Catalysts for Change: Harnessing the Power of Nurses to Build Population Health in the 21st Century

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INTRODUCTION

The United States is at a crossroads. The health of the nation's residents and their life expectancy is declining, while costs of health care continue to increase. At the same time, funding and support for state and local governmental public health agencies has declined dramatically.[1-3] For decades, health care payment structures have incentivized a fragmented health care system focused on treating illness and performing procedures rather than on prevention and wellness. Consequently, the United States spends more money on health care than any other country, and yet residents have shorter lives and poorer health than all other high-income countries.[4] In an attempt to change this trajectory, payers are shifting their focus to quality and value, rather than quantity, by introducing value-based payment. This change has caused a "tipping point" as health care transitions from an episodic orientation to promoting health. As a result, providers are beginning to recognize the importance of prevention, operational efficiencies, and quality outcomes for individuals and populations.

As the largest and most trusted health profession in the United States,[5-8] nurses have an obligation and an opportunity to positively influence the health status of the nation. Because nursing integrates the physical, behavioral, social, and public health sciences, nurses are uniquely prepared to promote health, not only of individuals, but also of populations. It is imperative that this underutilized population health resource becomes a full partner in bringing solutions to the national high cost/poor health dilemma.

Purpose—The purpose of this paper is to describe how nurses can best promote the health of the U.S. population in the 21st century, reversing current health declines. Specifically, this paper explores population-health related nursing roles and skills, and identifies their implications for nursing practice, education, research, and policy.

Methodology—In order to gather pertinent information for this project, a comprehensive literature review was completed and current newsletters from professional and private health-related organizations were monitored. In addition, more than 30 expert researchers, practitioners, and thought leaders were interviewed. The authors also attended key national and regional meetings to hear pre-publication initiatives, models of care, research findings, and policy implications. Finally, a national consensus conference—attended by 36 nursing leaders and educators; health care providers and payers; health economists and researchers—was hosted by the Robert Wood Johnson Foundation (RWJF) to develop actionable recommendations. Per recommended protocol, an application was submitted to the primary authors' university institutional review board and an exempt determination was received.

NURSING IN AN ERA OF POPULATION HEALTH

Nursing is not only the largest U.S. health care profession (more than 3 million strong), it is the backbone of the nation's health care workforce.[9] Nearly 85 percent of nurses (2.6 million) are currently employed in nursing.[10] For the past 15 years, nursing has been voted the most trusted U.S. profession.[8] Models of nursing are informed by a distinctive whole-person approach with therapeutic relationships as the cornerstone of practice. In addition, nurses are everywhere—in nearly every clinical site, in schools, homes, and workplaces. The full participation of this extensive group of skilled and trusted professionals is critical to reversing the country's "poor health, high cost" trajectory, and improving the health of the population.

Nursing and improved population health status

The recent focus on the health of the population brings nurses back to their origins. Florence Nightingale set an early example by using her work with individual soldiers to identify that more soldiers were dying from environmental conditions than from wounds of war.[11] In the early 1900s, Lillian Wald, credited with being the founder of public health nursing, followed sick immigrants to their tenement houses and discovered the causes of their illnesses. She said "The call to the nurse is not only for the bedside care of the sick, but to help in *seeking out the deep-lying basic cause of illness and misery*, that in the future there may be less sickness to nurse and to cure."[12 (p.65)] According to Dreher,[13] regardless of where nurses work or whether their patient is an individual, family, organization or community, they are about creating health, as well as treating disease.

Historically, nurses have brought health to people where they live, learn, work and play. They visit them in factories, inner-city housing, schools, libraries, rural farmsteads, corrections facilities, and senior centers, as well as in nearly every clinical setting in the health care system. Nurses are educated to consider health issues within a larger context that includes the social determinants of health. As a result, they are positioned to identify issues affecting the health and well-being of individuals, discern patterns across patient populations, link patients with community resources, and develop broad-based interventions.[14,15] According to Reutter and Kusher,[16] nurses have a clear mandate to ensure access to health and health care by providing sensitive, empowering care to those experiencing inequities and working to change underlying social conditions that result in and perpetuate health inequities.

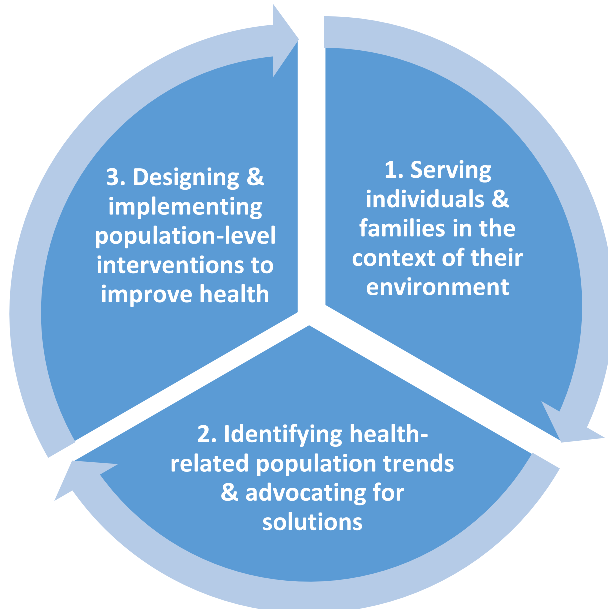
Many nurses are primarily focused on providing care to individuals requiring complex, and often high-tech care. Unfortunately, studies have shown that the majority of acute care nursing time is task-oriented—with a minimal amount of time spent teaching; providing psycho-social support; doing holistic assessments; or planning for patients post-discharge.[17,18] A population-focused nurse will move beyond the individualistic, downstream approach, viewing individuals and families in the context of their environment, and assessing how their community affects

them. Nursing roles are changing, including working with interprofessional teams; assessing community needs; managing the care of individuals and groups; monitoring trends; and advocating for individuals and communities. Nurses also will address how interventions at a population level, a patient panel, or a community can improve individual and/or group outcomes.[19]

> "If you think about population health and nursing practice, there is a role for nurses caring for individuals to better understand care coordination and how to assess for and address the social determinants of health. That is very much in the bailiwick of individual nursing practice. It doesn't require you to do big picture planning across large numbers of people, but it requires [the RN] to practice a little bit differently." (S. Swider, PhD, written communication, March 2017).

All nurses have a population health responsibility regardless of their education level or their work assignment. Population-focused nursing interventions occur on three levels: 1) serving and coordinating care for individuals and families in the context of their environment; 2) identifying determinants of health and gaps in resources (trends) and advocating for remedies; and 3) designing and implementing population-level interventions (Figure 1).[20]

Figure 1. Population Health Nursing Model[20]



BACKGROUND

POPULATION HEALTH DEFINITIONS AND STRATEGIES

The terms *population health* and *population management* have been used in various ways, often interchangeably, to describe strategies to improve the health of communities or groups.

Population health—The definition of *population health* has evolved over time. In 2003, Kindig and Stoddard defined *population health* broadly as the "health outcomes of a group of individuals, including the distribution of such outcomes within the group. These populations are often geographic populations, such as nations or communities, but can also be other groups such as employees, ethnic groups, disabled persons . . ."[21(p381)] or other defined aggregates.

While the definition of *population health* initially focused on outcomes, today it is used more broadly to include the collaborative activities that result in an improvement of a population's health status. Upstream factors (determinants of health)—not just health outcomes—are included in measurement, and there is a recognition that responsibility for *population health* outcomes is shared.[22-25]

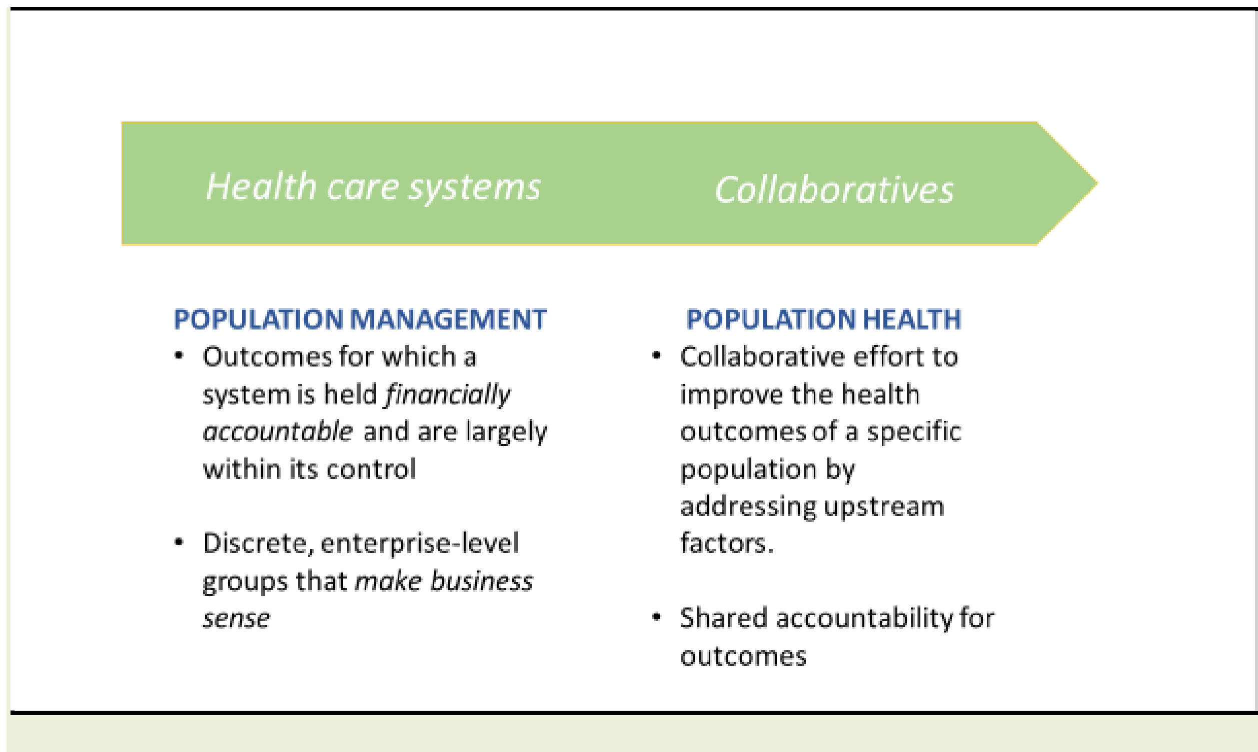
According to Stoto,[24] population health improvement is a collaborative effort designed to improve the health outcomes of a specific population by addressing upstream factors. Its purpose is to reduce inequities through interventions and policies that influence these upstream factors.[26,27] Accountability for outcomes is shared, since outcomes arise from the multiple upstream factors that influence the health of a group or community. Population health requires systems thinking. It means doing business differently, including clinical and community prevention.[28]

