A Review of New Jersey Public Health Goals
Using a Population Health Approach

By

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Abstract

Public health has begun to embrace the concept of population health within its sphere of influence. The concept of population health has become mainstream in the lexicon of public health. Defining population health can be as elusive as defining public health; it means different things to different people. Only in the last four decades has a population health approach to address health outcomes been researched, disseminated and implemented.

Population health represents an evolution of thinking about public health with its roots in the "sanitary movement" of the 1800's where the impact of society and government welfare on the health of individual citizens had begun to be recognized. Looking at the historical perspective of public health as it evolved clarifies many aspects of its present day form. Population health is a continuation of this movement where an ecological model highlights the social and physical environments that impact the ability of public health to meet the needs of people.

In Canada, population health is well defined and its concepts are used as an integral part of public health policies developed at the federal, province and territorial levels. There are two main goals in Canada's approach: "to maintain and improve the health status of the entire population and to reduce inequities in health status between population groups" (Public Health Agency of Canada [PHAC], 2012). The Public Health Agency of Canada makes use of a population health template which outlines a methodology to evaluate, monitor and implement population health initiatives.

In the United States, each state creates legislation that determines what public health services will be implemented and supported. In New Jersey, public health laws define what programs and service capacities are required to be provided by each local health department. By law it is the responsibility of the local health department to deliver and ensure population-based

public health services. Administrative, health education and public health nursing services are the three core functions of public health in New Jersey. These core functions are expanded to describe ten essential public health services that are inclusive of the key concepts of population health. Interpreting public health laws, population health policies are formulated by the New Jersey Department of Health. It is the combination of state level support and local departments of health who administer the many programs that comprise population health in New Jersey.

An important question that is explored in this paper is how do New Jersey public health programs address the key elements of a population health approach to maintain and improve the health status and reduce inequalities for the entire population of New Jersey. Using the Canadian Population Health Template (Template), programs presently being conducted in New Jersey were reviewed against the eight key elements described in the Template. In the remaining sections of this paper population health will be defined and the Canadian approach will be presented as a model for the United States. The application of this approach to the public health services in the state of New Jersey is examined.

This paper compared a limited number of the various health programs supported by the state of New Jersey to the Template. Based on a review of the literature and after an examination of selected public health programs that are part of the Healthy NJ 2020 (HNJ2020) agenda, the eight elements of the Template were found to be incorporated into the programs.

By considering this type of comparison as part of a continuous quality improvement effort, all public health services provided by New Jersey would benefit. This approach would allow New Jersey to continue to successfully fulfill its mission to provide all residents “a state in which all people live long, healthy lives”.

The Advent of Public Health

Beginning with the ancient cultures, health was thought of an absence of illness which was considered to be caused by supernatural forces. Little was done to prevent illness because it was felt that that it could not be controlled either by personal or collective efforts (Turnock, 2009). With the start of recorded history, it was epidemics such as plague, cholera and smallpox that begun public efforts to stop the spread of disease through isolation of those infected and the quarantine of travelers. Poor moral character and lack of spirituality were considered the cause of disease which were "treated" with prayer and piety (Institute of Medicine [IOM], 1988).

During the eighteenth century isolation and quarantine practices became rules enforced by the local governments. Major cities in Europe and the United States began to create permanent councils to oversee disease control efforts (IOM, 1988). In the United States control over health practices was exercised by states since the U.S. Constitution, which enumerates the powers of the federal government, does not mention health (Turnock, 2009). The causes of disease were beginning to be seen as not just a part of human weakness but that disease could potentially be controlled through public containment efforts started to take hold (IOM, 1988).

The IOM report recounts that during the 19th century that the advent of scientific thinking produced the initial concepts of public health. Referred to as the "sanitary awakening" the public embraced cleanliness and the elimination of fifth as methods to reduce disease. Although it was still considered that individual poor morality and spirituality were part of its cause, disease was beginning to be seen as the result poor social and physical environments. The effective control of disease and the protection of everyone's health now became a social responsibility. In the United States the efforts to control disease began with the establishment of state boards of health, state health departments and local health departments that carried out the resulting sanitary and

social reforms supported by the implementation of the necessary laws. These organizations also began to collect and report health information through surveys of local health conditions and studies of specific diseases. During the latter half of the 19th century, the germ theory of disease provided scientific evidence that many diseases had single, specific causes. Bacterial identification, immunizations, sewage treatment and water purification changed the approach to disease from one of controlling outbreaks to prevention (IOM, 1988).

During the early 20th century, the IOM history of public health describes that in both the United States and Europe, it became apparent that many of the diseases were communicable in nature and were being transmitted through contact with other infected individuals. Increasing urbanization and industrialization that began in the latter half of the previous century produced an overburdened workforce, unhealthy working conditions and crowded housing. This environment made people more susceptible to disease and allowed communicable diseases to be more easily transmitted. These findings led public health officials to consider that a healthier society would be possible by providing health care to individuals. Clinical care and health education for individuals became added responsibilities to local public health departments in the United States (IOM, 1988).

