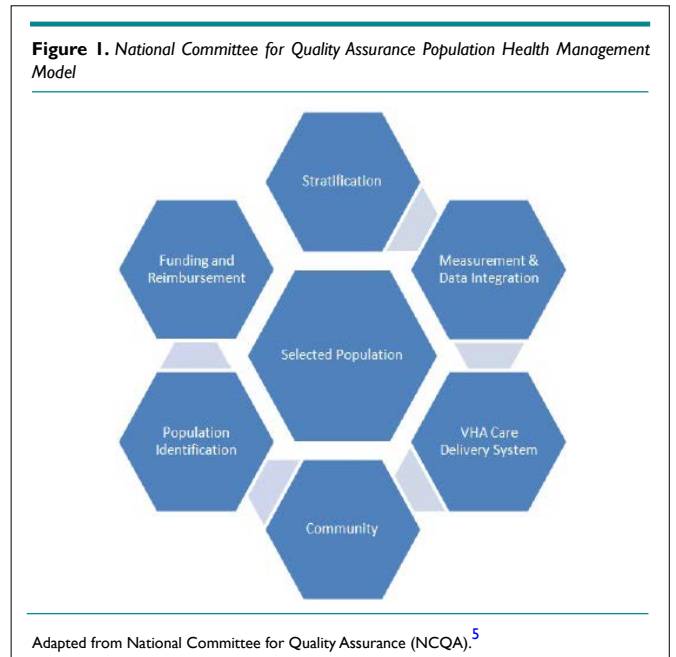
Population Health Management

The concept of population health management is often heard in a health system or clinical care setting. This suggests that the concept of population health management is different from the concept of medicine, public health and population health. An accepted definition of population health management follows:

Population health management (PHM): A model of care that addresses individuals’ health needs at all points along the continuum of care, including in the community setting, through participation, engagement, and targeted interventions for a defined population. The goal of PHM is to maintain or improve the physical and psychosocial well-being of individuals and address health disparities through cost-effective and tailored health solutions.⁵

Population health management suggests a framework

for addressing the health needs of a panel of individuals using a healthcare system (Figure 1). Such a framework requires coordination and collaboration in the delivery of medical and health care for a population using the resources of a health care system. In a geographic area, various resources may be available that could be accessed by the population and that, ultimately, contribute to the improvement of the health status of the population.



The PHM model, shown in Figure 1, was developed by the National Committee for Quality Assurance (NCQA). The focus of the model is on a selected population located in the center, and the components located around the population are considered essential components for the successful implementation of a population health management program. The PHM model represents a shift away “from a disease-centered approach” to one that considers the needs of the population located at the center of the model. This concept could be adapted for other populations of interest (Box 1).

Box 1.

Possible Functional Definition: Veteran Population Health Management

The concept of population health management within a healthcare system could serve a selected group, say, veterans nationwide. The new program was devised to provide veterans with a greater choice over their health care, and allow the healthcare system to deliver world-class, seamless customer service either through a facility within the system or community provider, not part of the formal system. A concept of Veteran Population Health Management could be proposed:

Veteran Population Health Management (VPHM) could be a model of care that addresses the health needs of Veterans at all points along the continuum of care, including in the community setting, through participation, engagement, and targeted interventions for the veteran population primarily using health system for medical treatment and care. The goal of VPHM is to maintain or improve the physical and psychosocial well-being of veterans using a health system and address health disparities among Veterans through cost-effective and tailored health solutions.

The definition is a modification of an earlier definition.⁵ NCQA tacitly proposed a model for the consideration of population health for the U.S. healthcare system. Health system administrators could modify the concept of population health management to align with the population served by a health service network.

These definitions are different, yet, complementary. The definition of public health is concerned with science and the art of preventing disease, prolonging life, and promoting health through organized societal efforts. Population health, the second definition, is concerned with measuring the health status of a population. Finally, population health management is a model of care for a selected population.

ROLE OF DATA

The collection, availability, and utilization of health data seem to be a tacit component of each concept previously identified and defined. Gathering and analyzing usable health and health-related data would be necessary for any public health, population health, or population health management activity. Finally, the products of the data analysis activities would be considered and utilized in health system decision-making.

For example, notice the compartment for data integration in the population health management model (Figure 1). Data is an element in many parts of the model (e.g., data is needed for health resource planning by a healthcare system; data is needed for funding and reimbursement for a healthcare system; data management methods are needed for population stratification; etc.). The availability of health information technologies, various data sources applicable to population health, and incentives for more focus on preventive care, better management of chronic disease, and preventing expensive episodes of acute care push for acknowledging a framework for data analytics to support population health management.⁶

Upon reflection, we recognize that a population health management system must include, at least, three data-based tasks: gathering data from multiple sources into a usable format (e.g., establishing a data infrastructure); applying analytic techniques (e.g., trend analysis, reporting metrics, and developing work lists); and utilizing analytic products (e.g., work lists) to manage the care of a population.⁶

The analytic techniques to support population health management should, at least, help health system administrators perform the following tasks:

- Define one or more patient population groups that utilize health services;
- Stratify the patient population groups by risk to permit better resource allocation;
- Create metrics, graphical information displays, work lists, etc., of the risk-stratified population groups to show where action is needed.

These tasks are facilitated in a situation where a health care system utilizes some type of electronic health data to record the experiences of individuals in a patient population in the catchment area of the health care system.

Many believe that the electronic health record is a “stepping stone” to population health management in that the collection of individual-level care data, when aggregated and examined from a public health and/or population health perspective, leads to

population health management of a population utilizing a health care system.⁶ Data from an electronic health record from a patient population could be used with multiple, linked-data sources for population health management. However, the translation of data into meaningful information for health system planning and administration is tempered by data complexity, data variety, data quality, and data heterogeneity.⁷

CONCLUSION

Successful health system activities may depend on a clear understanding of what is meant by public health, population health, and population health management. Data are increasingly needed to develop, plan, guide, monitor, and assess public health, population health, and population health management activities. Gathering and analyzing usable health and health-related data would be necessary for any public health, population health, or population health management activity. Healthsystem administrators realize that they depend on data for developing plans, monitoring efforts, and evaluating actions that support the population using the health system. Analytic techniques should be considered to support health system administrators making decisions to address the needs of people using the health system.

DISCLAIMER

The views in this paper are those of the author and do not represent the official position of the U.S. Government.

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