Population management—*Population management* (sometimes called *population health management*) has a more narrow definition. According to the Institute for Healthcare Improvement (IHI), it "orients payment and the delivery of health care services toward the achievement of specific health-care-related metrics and outcomes for a defined population."[29(p82)] Typically these are discrete, enterprise-level groups (populations) that make business sense—groups of individuals who are receiving care from a health system or whose care is financed through a specific health plan or entity; outcomes are often attached to value-based contracts. Assumed in this approach is that the outcomes for which a system is held financially accountable are largely within its control. Health care organizations may, however, partner with others (e.g., skilled nursing facilities) to meet the specific needs of the population for which they are held accountable.[30]

These two basic terms, *population health* and *population management*, describe a continuum that begins with the *population management* of a defined group of individuals for which a health care entity is paid to improve health outcomes—to a broader *population health*

collaboration in which health-related and civic organizations work together to improve health outcomes for a specific population, with shared accountability and a commitment to addressing upstream determinants of health (Figure 2). Describing these terms along a continuum is not meant to suggest that organizations must choose between them; rather, the aim is to clarify purpose, demonstrate intent, and drive strategy. The beginning of the continuum, *population management*, is likely inevitable for most health care organizations, as suggested by U.S. Department of Health and Human Services Secretary Sylvia Burwell's January 2015 announcement, seeming to tie 50 percent of fee-for-service payments to alternative value-based payment models by 2018.[29]

Figure 2. The Population Health Continuum[24,26,29]



Population Health Strategies

Because improvement in a specific population's health requires action on multiple determinants—e.g., health behaviors, health care, and social and physical environments—no single entity can be held accountable for achieving the desired outcomes. Health care organizations, public health agencies, schools, businesses, and community organizations all need to make substantial changes in how they approach health and how they allocate resources. In addition, contributions must also come from those that have a secondary influence on health outcomes, such as business, education, community development, and philanthropy.[31] Because needs vary considerably from community to community, participants

will also vary.[24] An analysis of 16 years of data from a large cohort of U.S. communities found that deaths due to cardiovascular disease, diabetes, and influenza declined significantly over time among communities with multisector networks that supported population health activities.[32]

Kindig and Isham[31] recommend the development of a multisectoral community health business partnership model that will provide a platform for the more robust and sustained implementation effort that is required to accelerate and sustain population health initiatives. Porter and Kramer[33] suggest that successful partnering requires focusing on shared values, which involves creating economic value in a way that also increases value for society by addressing its needs and challenges.

It is crucial to understand the population experiencing a specific health concern or problem in order to determine possible interventions. Community health needs assessments (CHNA) are the first step in addressing the needs of a population.[27] These assessments should describe the community or population, identify existing health care resources, prioritize health needs leading to the development of interventions, and direct resources to meet the needs identified.[24] Public health agencies are an essential partner in population health initiatives. Particularly exciting are collaborations among public health, health care and community entities in developing joint community health assessments, and the leveraging of public health data and shared resources to improve community health.

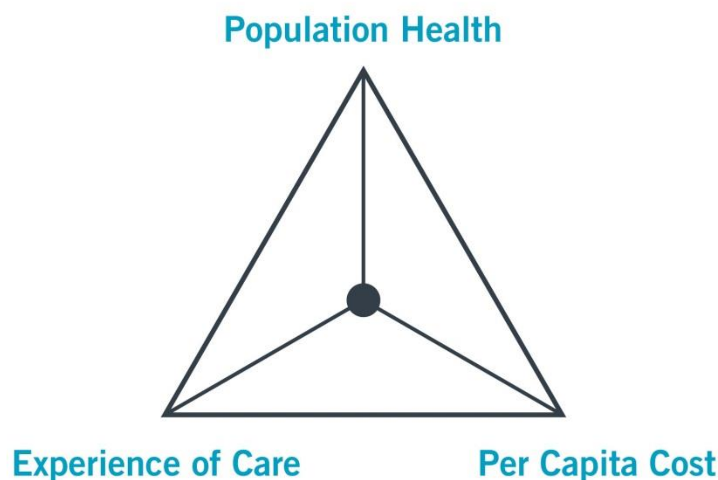
Population Management Strategies (from volume to value)

Reimbursement strategies have long influenced how health care services in the United States have been delivered. For many years, most payers reimbursed providers on a fee-for-service basis, typically with higher payments for procedures than for medical care, thus promoting increased service volumes. This fee-for-service system is now considered the single biggest obstacle to improving health care and reducing costs.[34] However, in 2012, the Centers for Medicare and Medicaid Services (CMS) significantly changed the way it pays hospitals, initiating a value-based payment approach, which rewards and holds providers accountable for the total cost, patient experience, and quality of care for a population of patients.[35] CMS and private payers are pressuring hospitals to take on more risk than ever before. This disruptive shift has required health care providers to focus on reducing costs while also improving value.[36]

In 2008, the Institute for Healthcare Improvement developed the Triple Aim as a framework for optimizing health care system performance—particularly useful for *population management*. It was IHI's belief that new approaches must be developed to simultaneously pursue three dimensions: 1) reducing the per-capita costs of health care; 2) improving the patient experience of care (including quality and satisfaction); and 3) improving the health of populations. The Triple Aim is one of the leading forces for change in the United States. Not only does it motivate

health care systems to focus on reducing costs and improving care experience, but it also includes improved population health as the third leg of the triangle (Figure 3).[31] IHI saw the Triple Aim as the foundation for organizations and communities to successfully navigate the transition from illness care to optimizing health for individuals and populations.[37,38] This idea struck a national nerve and has become a compass and organizing framework to optimize health system performance.[39]

Figure 3. The IHI Triple Aim [37,40]



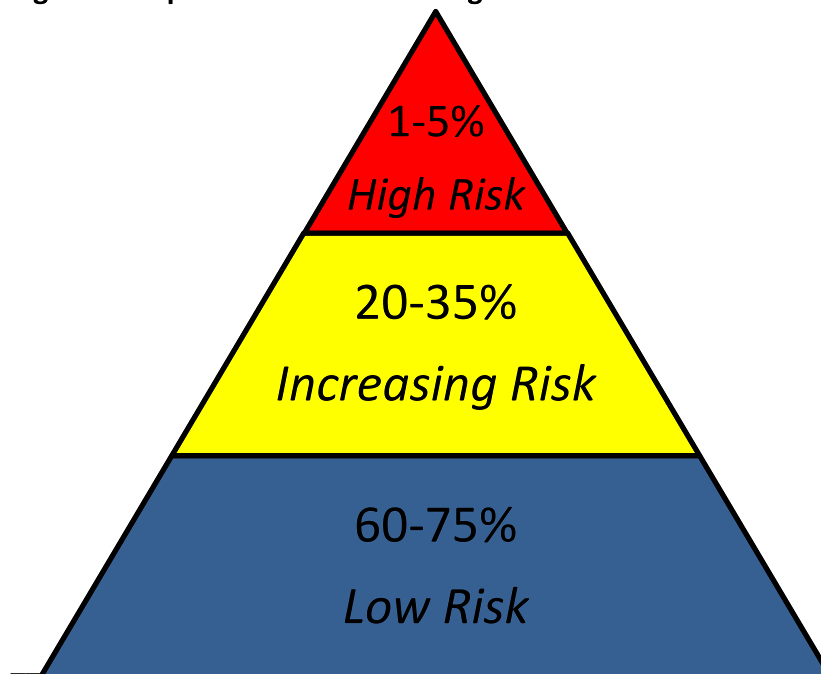
The IHI Triple Aim framework was developed by the Institute for Healthcare Improvement in Cambridge, Massachusetts (ihi.org). Reprinted with permission from IHI.

Population management strategies are used by health care providers to reduce costs and improve the outcomes of groups for whose costs they are accountable. The goal is to keep a patient population as healthy as possible, minimizing the need for expensive interventions, such as emergency department visits, hospitalizations, imaging tests, and procedures.[41] As health care entities better understand the demographics of high-utilization/high-cost residents in their service areas, they often find partnering on environmental and social improvements actually benefits them financially because of the number of high-cost patients concentrated in a specific geographic area.[42,43] Key characteristics of organizations that successfully implement population management include an organized system of care; multidisciplinary care teams; coordination across care settings; enhanced access to primary care; continuous care; self-management education; a focus on health behavior and lifestyle changes; and use of health information technology.[41]

Data applications & analysis—Understanding specific patient populations is the first priority for a health care provider seeking to effectively manage risk. Today, one percent of the U.S. population accounts for 28 percent of health care spending, and five percent of the U.S.

population is responsible for more than half of all health care spending.[44] The shift to value-based purchasing is fueling rapid deployment of predictive analytics; being able to identify and monitor high utilizers and those at risk of becoming high utilizers is essential. Typically, there are three risk levels for patients, often depicted as a pyramid. One to 5 percent of patients consume the majority of health care resources—high risk. These complex patients typically have multiple chronic conditions and comorbidities and have experienced recent hospitalizations. Approximately one-third of patients have multiple risk factors and are on their way to becoming high-utilizers—increasing risk. And the remainder, 60–75 percent have minor conditions that are easily managed—low risk.[45] Ongoing analysis can target these three patient populations and profile their locations, patterns of care, use of resources, and behavior patterns—all essential information for developing effective prevention and management strategies (Figure 4).