During this time the federal government became more active in public health with the formation of the Public Health Service led by the Surgeon General in 1912 (IOM, 1988). In 1916, the ratification of the 16th Amendment allowed the federal government to levy taxes in order to provide for the "general welfare" (Turnock, 2009, p. 7) of its citizens. Federal legislation began to be enacted to fund various public health activities to promote programs for individual health and state campaigns to address specific health problems such as maternal and child health. With the enactment of the Sheppard-Towner Act in 1921, the federal government

began to set guidelines and providing funding for state-run programs to implement these guidelines. The vision of a strong federal and state role in ensuring health and social welfare was part of the values promulgated through the government programs of the "New Deal" of the 1930's and the "Great Society" of the 1960's (IOM, 1988).

Governmental Public Health Today

In the United States all levels of government participate in public health activities with the states and local health departments being charged with providing most of these services. The practice of public health today continues to include protecting drinking water and the food supply, sanitary engineering, communicable disease control, services for children and infants and collecting vital statistics (Turnock, 2009).

These historical services have been expanded because of the changes to public health law to include health and social welfare programs. During the 1970's, various federal assessments of public health found increasing costs without an adequate method to demonstrate improving public health (Green & Fielding, 2011). The 1988 Institute of Medicine's report, *"The Future of Public Health"* presented strong evidence to indicate that the governmental public health infrastructure was deficient (IOM, 1988). These findings of increasing costs and an inadequate public health system were followed up by the health reform debate in the 1990's. This led to formation of a committee to provide a more detailed definition of governmental public health services (Benjamin, 2012). The committee delineated the ten essential services to be provided and assured by all governmental health departments (CDC, 2013a):

- Monitor health status to identify and solve community health problems
- Diagnose and investigate health problems and health hazards in the community
- Enforce laws and regulations that protect health and ensure safety
- Link people to needed personal health services and assure the provision of health

care when otherwise unavailable

- Inform, educate, and empower people about health issues
- Mobilize community partnerships to identify and solve health problems;
- Develop policies and plans that support individual and community health efforts
- Assure a competent public and personal health care workforce
- Evaluate effectiveness, accessibility, and quality of personal and population- based health services
- Research for new insights and innovative solutions to health problems.

The importance of public health continued to be recognized by the federal government with the establishment of the Communicable Disease Center in 1946. Its name was changed in 1967 to The National Communicable Disease Center until 1970, when it was renamed the Center for Disease Control (CDC, 2013b). With another name change to the Center for Disease Control and Prevention, the U.S. Congress, as part of the Preventive Health Amendments of 1992, had recognized CDC's leadership role in prevention, acknowledging CDC's responsibility for "addressing illness and disability before they occur" (CDC, 1998).

Having this framework for public health services, all levels of government created committees, task forces and assessment programs to determine how well these essential services were being provided. Using this information to meet the needs of its citizens, public health is continuing to evolve as scientific knowledge expands and society changes.

The Genesis of Population Health

The social hygiene movement of the 19th century and the beginning of federal government intervention in public health in the 20th century have historically concentrated on infectious and communicable disease control and prevention. Communicable diseases are still prevalent throughout the world where there is the baseline background of infectious diseases that

continue to be an ongoing threat such as malaria and tuberculosis. As diseases such as polio and smallpox are eradicated others have taken their place such as HIV/AIDs and severe acute respiratory syndrome (SARS) (Fauci, 2006).

As these earlier causes of illness and disease have been reduced in developed countries, other health threats have taken their place. In the United States chronic and degenerative diseases are replacing infectious and communicable disease and occupational injury as the major cause of morbidity and mortality. The understanding of the pathophysiology has led to a large increase in the diagnostic technologies and treatment of chronic diseases. The American conceptualization of health was changing to a medical model, with a focus on the individual and a primary goal of reducing adverse outcomes of disease. For example, determining the casual relationship of smoking and hypertension to some cancers and heart disease has helped reduce the epidemic rates of these diseases (Fielding, Teutsch, & Breslow, 2010).

This change in approach also includes a new definition of health. Whereas past efforts concentrated on the negative dimension of health, disease control, the new definition prioritizes the goal of health itself including extending the quality of life (Fielding, Teutsch, & Breslow 2010). The World Health Organization has defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." (WHO, 1948).

This mid-20th century switch in the prevalent reasons of disability and death requires different public health strategies and resources to address this change (Turnock, 2009). Recent responses in the United States in recognizing the impact of chronic diseases on public health include the Surgeon General's report, "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention" (Green & Fielding, 2011, p. 454) and the supporting Institute of Medicine (IOM) report "Perspectives on Health Promotion and Disease Prevention in the

United States" (Green & Fielding, 2011, p. 454) The Surgeon General's report provided a conceptual framework of the three broad areas of (1) health promotion, (2) health protection and (3) preventative services each with five prevention priority areas for intervention (Green & Fielding, 2011). During the same era, in 1974, the Minister of Health Canada released the document "A New Perspective on the Health of Canadians" which is also referred to as the "Lalonde Report". This report acknowledged that the approaches of traditional public health and medical care did not recognize the importance of socioeconomic factors and health inequalities. Both movements have shaped the current thinking and government policies that have come to be known as "population health" (Green & Fielding, 2011).