Figure 4. Populations at Risk for High Utilization of Health Care Services



Care coordination/management—There is consensus that nurse care coordination is the most effective strategy for reducing costs and improving outcomes for the two highest-risk groups. However, the intensity and type of care coordination/management varies according to the complexity of the patient. Care coordination is one of the six priorities identified by the National Quality Strategy to reduce care fragmentation and improve the quality of life for patients with chronic illness and disability.[46]

Primary care/chronic disease management—Primary care is at the heart of population management. It supplies the continuity required to ensure that patients receive appropriate preventive, illness and chronic care. To be successful, providers must care for patients between,

as well as during, encounters. Care teams can manage more patients and address more of their needs than the traditional primary care model. They must ensure that care gaps are addressed with patients who do not come into the office. New models of care—including group primary care visits, telehealth visits, and group education sessions—have been used to improve access, continuity, and patient engagement. While the 20–35 percent of patients in the "increasing risk" level, are not the highest utilizers of health care services, the fact that they have multiple risk factors makes them vulnerable to eventually moving into the high-usage ("high risk") group.[47]

Integrated care—Navigating the multiple isolated silos of health care providers is complex for patients and their families. Multiple admissions and discharges between sites of care is not only inefficient, it is a major factor in patient nonadherence, polypharmacy and medical errors.[48] The realization that value-based purchasing makes it financially beneficial to reduce inpatient admissions and stays has fostered a number of strategies to reduce fragmentation, including collaborating with post-acute care providers to form an integrated care system.

Community benefit—In 1969, the Internal Revenue Service (IRS) established "community benefit" as the legal standard for not-for-profit hospitals' (60 percent of all hospitals) tax exemption. Provision of charity care to those that cannot pay is an important element, but the charitable tax exemption may also be supported by diverse hospital activities designed to improve the health of the community as a whole. More recently, the Affordable Care Act (ACA) requires that all tax-exempt hospitals conduct a community health needs assessment (CHNA) every three years and develop an implementation strategy to address the identified needs.[49-51] These requirements bring additional resources to improving the health of communities and populations. As a result, hospitals are beginning to use community benefit funds to address upstream determinants of health, in concert with local health departments.[52,53] Reports of hospitals investing in things like housing; education violence prevention; early childhood education; public transportation; motorcycle safety; and water fluoridation in their communities; and acting as a "driving force" for community improvement are increasing.[54-58]

EXAMPLE: Kane County Community Assessment
A Community Health Needs Assessment (CHNA) was done in Kane County, Ill., led by the Director of the County Health Department, Paul Kuehnert, DNP, RN. A collaborative enterprise was established involving all five hospitals, two United Ways, and the community mental health board. More than 1,800 Kane County residents were involved in the process, which included a robust sampling of community residents; a child health survey; targeted focus groups; community information meetings; web-based presentations; and surveys of and presentations to policymakers. The county-wide improvement plan was completed in early 2012 and adopted by the Kane County Board, following which, the Assessment Collaborative formally evaluated the process and outcomes. [59]

PUTTING POPULATION HEALTH INTO CONTEXT

The gaps in health insurance coverage and access to high-quality health care, even though significant, are not the dominant reasons for the increasing U.S. lag in health status compared to other high-income countries.[32] Rather, social and economic determinants, mediated by behavior and geography, are the major drivers of population health dynamics.[60-62] With reimbursement transitioning from a fee-for-service to a value-based approach, health care delivery organizations are being forced to change strategies and target high-risk populations and communities to reduce utilization and improve health.[29]

Health care costs—The United States is a leader in developing cutting-edge medical technologies, pharmaceutical products, and health care treatment innovations, and has an international role in biomedical and health services research;[4] it also has the dubious distinction of having the highest health care costs per capita of any country.[63] Total health care costs continue to climb, reaching 17.5 percent of gross domestic product (GDP) in 2014,[45] almost 50 percent higher than the next-highest spender (France, 11.6 percent of GDP).[64] Although the rate of increase for health care spending in the U.S. had continued to decrease over the past decade, it actually increased by 5.8 percent in 2015[65] with estimates that it will grow to more than 20 percent by 2020. These higher costs for U.S. health care are partly due to greater use of medical technology and procedures, as well as higher health care prices.[66,67]

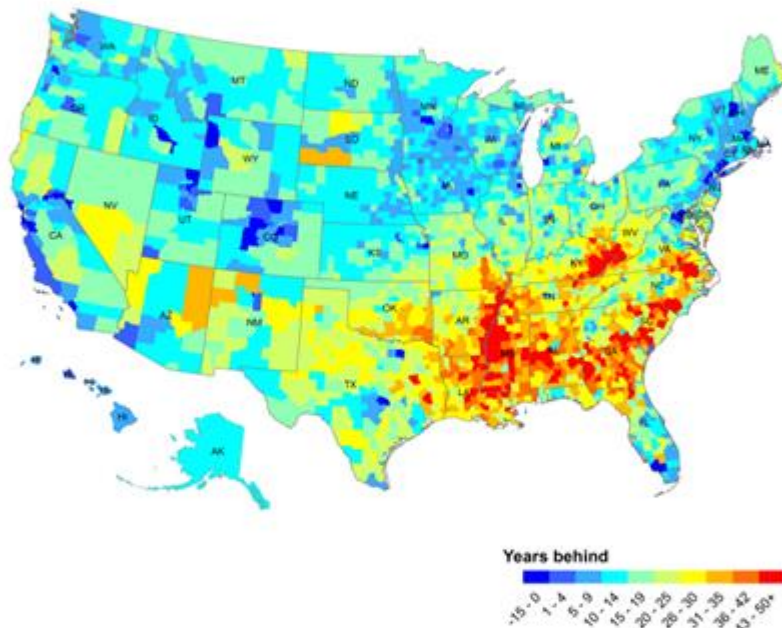
Health status—Although health status and life expectancy have continually improved over the past century, the United States is not keeping pace with other economically advanced countries.[4] Even though costs for health care are extremely high, U.S. residents have poorer health outcomes—including a shorter life expectancy—than residents of other high-income countries, the lowest (78.8 years) of 13 peer countries (range 83.4–80.4; median 81.2 years).

Over the past three decades, this difference in life expectancy has been growing, especially among women. In fact, in 2015, U.S. life expectancy declined for the first time in 22 years.

Drivers (determinants) of population health status

***Social determinants of health* (SDOH)**—The material and social conditions in which people live have the most significant impact on their health status.[16,25,28,68-71] SDOH are conditions in the environment in which people are born, live, learn, work, play, worship, and age that affect health outcomes, functioning, and quality of life. They include early childhood development; education; food security; and health care services, as well as employment; working conditions; housing shortages; income and its equitable distribution; social safety nets; social exclusion; unemployment; and employment security.[72] These social, economic and environmental conditions, in addition to health behaviors, are related to an estimated 80 percent of health outcomes in the United States.[73]

Figure 5. Male Life Expectancy by County, Compared to the World's 10 Best Countries [74]



Murray CJ, Ezzati M. Falling behind life expectancy in U.S. counties from 2000 to 2007 in an international context. Population Health Metrics; 2011. Published by Biomed Central.

Recognition that "place matters" has permeated research and policy discussions. In fact, because the SDOH have such a profound impact on health outcomes, researchers now say that a person's ZIP code or census track is far more important than their genetic code in determining health outcomes (Figure 6).[4,16,28] In fact, researchers have documented significant differences in life expectancy between neighborhoods in relatively close proximity, and also between low-

income groups in different cities.[75,76] For instance, life expectancy for the bottom income quartile was as much as 4.5 years lower in Dallas and Detroit than in San Francisco and New York—cities with a stronger interest in social policies.

Health inequities (economic factors)—The term *health inequities* has been defined as outcomes caused by inequities in those factors that contribute to health.[77] All the actionable determinants of health—personal behaviors, social and environmental factors and health care—disproportionally affect the poor.[70,78,79] Recently, a massive data study by Stanford and Harvard University researchers confirmed that life expectancy correlates with income: The richer you are, the longer you live.[75,80] The costs of health inequities is high; racial health inequities alone are projected to cost health insurers $337 billion between 2009 and 2018.[81]

Health behaviors—A major cause of premature death and poor health lies in personal health behaviors. The United States' positive experience with smoking cessation, reduced use of saturated fats, and increased use of seatbelts demonstrates that it is possible to change behavior. The models used for these population-level behavioral changes have been suggested as a way to reduce obesity—another major, preventable cause of death and disability in the United States. Both smoking and obesity are highly prevalent conditions beginning in childhood or adolescence, and are major risk factors for chronic disease. They are more common in lower socioeconomic populations; exhibit regional variation; carry a stigma; and are difficult to treat.[78]

Access to clinical care—The United States stands out from many other countries in not offering universal health insurance. In contrast to populations in other high-income countries, a large proportion of the U.S. population has been, until recently, uninsured.[4,69] In addition, cost sharing (deductibles and co-pays) is common in the United States for those who do have insurance coverage, and high out-of-pocket expenses make health care services, pharmaceuticals, and medical supplies increasingly unaffordable.[4] In the seven years since President Obama signed the Affordable Care Act into law, 20 million additional Americans now have health insurance—the largest expansion of health insurance coverage in the United States since Medicare and Medicaid were instituted.[82]

Major trends affecting nursing's role in population health

In considering nursing's role in population health, the impact of several influential national trends, in addition to health care reform, need to be considered: aging of the population; nurse retirements; public health system transformation; technology; and consumerism.

Aging population—The 65-and-older U.S. population is expected to increase from 46 million today to 98 million by 2060. This burgeoning older population will be more racially and ethnically diverse. Education levels have also increased in this age group, while the gender gap in life expectancy has been narrowing.[83] The eldest cohort (85 years and older) is also expected

to increase in size.[84] This will likely lead to even more multiple chronic conditions in the eldest of our older adults. Although deaths from stroke and cardiac disease have decreased, deaths from diabetes and dementia-related complications have increased.[84] The leading causes of death for the older adult have shifted from infectious diseases and acute illness to chronic and degenerative diseases. Two out of three older adults have multiple chronic conditions, with 66 percent of the U.S. health care budget used to care for this population.[85]

In 2008, the Institute of Medicine (IOM) emphasized the importance of building the health care workforce to care for aging Americans. They recommended enhancing the competence of individuals in geriatric care, as well as increasing recruitment and retention of both geriatric specialists and caregivers.[86] There is a recognized need for nurses who can provide complex care coordination, participate in teams, and use technology in the care of elders.[87,88]

Nurse retirements—Registered nurses (RNs) are the largest employed health care workforce in the United States.[5] However, retirement from the nursing workforce is predicted to increase from 20,000 in the past decade to nearly 80,000 in the next decade as RN baby boomers age. This will be offset by new RNs entering the workforce.[89] While nurse retirements increase, new roles for RNs and advanced practice nurses (APRNs) are emerging. What is unknown is how changing care delivery models—including models related to care management, primary care, prevention, and population health—will contribute to the future demand for RNs.[9] Buerhaus emphasizes that we need to pay attention to the loss of knowledge and "know-how" of the retiring nursing workforce. Although we may have an adequate supply of nurses, they will not have the experience of the retiring nurses they replace.[91,92] The retirement of 1 million RNs, (one-third of the nursing workforce) between now and 2030 means a tremendous loss of knowledge and experience in the nursing workforce at a time when the demand for nursing is increasing.[91,92]

> "We still have time over the next several years to prepare for the retirement of one-third of the RN workforce . . . particularly by finding ways to have older and more experienced RNs impart critical knowledge and experience to younger and less experienced RNs." (P. Buerhaus, PhD, written communication, March 2017).

Public health system transformation—The public health mission is defined by the IOM as ". . . fulfilling society's interest in assuring conditions in which people can be healthy."[93(p7)] Public health agencies are expected to provide the core functions of assessment, assurance, and policy development through the delivery of essential public health services. State, local, and tribal health departments are the backbone of this infrastructure. These governmental entities assure that basic services exist; develop policies to promote health; respond to health threats in their jurisdictions; and focus on prevention and partnerships. Unfortunately, public health funding has been insufficient; subsequently, the public health workforce has been declining,

with staffing down 22 percent between 2008 and 2016 in local public health departments alone.[59,94-96]

As population health has grown increasingly important, there has been a simultaneous recognition that public health practice needs to be reformed. In 2012, the IOM recognized that changing health care alone would not improve the health of the U.S. population, and that the failure to develop and deliver effective prevention strategies is taking a growing toll on the health of U.S. residents and on the U.S. economy. They recommended changes in funding and in the public health infrastructure, including the development of a minimum package of public health services for every community.[97] As a result, considerable activity has occurred to address these concerns, including development of a model of foundational public health services, promotion of public health agency accreditation, research on the effectiveness of public health organizations, and improving public health workforce competencies.[59,94,98] Emerging public health improvement strategies include the development of strong alliances and partnerships, emphasis on cross-sectoral environmental policy; implementation of system-level actions that affect the SDOH; adoption of a "health in all policies" approach; and the institution of the role of local, tribal and state health departments as the "Chief Health Strategist" for communities.[59,94,98-101]

Technology—In the past few years, dramatic technological advancements have been developed that have the potential for changing clinical care, prevention, and health communication. As the pace of innovation accelerates, these developments will force strategic changes in every part of the health services continuum, including hospitals, health plans, community-based providers, and population health initiatives.[102] For instance, Geographic Information System (GIS) mapping is a powerful tool—relatively new to health care—that provides the ability to focus on small geographic areas in which interventions can be delivered and managed. It helps identify community resources, as well as areas of disproportionate need.[103] Three broad areas of technology have both opportunities and challenges related to population health: self-care, telehealth and the electronic health record, or EHR.

Self-care—New information capabilities have produced previously undreamed-of capacities for people to meet their own needs. A 2016 survey found that people living in the United States are embracing multiple electronic tools to manage their health; 46 percent of U.S. adults are now active digital health adopters (individuals using three or more categories of digital health tools), up from 19 percent in 2015.[104] New digital tools, such as mobile apps, allow patients to access care at home rather than at a clinic or hospital.[102] Now everyone who has a mobile device can download some apps and obtain health-related information. Do-it-yourself (DIY) health care technology, such as smart devices and wearable technologies, promise to transform homes, workplaces and mobile phones into more convenient sites for health monitoring and intervention.

Telehealth—Telehealth is a classic disruptive innovation—something that radically changes how and where health care is delivered.[105] This includes conferencing between providers and specialists and between providers and patients; remote patient monitoring; and remote physical assessment peripherals.[105-107] It has been shown to improve quality of life and self-management; reduce hospital admissions and re-admissions; reduce emergency department visits; improve patient satisfaction; and reduce mortality and inpatient length of stay. For instance, telehealth has been used in schools to manage asthma and behavioral health issues.[105,108]

Electronic Health Record (EHR)—EHRs have improved communication among providers; improved legibility; reduced medical errors; reduced adverse drug events; reduced the number of duplicate tests; improved access to radiology and lab reports; and facilitated medication reconciliation. Individuals have access to their own clinical record through patient portals and can read, print and send their health information to providers—empowering them to be their own advocate.[109,110] In addition, EHR data can be used to identify at-risk populations and to monitor trends. Organizations that participate in health information exchanges (HIEs) have an advantage, as they can share and exchange information to better understand a patient's continuum of care. HIEs operate as central hubs, enabling stakeholders to use their own EHR systems to exchange information and access patient information.[111,112]

Consumerism—In most industries, consumerism has been a motivating influence for change and innovation. As consumers, people are looking for products that are convenient, affordable and that provide an enjoyable experience. They want services when they want them, where they want them, and how they want them. In short, "consumerism, when it is fully unleashed, is a value-seeking machine."[113(p4)] A consumer-friendly approach encourages individuals and families to play an essential role in their own health management. It allows them to choose the type of services they receive; the payment programs in which they are enrolled; and even the treatment process—all focused on improving health outcomes.

POPULATION-FOCUSED NURSING

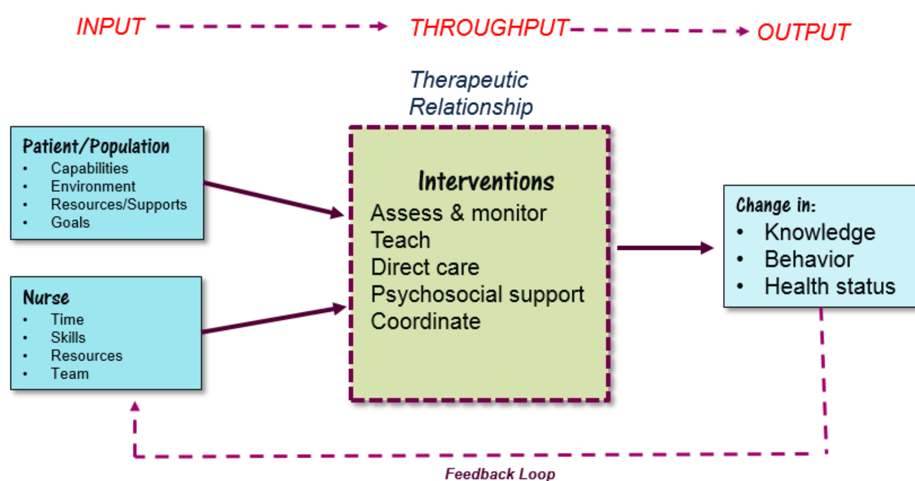
Population-focused nursing draws on the rich legacy of nursing theory and practice which has always understood individuals and their care in the larger context of their social, emotional and physical environments. Population-focused nursing integrates the tenets of public health with clinical care, thus contributing to improving the health of communities and populations.

Key Population-focused Concepts

Regardless of where a nurse works, there are four key population-focused concepts that are foundational to all nursing practice: holism, coordination, collaboration and advocacy.

Holism—A wholeness approach to nursing is essential in all positions and locations, taking into account an individual or community's environment and the determinants of health affecting them. A systems model to guide nurses working with individuals and/or populations provides a framework for holistic nursing practice in a variety of settings (e.g., acute, ambulatory, home, community). This model joins the RN's skills and resources with an individual or population *in their environment* to form a therapeutic relationship for the provision of appropriate nursing interventions—assess/monitor; teach; direct care (treat); psychosocial support; and coordinate. These interventions result in changes in knowledge, behaviors, and health status (Figure 6).[114,115] Holism and therapeutic relationships can be centered on populations, as well as individuals.[116]

Figure 6. Systems Model of Nursing Care for Individuals and Populations



Note: *Adapted from Easley-Storfjell Instruments for Caseload-Workload Management and the Omaha System.*[114,115]

Coordination—Nurses have a critical role as "boundary spanners," taking responsibility to link individuals with disparate parts of the health system and coordinating transitions of care.[117] Nurses are responsible for "minding the borders" and assuring that health care in all settings is seamlessly connected and coordinated. Coordination responsibilities may be shared with specialized nurse care coordinators/care managers working in tandem with the direct-care nurse. There are a number of evidence-based nursing care coordination or transition management models that can be applied in a variety of settings.[19] According to Lamb, care coordination is the "glue that makes the health care system a safe and coherent space."[118]

Collaboration—Collaboration goes beyond coordination. It requires partnering with others toward a common goal. Population health is a "team sport," a team effort. It involves all sectors of the population. Improving the health of communities and populations cannot be accomplished by nurses alone. Although nurses' contribution to population health is critical,

nurses do not own population health alone. Success demands collaboration across disciplines and community partners. Whatever the setting, collaboration is essential to achieve optimal results for individuals and populations, valuing the contributions of each partner and promoting teamwork. It requires collaborating with a variety of community, public, health care, business, and educational partners. A recent case study analysis of successful innovative nurse-designed models of care reinforced the importance of developing close cross-sector and community-based partnerships to promote a Culture of Health.[119]

> "It is no longer just the health department's job to be responsible for the health of the community that they serve, but everyone has a role to play, and many different groups need to be equally involved and need to be at the table." (L. Ortega, PhD, CDC, written communication, March 2017).