Defining Population Health

Population health has been described in very broad terms such as the ecological model (Figure 2) or more focused in its application to clinical care (Nash, Reifsnyder, Fabius & Pracilio, 2011). The concept of population health is believed to have its roots in the work of the Population Health Program of the Canadian Institute for Advanced Research and a book aptly titled "Population Health" by author T.K. Young (Kindig & Stoddart, 2003). A discussion and the formation of a definition of population health is the topic of Kindig's and Stoddart's (2003) article. They defined population health as "the health outcomes of a group of individuals, including the distribution of such outcomes with the group". Kindig has provided a diagram (Figure 1.) of this definition on his blog site which shows the interrelationship of policies and programs, determinants and the resulting outcomes (Kindig, 2011).

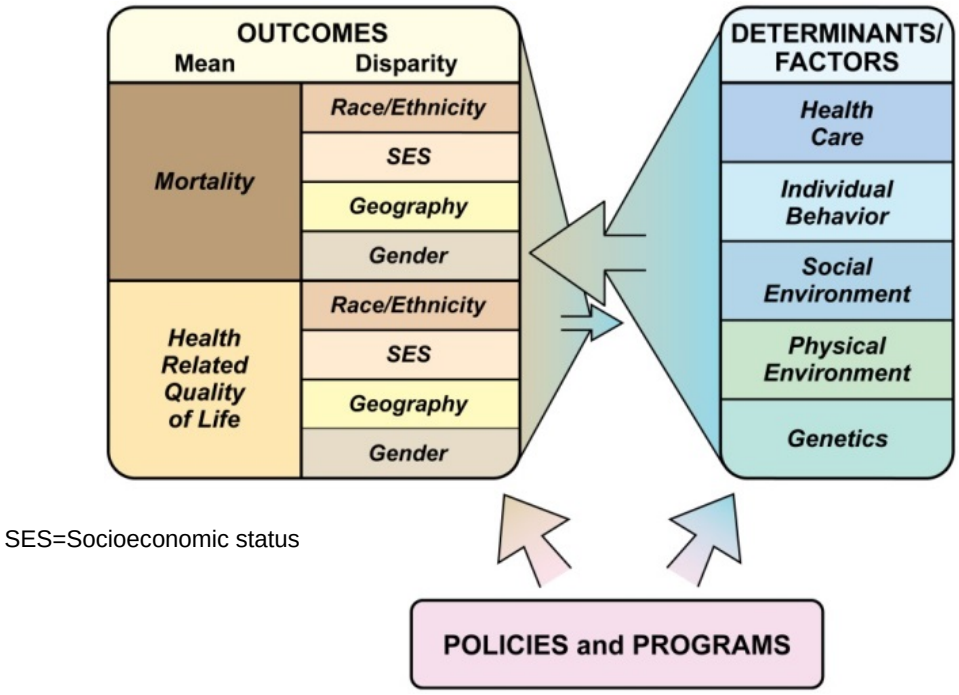

Figure 1. Population Health Model by Kindig

The guiding principle for population health is an increased focus on health outcomes that are improved for everyone. The primary goal is not to focus on the inputs, processes and products but to see a positive change in everyone's health that can be identified and attributed to what was done to improve the health of the total population (Kindig & Stoddart, 2003).

Additionally, the concept of the determinants of health has expanded beyond the immediate causes of morbidity and mortality (clinical care approach). An ecologic model of health broadens the sphere of possible influences further upstream by considering the impact of an individual's biologic characteristics and their interactions with their immediate social and physical environment (United States Department of Health and Human Services [HHS], 2008). Also considered is the impact of broad economic, cultural, social and physical environmental conditions at local, national, and global levels upon the individual (Fielding, Teutsch, & Breslow, 2010). Figure 2 depicts the conceptualization of the ecologic model as proposed by the

Healthy People 2020 framework (HHS, 2008). This model visualizes the different determinants of health from its' broadest environmental aspects and narrows down to the individual.