Advocacy—Nurses must be advocates for the individuals and populations they serve. Being able to identify gaps in services and recognize the causes of poor health for targeted populations is only the beginning of nursing practice/assessment. It is what nurses do with that information that becomes most important. Effective communication on behalf of populations is a key function of population-focused nursing. It is the second phase of the Population Health Nursing Model above (Figure 1). It is only by effectively identifying/communicating trends and advocating for solutions, that interventions and policies can be developed. To be effective, nurses need to be able to clearly communicate, using appropriate and understandable language. Nursing is the most trusted profession because of nurses' work at the individual level. However, population health and population management do not reside downstream. Advocacy for policies and resources focuses upstream on those things that influence the health of populations.

Key Issues

Effective population-focused nursing requires attention to several critical issues: nursing leadership; adequacy of the nursing workforce; nursing's value proposition; and adequate data.

Nursing Leadership—The key to implementing a population-focused vision of the future is strong nursing leadership. The 2016 National Academy of Sciences (NAS) Committee assessing the five-year progress of the Institute of Medicine's *Future of Nursing* report recognized that today's nurses are positioned to provide leadership in a variety of health care and policy settings.[120] This nursing leadership is required to accomplish the monumental culture change required to improve health and reduce costs in the United States. Nurse leaders must support a culture of continuous learning; foster trust; and ensure organizational value alignment with

every decision.[121] In addition, nurse managers and leaders must be able to incorporate system thinking while promoting holism, collaboration, coordination and advocacy.

Of particular importance in this period of transition is the ability of nursing leaders to effectively manage change.[122] Change is the new normal. A key NAS recommendation was involvement of nurses in the redesign of care delivery and payment systems.[120] The ability to use systems and organizational leadership is essential for all nurses, as is the understanding of health care policy, finance and regulatory environments.[123]

Nurse leaders should be champion advocates for improving the health of their communities—utilizing a network of internal and external resources and relationships; participating in assessing community needs; and providing leadership and support for planning and implementing strategies. Nurses at all levels require strong leadership skills to lead and contribute to population health and population management initiatives.[124] The *Future of Nursing* report recognized that if a transformed health care system is to be realized, the nursing profession must produce leaders "from bedside to boardroom."[125p7]

Toward this end, the American Organization of Nurse Executives (AONE) has identified nurse executive competencies for population health and population management.[126] In addition, interviewees for this paper identified systems thinking as a key competency, and Cianelli et al.,[127] recommend including innovation and courage as key nurse leader competencies (Table 1).

Table 1.

Synthesis of Nurse Leader Population-Focused Competencies*	
Shared decision-making	**Relationship management**
Influencing behaviors	**Communication**
Community involvement & advocacy	**Systems thinking**
Provider & academic relationships	**Diversity**
Innovation (courage)	**Governance**

*Based on AONE nurse executive population health competencies, interviews, and literature used in this paper

Nursing Workforce (adequacy and diversity)—Auerbach and Buerhaus have been closely monitoring nursing workforce changes over the past decade. After an unprecedented increase in nursing school enrollment, the projected shortages of nurses had been erased and the national-level nursing supply is expected to grow in line with demand. However, there are dramatic regional differences in expected growth in the number of RNs per capita. If recent

trends do not change, shortages are projected in the New England and Pacific regions in the next decade.[128]

Although the nursing workforce is more racially and ethnically diverse than most other health professions, diversity is greatest among licensed vocational nurses rather than the higher levels of education.[120] Improving the diversity of the nursing workforce will require ". . . focus on each step along the professional pathway, from recruitment; to educational programs; to retention and success within those programs; to graduation and placement in a job; to retention and advancement within a nursing career."[120 (p125,127)]

Nursing's Value Proposition—The shift in health care reimbursement strategy—to rewarding quality and health improvement—shapes the definition of value to mean health outcomes achieved per dollar spent and strengthens its importance.[129] In economic terms, nurses must clearly communicate their "value proposition"—a statement which identifies clear, measurable and demonstrable benefits of a particular product or service.[130] This means that nursing value needs to be demonstrated in terms of nurses' impact on the health and costs of populations as well as individuals. According to Pappas,[131] traditionally, nursing work has been defined as the activities of patient care. The concept of value now pushes accountability beyond nursing tasks or activities to include individual or population outcomes, both clinical and financial. The costs that are avoided because the quality of care improves are the most relevant to the concept of nursing value.

Fortunately, health services researchers have begun to study the clinical and cost outcomes of nursing interventions. For example, several studies have found that a BSN education, decreased nurse workloads, and supportive work environments have reduced inpatient mortality, inpatient lengths of stay, re-admissions, and health care costs.[132-135] Likewise, ambulatory care, nurse-led teams, patient self-management support, use of telehealth, education interventions, care coordination, and care of chronically ill individuals have also been shown to be effective in reducing hospitalizations and emergency department visits, increased patient satisfaction, improved clinical outcomes, and increased adherence.[136] Recent evaluations of public health nurse home visit interventions for pregnancy and parenting[137] and for health literacy outcomes show promise of positive outcomes and lead the way for further similar investigations.[138]

However, methods for documenting the effectiveness of nursing practice still need to be strengthened.[139] A 2010 national conference sponsored by the Agency for Healthcare Research and Quality recommended further development and testing of public health nursing intervention models; quality of population-focused public health nursing practice; public health nursing metrics; comparative effectiveness research; and development of minimum public health nursing data infrastructure.[140-142]

Health Data— Data fluency is a basic population health nursing competency required to make data-driven decisions and to translate research into practice. Essential in all health services is the ability to coordinate, collaborate and exchange critical information. The health care

industry is decades behind other consumer-oriented businesses in using analytics to anticipate future needs and costs.[143] Even though health systems have massive amounts of data (administrative, claims, clinical, and patient-generated [e.g., surveys] data), they aren't integrated and data are often unstructured. The electronic health record needs to be expanded with tools to power sophisticated utilization management and seamless care coordination, which can affect quality, cost and reimbursement.[144,145]

Public health data systems need improvement, as well. A recent symposium for the emerging field of population health informatics identified four broad goals, including: a) developing a standardized collaborative framework and infrastructure; b) advancing tools and methods; c) developing evidence and a knowledge base; and d) developing a framework for policy, privacy and sustainability.[146] Development of a population health record—a repository of statistics, measures and indicators regarding the state of and influences on the health of a defined population in computer-processable form—has been discussed since 1997, and could be extremely valuable in a population health environment.[147]

As the need for population-level data increases, data system interoperability—the ability to merge data from a variety of sources—is critical for mapping, monitoring, and responding to population indicators. This includes considering the role data from social media can ethically be used. A basic population health minimum data set is essential to facilitate sharing data across sectors (e.g., public health, health care systems, schools, and community collaboratives), and to provide optimal access to data for research, planning, and evaluation.

KEY ROLES

Population Health Nursing Roles

Public health nursing—In 2013, an American Public Health Association (APHA) Public Health Nursing Section Task Force reaffirmed the definition of public health nursing that had been in place since 1996, "Public health nursing is the practice of promoting and protecting the health of populations using knowledge from nursing, social, and public health sciences."[148 (p154)] They recommended the baccalaureate degree in nursing (BSN) for entry-level public health nursing and affirmed the value of graduate education with specialization in population health for positions of leadership.

In 2013, an APHA group recommended that public health nursing elements of practice include: 1) a focus on the needs of an entire population; 2) a systematic assessment of population health; 3) attention to the determinants of health; 4) an emphasis on primary prevention; and 5) application of interventions at the individual, family, community and system levels.[149] Public health nursing priorities identified by the Quad Council include: 1) supporting current and emerging roles; 2) creating innovative models for practice and interventions that include

sustainable funding; and 3) developing and supporting leadership for practice, education and research.[150]

Public health nursing roles in local and state agencies—Public health nurses in local health departments conduct community health assessments and monitor the social, political and economic factors that influence individual and population health—and develop, implement, and monitor interventions to advance the health of communities and populations. They provide insight and leadership at the community level and collaborate with a variety of community and health care entities. In addition to providing direct service to at-risk populations, public health nurses may manage programs that serve select populations and lead teams of community health workers to address specific health-related issues in a particular population.[151] Finally, public health nursing leaders are well positioned to provide leadership in local and state health departments—becoming the chief health strategist for their communities; collaborating with community partners in assessing; and planning and intervening to promote the health of populations.

Other population-focused public health nursing roles—Public health nurses' abilities to understand social and ecological determinants of health and to use epidemiologic data and an ecological perspective in identifying health risks for populations are needed across health care and community settings—including inpatient facilities; ambulatory care settings; schools; workplaces; and county, state, and federal agencies. Public health nursing practice is not now—nor is it likely in the future to be—limited to public health agencies. Public health nurses can provide leadership for population health initiatives for health care systems, including directing their community benefit initiatives; partnering in community assessments; developing community collaboratives; and developing innovative models of care. According to Orr, a number of public health nurses who have been in leadership roles in governmental public health agencies have been hired by health plans and health systems to lead or have a significant role in the development of a population health focus. She states: ". . . becoming embedded within the health care delivery system is a way public health nurses can help to more effectively support integration between public [health] and health care and advance the great potential for population health to be understood, embraced and addressed. . . ." (S. Orr, MHS, written communication, March 2017).

Public health nursing workforce—While the need for public health nursing skills and abilities is great, the growth and advancement of public health nursing is challenged by: a confusion in roles and titles; a lack of qualified public health nursing faculty and appropriate clinical placements; inadequate funding for advanced education; an aging workforce; limited opportunities in advancement; and public health infrastructure concerns. A 2012 study of the public health nursing workforce found that 31 percent of public health departments' RN workforce had diploma or associate's degrees, and that providing clinical services was their major activity.[152] They also found that: the public health nursing workforce was not as racially or ethnically diverse as the U.S. population; few minority public health nurses held leadership

positions; and public health nurses were aging. Recruitment of new public health nursing hires was reported as challenging due to lack of promotion opportunities. Recommendations from this study included: 1) developing and supporting strategies to encourage education for RNs; 2) improving the racial and ethnic diversity of public health nurses; 3) addressing organizational concerns related to recruitment, compensation and promotion; and 4) determining potential changes in public health nursing functions related to health care reform.

School nursing—School nurses are on the front lines and witness first-hand the health and social needs of children in a given community. They communicate with families and providers and connect with community resources. They regularly identify gaps in services and resources. School nurses are, in fact, valuable partners in population health initiatives.[153] According to the National Association of School Nurses (NASN), the population health potential of school nurses is enormous: "We see school nurses as not only practicing direct care for students who have chronic conditions, or have an accident on the playground, or are at risk, but also truly practicing population-based care. School nurses have a school community which includes students and their families, the staff that work in the school and the communities in which they live" (E. Maughan, PhD, personal communication, March 2017).

Recently, there has been an increase in the number of students with health needs, those at risk for health issues, and the complexity of their health needs. In an attempt to update and standardize school nurse practice, NASN developed a framework for 21st century school nursing practice aligned with a "whole school," "whole community," and "whole child" model which calls for a collaborative and coordinated approach to learning and health.[154] Key aspects of the framework include: care coordination, quality improvement, leadership, and community/public health—surrounded by standards of practice.[155]

In addition to school nurses, in the 2013–2014 school year, there were 2,315 school-based health centers in the United States, a growth of 20 percent since 2010–2011, typically staffed by APRNs.[156] These highly accessible clinics provide primary care services to the students in their service area, while 55.9 percent also provide primary care to others as well.[156] Together, population-focused school nurses and clinics may be very well-positioned to have early impacts on the health of children and their families in the communities they serve.

School nurse workforce—A 2015 NASN survey[157] found that school nurses were aging, with the average age over 55 years, which means many may retire in the next 10 years. Nearly half (45.3 percent) of respondents had a baccalaureate degree (BS/BSN), 11.5 percent had a master's degree in nursing (MS/MSN), and 15.1 percent had an associate's degree (AD) in nursing. Only 22.7 percent of school nurses were nationally certified and slightly more than half (55 percent) were state certified.[157]

Data analyst—Nurse informaticists are needed in all sectors of public health and health care—to work with vendors to ease the capture and documentation of data; identify population health nurse-sensitive indicators/metrics; increase data collection capacity; improve public

health data systems; identify at-risk individuals and populations; monitor trends; and provide actionable data for planning and evaluation. They can also work on registry and EHR structures to facilitate nurse engagement and team communication. The National Advisory Council on Nurse Education and Practice noted that health care organizations need nurses that are capable of gathering and analyzing data, promoting disease prevention, and adopting best practices for population health, in collaboration with public health agencies.[14]

Population Management Nursing Roles

Population-focused nurses can make significant contributions to both individual and population health in all health care settings in the transition from "volume to value." While nurses will continue to care for ill patients in multiple settings, they have a variety of roles working with interprofessional teams—assessing needs; monitoring and improving the safety and quality of services; coaching individuals and groups; designing informatics; and advocating for individuals and communities—all aspects of improving the effectiveness and efficiency of health care. They also address how the community affects individuals, and how interventions at a population level, a patient panel or a community, can improve individual outcomes.[19]

As reimbursement risk shifts from payers to providers, health systems are expanding post-acute care services as a key element of their strategy to reduce costs.[158] A recent study of high inpatient utilizers (individuals with multiple chronic conditions) found that as the number of chronic conditions increased, length of stay and costs per hospital stay also increased.[159] To address the need for better care for these individuals with complex health needs, five foundations joined forces and identified five priorities to accelerate health care transformation: 1) Seek effective care models; 2) share information on outcomes; 3) create payer-provider data collection partnerships; 4) promote self-efficacy; and 5) leverage state-based approaches.[160,161]

Ambulatory care—In an attempt to reduce inpatient care, ambulatory care delivery models are rapidly evolving to address SDOH, environmental factors, and access issues to support population management goals.[162,163] To achieve these goals, nurses working in these settings will practice population-focused nursing—using a holistic approach, enhanced with strong coordination, collaboration and advocacy skills. As a result, they will have extremely valuable information about community and/or population health needs based on their experiences working with individuals and families. However, if this experience and knowledge is not shared, and if there is no mechanism for joint planning and intervening, community-wide changes to improve health status will be stifled. According to the American Academy of Ambulatory Care Nursing (AAACN), maximizing the roles of RNs in the evolving health care environment will require sustained forward movement in nursing practice, education, research and leadership.[136]

Primary Care (Chronic disease management)—Currently only 6 percent to 8 percent of health care dollars are spent on primary care services.[47] A study of primary care in Europe found that strong primary care was associated with better population health, lower rates of unnecessary

hospitalizations, and relatively lower socioeconomic inequality.[164] As the U.S. population ages, the need for managing chronic disease and reducing inpatient and emergency room care becomes ever more important. In order to address the needs of this rapidly expanding at-risk population, new primary care models are being developed with expanded RN roles.[47,165]

The National Advisory Council on Nurse Education and Practice (NACNEP) recommended that in order to meet the projected demand for primary care, roles of nurses should be re-examined. They noted that the IOM recognized that nurses had responsibility for key essential components of primary care, including: integrating care; increasing accessibility to care; addressing a large majority of personal health care needs; building sustained partnerships with patients; and practicing in the context of family and community. There are roles for both APRNs and RNs in primary care. The key, however, to their impact on the health of populations and communities goes beyond their ability to change the health status of the individuals they serve. Population-focused primary care nurses will look beyond the individual to the determinants of health, and they will collaborate (partner) with others to assess, plan, and develop innovative remedies in order to improve the health of communities and populations.

APRNS—Bodenheimer and Bauer[165,166] predict that in the future, APRNs will be providing the majority of primary care, and physicians will likely focus on diagnostic conundrums and leading teams caring for patients with complex health needs. This prediction would place APRNs in a strategic position to identify trends, gaps in resources, and environmental conditions that affect the health of their clients.

EXAMPLE: Integrated Health Care (IHC)
In response to an identified need in the community, the APRN faculty at the University of Illinois at Chicago College of Nursing, in collaboration with the leading freestanding psychiatric rehabilitation agency in Illinois, has been providing integrated primary and mental health care to individuals with serious mental illness (SMI) since 1998. This integrated care model blends concepts and processes of both mental and physical health in the context of SMI and other comorbid diseases. Faculty APRNs provide primary care with additional psychotherapeutic knowledge and skills, including cognitive-behavioral interventions for lifestyle change and self-care behavioral change. Recently, IHC received an "Excellence in Diabetes Management" award from the disease management division of Illinois Medicaid, for achieving the best clinical outcomes in Illinois for patients with SMI. The individuals presenting the award were not aware that the clinics were nurse-managed. Their exact words were that the IHC results were "astonishing" and that although other practices used the same protocols, "they did not obtain the same results." IHC has also received *Edgerunner* recognition from the American Academy of Nursing.[167]

RNs—A 2016 conference hosted by the Josiah Macy Jr. Foundation, explored the opportunities for RNs in transforming primary care.[168] There was consensus that RNs, appropriately prepared

and working to the full scope of their license, can successfully implement and sustain patient-centered services for the aging and increasingly complex primary care population. Recommendations for emerging RN roles in primary care include: 1) managing the care of patients with chronic disease by helping them with behavior change and adjusting their medications according to protocols; 2) leading complex care management teams to help improve care and reduce costs for patients with multiple diagnoses (high utilizers); and 3) coordinating care between the primary care team and providers of other health services.[165] These recommendations may require changes in scope-of-practice laws and regulations, nursing curricula, and payment models.

Home-based care—In 2011, the National Research Council (NRC) declared that health care is coming home. Although cost is one driver of this shift, the delivery of health care in homes is highly valued by individuals.[169] The expanding need for in-home services; the explosion of technology advancements; bundled payment systems; the Triple Aim; and the push to reduce costly inpatient care have combined to promote increasingly creative home-based programs. Both the complexity and the intensity of health care services provided in homes are increasing. As a result, home health providers are rising to the challenges of meeting the needs and demands of these populations by exploring alternative models of care and payment approaches.[170] According to Landers and colleagues, home-based care is well positioned to drive progress toward key U.S. health care system-wide goals.[171]

EXAMPLE: VNS NEW YORK COMMUNITY NURSING PROJECT
A decade-long CMS (formerly HRSA) demonstration project at the Visiting Nurse Service of New York tested a capitated payment model that bundled home health services with other services for Medicare beneficiaries. It highlighted the value individuals place on nurses and the impact home care nurses have on their health and costs of care. Participants were attracted to the program by having their "own nurse." Their assigned nurse met them in their home, in senior centers or other locations where education or screening events were held, and was available to them at any time when enrollees felt the need to communicate. This incentivized participants to contact the nurse first when they had a health issue. Throughout the project, participant satisfaction was high, utilization of emergency and inpatient services declined, and overall costs were reduced compared to usual Medicare expenditures. [172]

Going beyond the advantage of reducing health care costs and improving the patient experience, home care nurses are in an ideal position carry out all three aspects of the Triple Aim. Nurses that provide services in homes have the opportunity to see the impact that the environment and social supports have on the health of individuals and families. They are intimately aware of service and resource gaps and care fragmentation. They are in a perfect position to identify trends and collaborate in mobilizing needed community resources to improve the health, not only of individuals, but also the health of a community or population.