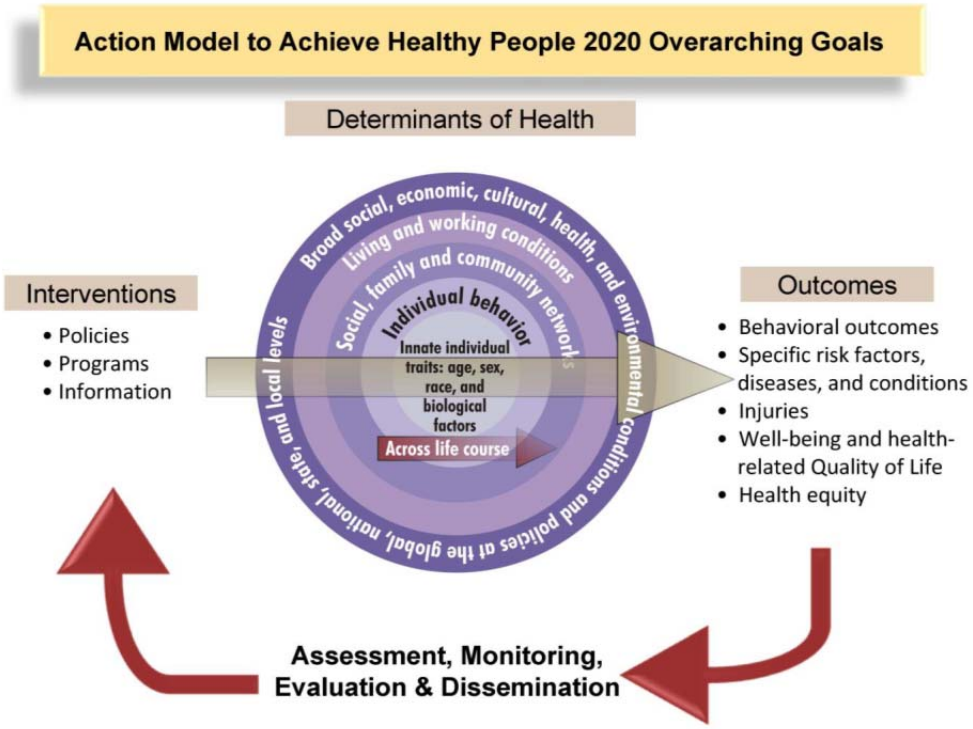

Figure 2. Ecologic Model Proposed by the Healthy People 2020 Framework

Another view considers population health as the framework that can be used to re-align healthcare delivery systems (medical model) that in their present state tend be fragmented, ineffective, poorly managed, wasteful and economically inequitable. This narrowed view focuses more on clinical care that includes health promotion, illness prevention, chronic condition management and patient self-management (Nash et. al, 2011).

Governmental Population Health

For its public health programs the Canadian government has defined population health as the health of a population as measured by health status indicators and as influenced by social, economic, and physical environments, personal health practices, individual capacity and coping

skills, human biology early childhood development and health services. As an approach, population health focuses on interrelated conditions and factors that influence the health of populations over the life course, identifies systematic variations in their patterns of occurrence, and applies the resulting knowledge to develop and implement policies (PHAC, 2012). Canada has created the Pan-Canadian Healthy Living Strategy to provide a conceptual framework so that all Canadians can experience the conditions that support the attainment of good health (PHAC, 2010). The framework focuses on preventing chronic diseases, promoting good health and reducing disparities by assisting the public health community to align and coordinate their efforts to address common risk factors (PHAC, 2010).

In the United States governmental public health policies and programs do not contain a similar definition of population health. However, the population health concepts of having an ecological model (Figure 2) and determinants approach (Figure 3) are shown prominently in the Healthy People 2020 program (HHS, 2008; HHS, n.d.). The Action Model (Figure 2) encompasses not only the ecological model (determinants of health) but also includes the interactions of the interventions and outcomes which are dependent on the assessments, monitoring, evaluation, and information dissemination. Similar to the Healthy Living Strategy in Canada, the Healthy People 2020 agenda was created by the United States government to also provide a framework to promote the health of all Americans. Healthy People 2020 is the most recent iteration of the national Healthy People program designed to provide 10-year objectives that address four foundation health measures of general health status, health-related quality of life and well-being, determinants of health and disparities (HHS, 2012).

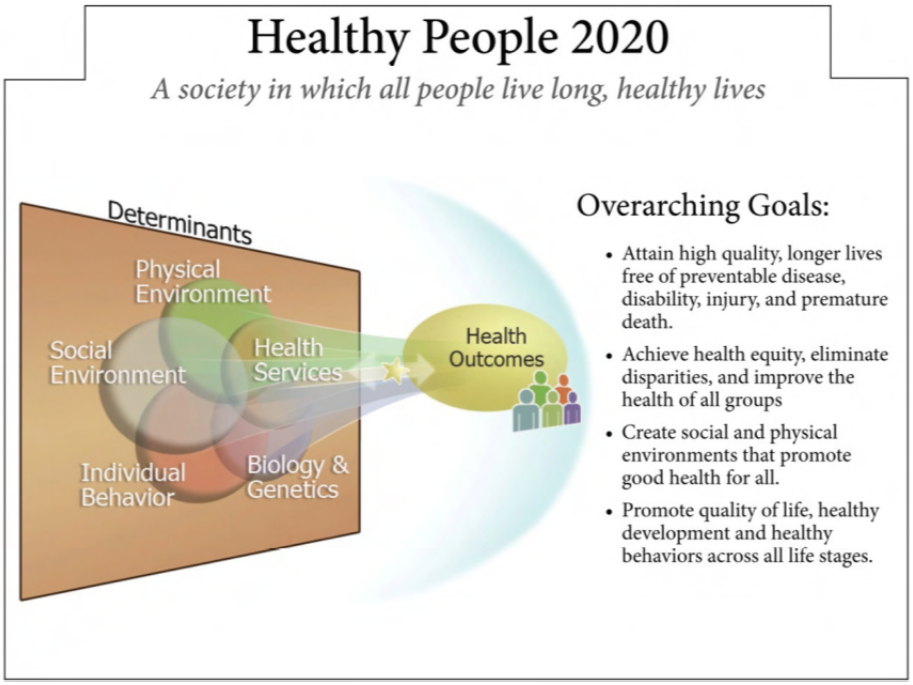

Figure 3. Graphic Model of Healthy People 2020

The Public Health System in New Jersey

In New Jersey, the laws of public health practice define what programs and service capacities are required to be provided by each LHD. It is the responsibility of the LHDs to deliver and ensure population-based public health services. New public health regulations were developed and the Public Health Practice Standards of Performance for Local Boards of Health in New Jersey were adopted in 2003 (NJAC 8:52). Administrative, health education and public health nursing services are the three core functions of public health in New Jersey. These core functions are expanded to include the National Public Health Performance Standards (NPHPSP) ten essential public health services (CDC, 2013a). Most commonly performed services include clinical preventive services, immunizations, communicable disease investigations, environmental health inspections, community health education and emergency planning/response (NJAC 8:52).