Acute Care—The American Hospital Association (AHA) describes the hospital of the future as an interconnected ecosystem of hospitals, health systems, and health organizations that are: 1) providing care and leading in communities; 2) creating new models of care, services and collaborators; 3) helping communities beyond the walls of the hospital; and 4) striving toward the vision to advance health in America. They anticipate that tomorrow's hospital will be as much associated with health as with sickness, and more closely aligned in the minds of patients with the joy of living than the fear of dying. Consumerism and chronic care management are major forces requiring the shift from episodic care to continuous patient engagement through nontraditional partnerships.[173-175]

The acute care nurse may be the first step in a population management and/or population health process, assessing the needs of individuals in the context of their environment. 'Whole-person' nurses have a "critical role as "boundary spanners," with responsibility to link patients with disparate parts of the health care system."[117] Although acute care nurses work with individual patients and families, they are in a position to see trends and advocate for solutions addressing questions such as: Why are patients readmitted? Where are the resource and policy gaps? What are the prominent transition needs of specific populations of patients and caregivers that differ from others?

Care management/coordination—Two approaches to nursing care coordination/management that follow the patient from acute care into the community have shown promise for adults with multiple chronic illnesses: Transitional Care and Comprehensive Care Coordination (CCC). Transitional Care is a set of time-limited activities (4–12 weeks) designed to coordinate health care as patients move between various locations or levels of care.[176] Two prominent transitional care models that have reduced readmissions and costs are the Transitional Care Model developed by Mary Naylor,[177,178] and the Care Transitions Intervention developed by Eric Coleman.[179] Although the models differ, both engage patients with chronic illness while hospitalized, follow patients intensely post-discharge and use a transitional nursing coach or team to manage clinical, psychosocial, rehabilitative, nutritional and pharmacy needs; teach or coach patients about medications, self-care and symptom recognition and management; and encourage physician appointments.[176]

In contrast, CCC identifies individuals at increased risk of hospitalization within the next 12 months and assigns a nurse care coordinator to work with them to manage their illnesses in order to reduce risk of hospitalization. Effective models include Geriatric Resources for Assessment and Care of Elders (GRACE);[180] Care Management Plus (CMP);[181] Guided Care;[182] and the four best-practice sites that participated in the Medicare Coordinated Care Demonstration.[183,184] These models have common key components: a) interdisciplinary team care with designated care managers (RN or APRN); b) frequent face-to-face patient contact in clinical, hospital, and home settings; c) regular phone monitoring; d) relatively small patient caseloads; and e) psychosocial assessments combined with mental health and social support services as needed.[176]

SUMMARY: Population-focused Nursing Competencies and Emerging Roles

Consistent themes for nurses working with individuals and families in a population health or population management environment are the importance of: 1) a **holistic** approach (considering the physical, mental, social, and spiritual aspects in the context of an environment); 2) "minding the borders" (**coordinating** care across providers and sites of care); 3) **collaboration** (partnering with other professionals and community resources to improve the health of the individual and the community); and 4) **advocacy** on the part of the individual and the community. By observing and reporting observed trends in determinants of health and gaps in resources, population-focused nurses in all roles and locations can become a powerful force in improving the health of populations, and as a result, reduce costs of health care. Several organizations have developed lists of core competencies for public health nurses and/or population-focused health professionals.

Following is a summary of the recommended population-focused nursing competencies compiled from the literature[14,185-189] interviews, and the RWJF consensus conference attendees' group work (Table 2).

Table 2.

Key Population-Focused Nursing Competencies	
BASIC*	***ADVANCED*****
Wholeness (whole-person & whole-community care)	**Data fluency, assessment & analytic skills (including use of epidemiological data)**
Coordination	**Systems thinking**
Collaboration (teamwork/partnering)	**Public health science**
Advocacy	**Financial planning and management**
Communication	**Policy development/program planning**
Assessment/Analysis	**Ethical principles**
Cultural competency/Diversity	
Attention to determinants of health	
Relationship-building	
Leadership	

*Basic population health competencies are required of all RNs.

**Advanced competencies are required for BSN and graduate-level RNs.

In addition, there are several emerging specialized nursing roles that are particularly critical to the success of population health and population management (Table 3).

Table 3

Key Population-Focused Nursing Roles	
Population Health	***Population Management***
Lead and/or partner in community assessments, planning, implementing & evaluating interventions	**Care management/coordination**
Direct state and local health departments as the "chief health strategist" for communities	**Lead community benefit & population health initiatives**
Lead public health programs and teams of community health workers	**Chronic disease management**
Data Analyst—Prepare data; identify at-risk individuals/populations/communities; monitor and report trends	

IMPLICATIONS FOR NURSING PRACTICE, EDUCATION, RESEARCH AND POLICY

A quick and smooth transition to widespread population-focused nursing has implications for nursing practice, education, research and policy. While separate, these are also very much related. Practice is needed to inform research, education and policy; research is needed to inform practice, education and policy; education is needed to inform practice, policy and research; and policy is needed to inform practice, education and research. With change comes challenges in each area. On the other hand, with the alignment of health care systems and payers with population health, there are now more resources available to facilitate this critical evolution.

IMPLICATIONS FOR NURSING PRACTICE

As the largest and most trusted health care profession, nurses are essential to reversing the decline in health status and the increasing costs of health care. *This dilemma should be viewed as a systemic crises that requires the mobilization of all nurses in all capacities*. It requires a systematic and urgent culture change. All nurses need to be population-focused, regardless of their education level, whether their primary assignment is the care of individuals or communities, or if they are managing people or data. This requires embracing the concepts of holism, coordination, collaboration and advocacy in all areas of practice.

A major challenge for nursing practice is to accomplish the transition to population-focused nursing practice with considerable speed and a sense of urgency. This requires planning, execution and evaluation, and involves changing practice models for all generalist nurses, as well as developing specialized population-focused nursing roles. In primary care, nurses will manage complex, high and increasing risk individuals with multiple chronic and/or behavioral health conditions. They, along with other ambulatory and home-based nurses, will establish long-term therapeutic relationships with their patients and practice in the context of family and community. By observing individuals in their family and community environments, nurses will identify and mediate environmental and social barriers to health and wellness.

Nurses can use their experience and knowledge to create and test new, more effective and efficient, models of care to improve the health of individuals and populations—using technology, partnerships and other resources—to promote effective change. Nurses can also create actionable information and then make data-driven decisions—for individuals and for populations. This requires eliminating silos among and between education, research and practice—and it requires, at all levels, an understanding of how to influence policy. Nurses should be involved in designing informatics programs to effectively support patient and community interventions, and to analyze individual and population trends. And, it is critical that nurses discover, recognize and articulate their value, supporting their advocacy for individuals, colleagues, programs, and communities.

Population health nurses will partner with and across health systems—aligning community and health care partners to conduct community assessments; develop and implement health improvement plans; and direct population management, population health and community benefit initiatives. As directors of local and state health departments, they will assume the role of "chief health strategist" for communities. Population-focused school nurses should be accessible to all schools. Because they are on the front lines—identifying barriers to health in their communities and partnering to develop improvements—population-focused school nurses could be a particularly effective and efficient way to improve the health of populations, advocating for the children, families and communities they serve.

This requires, first, that nurses are prepared; that they are lifelong learners; that they are visionary; that they have the necessary tools, data, and resources; and that they possess critical communication and leadership skills. Academia and health care organizations should partner to support and prepare nurses and students in population health knowledge, skills and perspectives, and that—regardless of their position—they maintain an holistic nursing approach. In addition, strategies to prevent the negative consequences that could ensue as RN retirements rapidly accelerate are essential—including gathering information on where and when retirements will occur; developing creative ways to reduce full-time retirement; partnering older and younger RNs; and succession planning.[91]

Nursing leadership—Strong nurse executives and managers are *essential* catalysts for improvement and change; building consensus; and building a Culture of Health, lifelong learning; interprofessional collaboration; transparency; and wholeness. A pipeline for developing nurse managers and executives in all aspects of health care, population management and population health is critical. This can be a collaborative process involving formal education, training initiatives, and/or residency programs.

Nurse leaders must take responsibility for improving systems and processes. In order to redesign health care and payment reform, nurses must be able to communicate the financial, clinical and societal impacts of proposed changes. Nurse leaders must be active participants at the highest levels of their organizations and communities, and be recognized as strong policy advocates.

IMPLICATONS FOR NURSING EDUCATION

Population-focused nursing is a culture change for all nurses and particularly nurse educators. Preparing nurses for population-focused interventions is the most critical aspect for the successful development of a dynamic population health nursing workforce. This involves developing faculty expertise, population-focused curricula and practica at all levels, and addressing workforce issues, including diversity; lifelong learning; transition to practice strategies and leadership development. It also requires integration of teaching, research and practice, and tapping the resources of experienced, and possibly retired, nurse experts. This includes developing strategies for education and training of the existing nursing workforce as well as nursing students, and the development of lifelong learning strategies.

Population health is a philosophy to be integrated throughout all curricula. This requires teaching and practicing in community settings.[190] It also provides opportunities for essential faculty practice. A challenge is to balance high-tech, high-touch with population-focused competencies. This will allow students to gain practical experience in implementing concepts of holism, coordination, collaboration and advocacy, and should be reflected in NCLEX as well. Interprofessional collaborative practice, data fluency, the ability to translate research into practice, and financial acumen are all essential competencies for population-focused nurses. Nurses at all levels need to be able to understand and articulate the value they bring to population health in terms of health outcomes and costs.

Preparing nurses for emerging specialized population-focused roles—including care management, chronic disease management, data analysis, population-focused school nursing, and population-focused nursing leaders and executives—is another challenge. This may be accomplished through formal graduate programs (MS, DNP); through residencies; certificate programs and/or continuing education. Joint degree programs with Schools of Public Health (MHA, MPH) and/or Schools of Business (MBA) should be strongly considered. Currently, many nurse leaders are encouraged to obtain non-nursing graduate degrees to gain critical financial

and organizational management skills and to be recognized by their health care colleagues. Unfortunately, while they gain these additional business skills, they do not obtain advanced knowledge in nursing science. Joint programs provide both.

EXAMPLE: Nursing Student Practica, Thomas Jefferson University
"Students are at homeless shelters, street ministries, the library, all kinds of sites . . . They [community agencies] are looking to have wellness programs delivered to their clients; they are looking for health promotion; they are looking for chronic disease management. . . . This is where our DNP and our MSN students have the opportunity to get involved with the BSN students, really looking at the assessment; what is the organization interested in having our students do?" (B.A. Swan, PhD, written communication, March 2017).

The adequacy of the future nursing workforce has significant implications for education, particularly in areas of the United States with predicted nursing shortages. It will be important to not only assure that there are an adequate number of qualified nurses, but that the diversity of the nursing workforce represents the populations it serves. The aging U.S. population also has implications for nursing education, including developing the ability of RNs and APRNS to manage the care of individuals with complex chronic conditions, including mental health, in the context of their environment.

IMPLICATIONS FOR RESEARCH

According to AACN,[191] research is the foundation on which nursing practice is built and therefore, it is essential for a successful transition to effective population health, particularly as research provides actionable information on the value and effectiveness of emerging nursing roles and models of care. Key research gaps include determining the value of population health and population-focused nursing; evaluating the impact of new population-focused models and approaches to care (health and cost outcomes); identifying population health nurse-sensitive indicators/metrics on both local and global scales; identifying the nursing workforce distribution, diversity, and competencies; policy analysis; and evaluating the effectiveness of supporting technology.

Research agendas have been established for population health nurses and ambulatory care nurses by their professional organizations. Key population health nursing research priorities applicable to population-focused nursing include identifying and examining: population healthy nursing intervention models; quality of population-focused population health nursing practice; metrics of/for public health nursing; and comparative effectiveness and population health nursing outcomes.[140] In particular, work is needed to strengthen methods for documenting the effectiveness of population-focused practice, to focus on promising interventions with multisite studies, and to translate evidence into practice settings. In addition, the ambulatory care

nursing research priorities—developing a strategy to study the testable components of RN care coordination and transition; improving patient outcomes; decreasing health care costs; and promoting sustainable system change—are also essential for locations of nursing practice.[192]

An improved science base on the determinants of health and disease and the relative effectiveness of alternative approaches to improving population health is also needed, including how social factors and social environments affect health outcomes. It is particularly important to understand how social marketing and behavior change can be designed for a population-level focus, cost-effectiveness research, and an improved understanding of how the various determinants of health interact.[193]

Developing a standardized population health data framework, minimum data set and infrastructure is also a priority. Integration and interoperability of multiple diverse databases are critical to obtain timely and actionable individual and population data in order to identify at-risk individuals and groups, monitor trends and predict nursing workforce shortages. Two reports have recommended that robust nursing workforce data sets be developed and made available to researchers, policymakers and planners.[86,120]

All of this requires maintaining a robust pipeline of nursing researchers in order to advance evidence-based interventions, inform policy, and improve the health of the nation. The recent trend of reduced enrollments in nursing PhD programs is problematic. According to AACN, PhD enrollments were down by 2 percent (100 students) for two consecutive years.[191] This decline is serious and cannot be ignored.

And finally, speeding up the translation of research into practice is especially critical. Many organizations are beginning to explore the potential return on investment (value proposition) from activities to improve population health.[194]

IMPLICATIONS FOR POLICY

Policy implications for population-focused nursing include: workforce gaps; public health infrastructure; funding for nursing education and research; scope of practice; reimbursement; development and testing of nursing roles and new population health approaches; and policy analysis. While value-based payment regulations have been driving changes in health care delivery, not all federal and state policies are aligned. For instance, the focus on improving the population’s health requires an adequately trained, diverse nursing workforce in all areas of the United States for all types and levels of nursing. Of particular importance are APRNs and RNs with expertise in: primary care; management; patient and community activation; interprofessional teams; leadership and management; public health nursing; community assessment; consensus building; and faculty development. Funding for education and training in these enhanced nursing roles is needed, as well as expansion of reimbursement to include nurses and promote the use of telehealth technologies.

Reimbursement policies and regulations should also support interprofessional collaboration, improved access to health care, and the enhanced use of technology to improve access to health care and community mobilization. In addition, research funding is required to target nursing workforce issues, and development of innovative population health-related models of care; collaboration; health promotion strategies; access to data; and an adequate public health infrastructure. Of particular importance is state and federal policy that allows nurses to practice to the full extent of their training and education.

Development of accessible population health data is a policy priority, including developing ways to share data; make use of nontraditional data sources; assure interoperability of disparate data sets; and improve access to CMS claims data. The ethics of social media data usage needs to be explored, and home grown data systems need to be addressed.

A requirement to determine the impact on health of all local, state and federal policies, particularly economic policies, is needed to assure that population health is not inadvertently negatively impacted. In addition, reimbursement and policy changes are required to promote population health initiatives, to redesign primary care and home-based care, and to promote collaboration between public health and primary care entities. Finally, changes are needed to promote access to care and connectivity across health care settings.

Accomplishing policy change is a complex process. Promoting population health policies requires knowing and using the appropriate language. Words matter when talking policy. It also requires understanding policy-making systems.

RECOMMENDATIONS

This work is critical and urgent, and if it is to be successful, we must fully engage the nursing workforce. The five broad recommendations that emerged from this work are designed to do just that.

1. **Transform nursing education.** We must:
    - Integrate population-focused nursing concepts (holism, coordination, collaboration, and advocacy) into the curricula for **all nursing students**, and clarify which related competencies should be expected of students at each educational level:
        - Collaboration with not only other health professions, but other professions and sectors in the community that impact health, should be a key component of all nursing education.
        - Education should provide students with the skills they need to **understand the impact of the community on patients' health**—and how they, as nurses, can influence change within their communities to improve health.

- **Fully prepare nursing and health professional faculty** to deliver population health curricula.
- Ensure that nurses and other health professional students are **well-prepared to practice in a team-based care environment**.
- Develop programs to educate nurses for **key evolving population-focused nursing roles** in fields that include care management, chronic disease management, and population data analysis.
- **Ensure the availability of nursing education** that prepares nurses for advanced population health specialty practice.
- Collaborate with practice entities and schools of business and/or public health to prepare **a pipeline of population-focused nursing leaders.**
- Integrate population-focused competencies into **accreditation standards for schools of nursing.**
- Ensure **licensure examinations (such as NCLEX)** assess for population-focused knowledge.
- Develop **lifelong population-focused learning strategies** for all nurses and nursing leaders.
- Ensure the nursing student body reflects a diversity of perspectives, as well as the diversity of the patients they will serve.

2. **Transform nursing practice.** We must:
    - Ensure that all nursing roles and specialties, in all practice settings, **include population-focused concepts** as an integral component of practice.
    - Foster true collaboration between **nursing and other health care professions**, as well as with other disciplines, to promote coordination of care, reduce fragmentation of health and social services, and support cross-sector collaboration to promote well-being.
    - Provide nurses in all practice settings with the tools to **promote learning and behavior change and connect patients and families with local resources** that promote health and meet social and emotional needs.
    - Support and promote **access to population-focused nurses** for all schools.
    - **Promote increased data fluency and data-based decision-making** regarding population needs and trends.
    - Promote **interprofessional teams** that include nurses as leaders and equal partners in improving the efficiency and effectiveness of health care systems and process.

3. **Foster population-focused nurse leadership.** We must:
    - Promote and support nurses in new population-focused executive and managerial roles in **health systems, public health agencies, and payers** as systems shift focus

from volume to value; encourage their inclusion on decision-making committees, advisory councils, and boards.
- Nurture nurses and nurse leaders who consider individuals and **families in the context of their environment—and advocate for individuals, families, and communities** accordingly.
- **Promote and support the development of a pipeline of population-focused nursing leaders** with population-focused nurse leadership residencies, lifelong learning, and mentoring strategies.

4. **Recognize nursing's unique contribution to population health-related research.** We must:
   - Evaluate the **impact of population health nursing initiatives** on health outcomes and costs.
   - Facilitate population health research by ensuring access to **adequate funding and interoperable datasets.**
   - Promote the **rapid dissemination** of research findings and **articulate nursing's value in improving the health of populations**.
   - **Promote and support the development of a pipeline** of expert nurse health services researchers, informaticists, and population-focused data analysts.

5. **Foster nurse advocacy and support policy efforts** already in motion.
   - **Advocate for funding** for population-focused nursing education and research.
   - **Support the recommendations** laid out in the Institute of Medicine's 2010 report.

   In that report, *The Future of Nursing: Leading Change, Advancing Health*, the Institute of Medicine declared: "Now is the time to eliminate the outdated regulations and organizational and cultural barriers that limit the ability of nurses to practice to the full extent of their education, training, and competence." If we are to achieve true population health, we must also support the ongoing efforts to build those policy changes at the local, state, and national levels.

   Here's the catch: These recommendations are not merely boxes we can check. We believe they are the building blocks for the culture change our nation needs—within nursing and health care, within our communities, and across sectors and disciplines—to truly achieve the best possible health and well-being for the U.S. population.

If these recommendations are to be realized, it will take more than goodwill and will power. It requires action. We call upon:

- **Accrediting bodies** to begin the process of integrating population health concepts and competencies into accreditation standards and licensing examinations.

- **Academic institutions** to make population-focused competencies an integral component in both classroom and clinical experiences for all students, and prepare nurses for emerging population- focused roles by training them to monitor trends, advocate for solutions, and collaborate with other sectors to implement those solutions.
- **Businesses** to bring nurses to the table when considering the health of employees and communities.
- **Researchers** to evaluate the impact of population-focused nursing initiatives, to ensure access to data, and to disseminate results in ways that reach policymakers and thought leaders.
- **Policymakers** to give nurses the tools to practice to the full extent of their education and training in order to achieve population health.
- **Nurse leaders** to take up leadership roles in population health and population management.
- **Nurses on the front lines** to develop improved population-focused understanding and competencies.
- **Health systems** to fully integrate meeting community and population health needs into their strategic planning processes and collaborate with health departments and other sectors in developing strategies that impact upstream factors affecting health.
- **Other health professionals** to develop mechanisms for collaborating with nurses as full partners in promoting the health of populations.
- **Payers** to develop reimbursement strategies for tasks and tools—such as care coordination—that promote the health of populations.

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