The state of New Jersey initiated a study of its public health system to include an assessment of the function, structure, funding and services (The State of New Jersey Department

of Health [NJDOH], 2008). The organizational structure of New Jersey local public health differs from all other states in several significant ways including the composition of the geographical area served, accountability, and jurisdiction. New Jersey is the only state that requires licensure of Health Officers. Municipal government has the primary responsibility for local public health services in New Jersey with 112 local health departments covering the State's 566 municipalities to include municipal health departments, regional health commissions and county health departments. Most (520) municipalities participate in shared services arrangement for local public health services with the remaining 46 municipalities, many of which are large cities, have stand-alone municipal health departments. Counties are authorized, but not required, to establish county health departments and provide local public health services for a majority (59%) of the municipalities. County health departments also perform specialized environmental services as well (NJDOH, 2008).

Interpreting the legislative laws, population health policies are formulated by the New Jersey Department of Health with the local health departments creating programs and providing support for these policies. It is the combination of state level support and local departments of health who administer this and the many other programs that comprise public health services in New Jersey. Many programs each contributes to demonstrating a population health approach to providing public health services and improving health outcomes to the residents of New Jersey (NJDOH, 2008).

Healthy New Jersey 2020

Many state programs are linked to the health agenda of the federal government. For example, Healthy New Jersey 2020 is a state-level version of the federal Healthy People 2020 initiative. Both programs include leading health indicators (LHIs), key topic areas with

corresponding objectives or health improvement goals. "Healthy NJ 2020 has adopted the vision, mission and overarching goals of the federal program" (NJDOH, n.d.a).

The NPHSS ten essential services of public health adopted by New Jersey provide the management principles that public health needs to take in order to create a healthy population. HNJ2020 builds on these services by providing the vision, mission, goals and objectives to improve the overall health of the residents of New Jersey envisioned to be "a state in which all people live long, health lives" (NJDOH, n.d.b). The mission of HNJ2020 is to: identify statewide health improvement priorities, increase public awareness and understanding of the determinants of health, disease, and disability and the opportunities for progress, provide measurable objectives and goals that are applicable at the State and local levels and engage multiple sectors to take actions to strengthen policies, improve practices that are driven by the best available evidence and knowledge, and identify critical research, evaluation, and data collection needs. The overarching goals of the agenda are to: attain high-quality, longer lives free of preventable disease, disability, injury, and premature death, achieve health equity, eliminate disparities, and improve health for all people, create social and physical environments that promote good health for all and promote quality of life, healthy development, and healthy behaviors across all life stages (NJDOH, (n.d.c).

The difference is that HNJ2020 tailors its LHIs, key topic areas and objectives to the specific health issues facing the residents of New Jersey. While the Healthy People 2020 agenda has 26 leading health indicators and 42 topic areas with over 1,200 objectives, HNJ2020 has a list of 5 leading health indicators and 20 topic areas with a variable number of objectives (HHS, 2013; NJDOH, n.d.d). Leading health indicators are a small set of objectives chosen to identify high-priority health issues together with the actions that can be taken to address them. For HNJ

2020 the LHIs for New Jersey are: access to primary care (topic area of access to health services), birth outcomes (topic area of maternal and child health), childhood immunizations (topic area of maternal and child health), heart disease (topic area of heart disease and stroke) and obesity (topic area of nutrition and fitness) (NJDOH, 2013b). The remaining topic areas cover chronic diseases (asthma, cancer, chronic kidney disease, diabetes), communicable diseases (HIV/AIDS, tuberculosis, sexually transmitted diseases), immunizations, environmental health, healthcare associated infections, injury and violence prevention, occupational safety and health, older adults, public health infrastructure, public health preparedness and tobacco use (NJDOH, n.d.d).

Assessment of Healthy NJ 2020

In order to assure that the created and implemented programs and work performed fulfill the mission and achieve these goals a methodology of assessment is needed to demonstrate whether the programs are designed to make the necessary changes and improvements that fulfill the goal of improving the health of all. To support operationalization of a population health approach, an application tool, The Population Health Template (Template) which summarizes the key concepts of population health, has been developed by the Public Health Agency of Canada (PHAC, 2001). It provides a more organized and comprehensive methodology to assess a health program in relationship to a population health approach and correlates well to the Kindig and Stoddart definition of population health. The Template consists of eight major elements as displayed in Figure 4 which also shows the relationship among them:

- Focus on the health of populations (measure population health status)
- Address the determinants of health and their interactions (analyze determinants of health)

- Base Decisions on Evidence
- Increase Upstream Investments
- Apply Multiple Strategies
- Collaborate Across Sectors and Levels
- Employ Mechanisms for Public Involvement
- Demonstrate Accountability for Health Outcomes

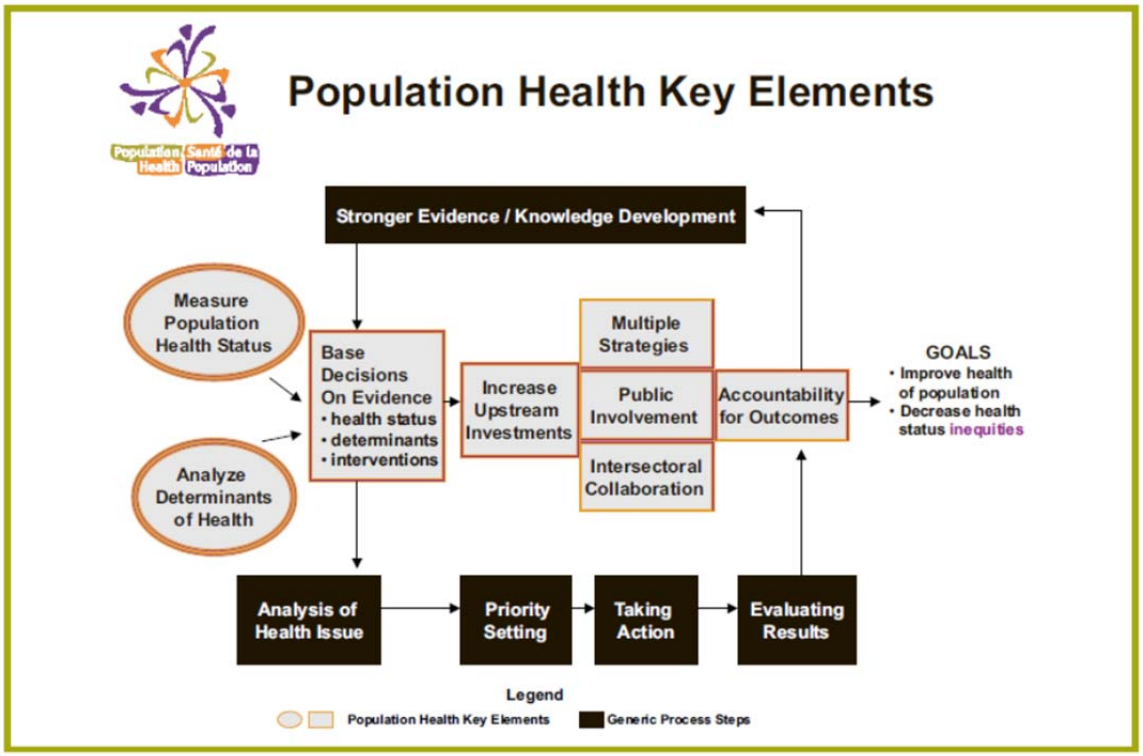

Figure 4. Population Health Key Elements

Measure Population Health Status

In order to focus on the health of populations there is a need to measure population health status. What is being measured and how it is being measured will allow for the answering of the question, “How healthy is the population and is their health improving?” (PHAC, 2001, p.9). Additionally the Template states that the measurement of health needs to occur over time and

people's lifespans. Having a valid surveillance system is required so that health related metrics can be collected, analyzed and interpreted to allow for program planning, implementation and evaluation (PHAC, 2001).

In 2007 the State of New Jersey Department of Health Center for Health Statistics launched the web site for the New Jersey State Health Assessment Data (NJSHAD) an online data access tool maintained by The NJ Center for Health Statistics (NJDOH, 2014a) supported with funding from the federal government. The site publishes online reports of health indicators which are summary measures that are designed to describe specific aspects of a population's health or health system performance. The data collection and presentation conforms to federal standards. The reports contain data, graphs and an overview including answers to the most commonly asked questions about the specific topic being presented. The site also provides, not only data about the health topic but also, links to other views that provide information on how New Jersey data compares to the United States, what are the health disparity issues and what services are available that are associated with the health topic (NJDOH, 2014b). NJSHAD supports the HNJ2020 mission "to identify critical research, evaluation and data collection needs (NJDOH, n.d.d). Additionally the data is used by LDHs to serve as a benchmark for planning and programs as well as identifying priorities and action.

Analyze the Determinants of Health

The Template explains that population health is concerned with identifying the factors that contribute to and impact a person's health according to the Template. There are many factors, or determinants of health that have been identified such as the social, economic and physical environments, early childhood development, personal health practices, individual capacity (abilities) and coping skills, human biology and health services. It is not only that the

individual determinants need to be understood but also their interconnectedness that can be impactful. A single determinant (obesity) may contribute to many health issues (diabetes and cardiovascular disease). Also positive determinants (good nutrition) may defend against health problems (obesity, cancer). Consideration needs to be made for the different populations (young and old, gender, cultures) when determining interventions (physical activity designed to protect the elderly from falls). This element assesses the health status and health status inequities as characterized by geography, age gender, culture or other defining features over a lifespan (PHAC, 2001).

HNJ2020 reports on the health status and inequities by reporting the percentages for the objectives of each topic area by each of the standard racial/ethnic groups (NJDOH, 2013a). By comparing the percentages the groups that would require additional support can be identified and prioritized. Additionally New Jersey provides these statistics on a county basis to determine geographic distinctions and by gender and age group to further delineate possible inequities (NJDOH, 2012a).

Base Decisions on Evidence

Evidence based decision, according to the Template, is an approach that gathers and analyzes information and research; qualitative and quantitative as well as formal and informal. According to the Template, many disciplines contribute to the information pool: biomedical research and statistics, epidemiology, community health and social sciences. The information needs to be critically reviewed to determine its validity and value with value being that which has a high positive impact on either determinants or health outcomes or both. The review needs to provide justification for accepting the information used in making any decisions. This information or evidence about health status and determinants and the effectiveness of

interventions are used to assess health status, identify priorities and develop strategies to maintain and improve health. The evidence needs to be sound with assessment methods and criteria fully understandable and transparent. The challenge with evidence-based decision making is that any new knowledge that generates additional information and research used in support of the decisions is continuously evolving so the need to be current is critical (PHAC, 2001). As the Union for Health Promotion and Education observes, there can be no single 'right' method or measure effectiveness and no 'absolute' form of evidence (PHAC, 2001, p. 17).

Quantitative data is collected through the national Behavioral Risk Factor Surveillance System (BRFSS) is a telephone (landline and cellular) survey that state health departments conduct monthly with a standardized questionnaire with technical and methodological assistance provided by the CDC (CDC, 2013b). The BRFSS is used to collect prevalence data among adult U.S. residents by asking questions about their risk behaviors, chronic conditions associated with disability and death and preventive health practices that can affect their health status. BRFSS results are used to monitor selected public health objectives related to disease prevention and healthy behaviors as outlined in the federal Healthy People initiative (CDC, 2013b). New Jersey uses the BRFSS data to support and evaluate rojects and monitor public health trends and needs.

In New Jersey a component of the BRFSS is the New Jersey Behavioral Risk Factor Survey (NJBRFS) administered annually which is used similarly to monitor HNJ2020 objectives (NJDOH, n.d.e). Beginning in 2009, a series of questions related to environmental and policy for physical activity, nutrition and obesity were included in the NJ BRFS (NJDOH, 2012b).

Increase Upstream Investments

The Template states that upstream investments refer to the concept that addressing the earliest or most preliminary causes of poor health outcomes has the greatest potential for

affecting population health positively. The approach looks to identify the root causes or what really starts the spiraling down of health. Upstream initiatives require sustained support because their impacts are only realized in the medium and long term timeframe (PHAC, 2001).

With the funding support of the CDC, New Jersey created an initiative to develop, implement and evaluate a state plan to prevent and control obesity and other chronic diseases through the promotion of healthy eating and physical activity. *Shaping NJ* is the statewide partnership focusing on environmental and policy changes around obesity and chronic disease prevention (NJDOH, 2012b). The state plan is designed to prevent obesity by working to address factors that are upstream to obesity and chronic diseases: healthy eating and physical activities. Healthy eating would promote increasing the consumption of fruits and vegetables and decreasing the consumption of sugary drinks and energy-dense foods. Additionally the environments of child care centers, schools, communities, and worksites would be targeted for improvements (NJDOH, 2012b).

Multiple Strategies

Population health occurs across the continuum of health: prevention, protection, promotion, intervention and care. The determinants not only include factors directly associated with health but also include factors originating in the social, economic and environmental domains as the Template explains. Consideration of innovative and inter-connected interventions and strategies across this broad spectrum of influencers can potentially yield the greatest positive impact on health outcomes. Strategies recognizing all influences and their interconnectedness seek to identify the most appropriate mix of interventions, actions and policies that will provide the greatest impact on health outcomes. Having a high level of integration and looking for synergistic opportunities should yield multiple benefits (PHAC, 2001).

The NJDOH communicated a priority of addressing chronic diseases and a new program in 2012 called the *New Jersey Coordinated Chronic Disease Prevention and Health Promotion Plan* (NJDOH, 2012b). This new initiative integrated the state's heart disease, stroke, cancer diabetes, arthritic, asthma, obesity prevention and tobacco control programs so that the individual resources could be concentrated and address these chronic diseases and factors simultaneously (NJDOH, 2012b). In 2014 New Jersey announced a parallel program called *Partnering or a Healthy New Jersey: New Jersey Chronic Disease Prevention & Health Promotion Plan* (NJDOH, 2014d). The plan was presented to not only state government representations but also to executives and public officials representing hospitals, academic institutions, businesses, non-profits, trade associations. New Jersey was seeking the commitment to adopt and promote the plan's evidence-based prevention programs and environmental strategies (NJDOH, 2014d).

Intersectoral Collaboration (collaborate across sectors and levels)

As noted above population health is not just influenced by direct health related factors; social, economic and environmental influences need to be factored in as well. These areas of influence are multi-disciplinary and usually represented by sectors outside of the usual health care or public health service sector. Defined as "intersectoral collaboration" (PHAC, 2001, p. 24), the various representatives of the different disciplines collaborate to impact health determinants. Intersectoral collaborations can have various types of relationships such as cooperative initiatives, alliances, coalitions or partnerships. A shared purpose leads to responsibility and accountability by all participating partners.

The HNJ2020 program is dependent on the shared responsibility of its citizens, communities, government agencies, not-for-profit organizations, and businesses. One key topic

area of HNJ2020 is Nutrition and Fitness. To address this key topic area and its objectives a core priority was the development of highly engaged long-term partnerships whereby people would work together to set statewide goals within specific areas related to obesity prevention and to implement population based strategies and interventions to meet these goals. With public/private partnerships with over 200 organizations, *Shaping NJ* was created as a long term (10 year) program that assesses physical activity, good nutrition and maintaining a healthy weight (DOH, 2013c). The New Jersey Department of Children and Families coordinated child care licensing requirements and a learning collaborative to support these objectives. The New Jersey Department of Transportation and the state university's Transportation Center are working with municipalities to create communities where all residents can be physically active. A local health insurance company (Horizon Blue Cross Blue Shield of NJ) promoted healthy concessions at local sport venues (NJDOH, 2013c).

Employ Mechanisms for Public Involvement

The Template explains that with a population health approach, not only is citizen participation vitally important in health improvement actions but also input from other the stakeholders, the public, comprised of government, individuals, consumers, special interest groups, industry and scientific and professional associations. Participation involves communication strategies that provide clear and accurate information. Consultation is required to gather stakeholder views and to provide opportunities for discussion and direct input in shaping policy and decision making. Citizens, because they are the recipients of the outcomes of health policies and programs, are important partners who are encouraged to become involved. The principal benefits of citizen/public participation are building relationships between policy makers and people, integrating more of the public needs, interests and concerns into decision

making, resolving problems more effectively using collaboration, expanding the technical, social, cultural context, and increasing the level of public ownership (PHAC, 2001).

Citizens are provided opportunities to contribute meaningfully to the development of health priorities and strategies and the review of health-related programs. The HNJ2020 agenda was built upon the work and experience of the previous Healthy NJ 2010 agenda where various committees included representatives from local (county) areas (NJDOH, 2005). *ShapingNJ* supports community activities through grants provided to local municipalities to develop sustainable community-based initiatives to increase access to nutritious food and places for physical activity. One city created a community garden next to a senior citizen's housing complex. Walking clubs were formed and met in the city's parks, with many participants recruited with the use local television advertisement (NJDOH, 2013c).

Demonstrate Accountability for Health Outcomes

The Template discusses that past approaches to health outcomes focused on inputs (resources utilized), processes (activities) and products. Population health changes the focus to determining the degree of change in health outcomes that can be realized through and attributed to population health interventions. A much greater emphasis is placed on results-based accountability for producing the greatest health gains with acceptable resource limits. Outcome evaluation assesses the impact on both health status and determinants. Measurement of objective and reliable variables or other performance indicators supports the ability to make accurate assessments of the impact that interventions have on population health. Collecting baseline data and setting targets and health goals are essential to demonstrate accountability. Sharing the results through public reporting is a cornerstone of a population health approach. This is a continuation of engaging the public in producing positive health outcomes (PHAC, 2001).

HNJ2020 depends on quantifiable and measurable objectives for assessing the progress New Jersey is making towards its health goals. Every objective of each topic area has a baseline percentage based on a previous year's validated number and a target percentage representing improvement with the description of the data source (NJDOH, 2013a). Additionally results are provided to the public through the NJSHAD website as Indicator Reports (NJDOH, 2014c). The reports provide various types of data dependent on its source and availability. Additional web sites are linked to these reports to provide supporting information and other related indicators

Discussion

In examining how New Jersey approaches its public health services, examples that the HNJ2020 agenda and the programs that support it address all eight elements of a population health approach to public health can be found. Valid statistics are available that support the goals and objectives for the reported health outcomes. However, changes over the years such as age groups and definitions make it somewhat difficult to track change over time. Many metrics are provided but discussion of the relationships between health outcomes and health determinants is minimal.

Prioritization of LHIs and identifying the key topic areas demonstrate that an assessment is being made. There is limited discussion or evidence found on the HNJ2020 web sites or documents to support the choices of the LHIs, key topic areas and objectives. It is difficult to make a direct link between the HNJ2020 agenda and many of the programs that are implemented to support its objectives.

Although New Jersey reports that it seeks community support, no information was found to determine how a citizen can get involved in representing their community. Outreach appears to be limited and dependent on local resources.

There was no central location to look for public presentations, health fairs or other types of health services that are provided directly by the state. This may be that the local departments of health manage the communication of these services. Information is found in many places such as the web sites, reports and newsletters. It is through the state newsletters that the state communicates recent or updated information about public health services and programs are provided to the public.

With the large number of LDHs, delivery of programs and services may be fragmented. Regional health partnerships have been established to look at synergies to improve service delivery and cost effectiveness. Also New Jersey has a very low per capita spending on health; it ranks 33rd out of 50 states and the District of Colombia (United Health Foundation, 2013).

By considering this type of comparison as part of a continuous quality improvement effort, all public health services provided by New Jersey would benefit. This approach would allow New Jersey to continue to successfully fulfill its mission to provide all residents “a state in which all people live long, healthy lives”.

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