POPULATION HEALTH

CREATING A CULTURE OF WELLNESS

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DEDICATION

To Es, Leah, Rachel, and Jake, we remember AJN with love.

— *DBN*

To Rachel, my inspiration.

— *JR*

To my mentors, my friends, and my family, especially my Sara, Mike, and Dan.

— *RJF*

To my family, friends, and mentors (DS and CB) who have supported me in my endeavors.

— *VPP*

and

To our current and future students who challenge us with their complex questions and whose quest for solutions will bring about much needed improvements in population health.

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Dr. Nash, a board-certified internist, founded the original Office of Health Policy in 1990. Thirteen years later, the Office evolved into one of the first Departments of Health Policy in an American medical college. In 2008, the Board of Thomas Jefferson University approved the creation of the new school. The Jefferson School of Population Health represents the first time a health-sciences university has placed four Masters Programs under one roof, namely a Masters in Public Health, Health Policy, Healthcare Quality, and Safety and Chronic Care Management. The goal of this innovative school is to produce a new type of healthcare leader for the future.

Dr. Nash is internationally recognized for his work in outcomes management, medical staff development, and quality-of-care improvement; his publications have appeared in more than 100 articles in major journals. He has edited nineteen books, including *A Systems Approach to Disease Management* published by Jossey-Bass, *Connecting with the New Healthcare Consumer* published by Aspen, *The Quality Solution* published by Jones & Bartlett Learning, *Practicing Medicine in the 21st Century* published by the American College of Physician Executives (ACPE), and most recently, *Governance for Healthcare Providers* published by Productivity Press. In 1995, he was awarded the Latiolais ("Lay-shee-o-lay") Prize by the Academy of Managed Care Pharmacy for his leadership in disease management and pharmacoeconomics. He also received the *Philadelphia Business Journal* Healthcare Heroes Award in October 1997 and was named an honorary distinguished fellow of the American College of Physician Executives in 1998. In 2006, he received the Elliot M. Stone Award for leadership in public accountability for health data from NAHDO. Dr. Nash received the Wharton Healthcare Alumni Achievement Award in 2009.

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Dr. Fabius currently serves as Chief Medical Officer of Thomson Reuters Healthcare and Science—the world's leading source of intelligent information for businesses and professionals. Thomson Reuters combines industry expertise with innovative technology to deliver critical information to leading decision makers in the financial, legal, tax and accounting, healthcare and science, and media markets, powered by the world's most trusted news organization. As CMO, Dr. Fabius spearheads thought leadership efforts, develops and deepens relationships with customers, advises on product development, and provides counsel to Thomson Reuters on medical issues.

Previously Dr. Fabius served as strategic advisor to the president of Walgreens' Health and Wellness division. In this role, he provided guidance to integrate an array of services through their extensive national network of pharmacies, many with retail clinics, workplace health and fitness centers, and infusion therapy sites, into a seamless population health network.

Dr. Fabius is the principal of Ab3Health, LLC, and a founder of HealthNEXT, two organizations focused on population health, health and productivity, and building organizational "cultures of health". To accomplish this, both entities utilize the five-stage road-map advocated by the American College of Occupational and Environmental Medicine as well as Six Sigma methodology. During the assessment process, organizations are compared to benchmarks to determine gaps, which are then prioritized in an implementation plan to achieve best practice.

Dr. Fabius was I-trax (AMEX:DMX)/CHD Meridian's President and Chief Medical Officer for the three years prior to its sale to Walgreens. During this tenure, he served on

the board of directors and was principally responsible for converting this financially struggling organization into a workplace health leader while quadrupling the DMX market capitalization. CHD Meridian operated over 300 workplace health centers providing fitness centers, wellness programming, occupational health, acute episodic illness treatment, and comprehensive primary care and pharmacy services. Leveraging the *trusted clinician at the workplace*™, I-trax integrated wellness, disease, and disability management programs within the proven advantaged on-site model. In his role Dr. Fabius provided visionary guidance, new product development, clinical leadership, as well as setting the research and development agenda.

Dr. Fabius also served previously as global medical leader of General Electric, responsible for the health and safety of over 330,000 employees worldwide. He spent his first decade in medical management within the health plan space, serving as a regional medical director and then corporate medical director for Cigna, U.S. Healthcare, and Aetna. This included leadership roles in utilization, disease and quality management, national accounts, e-health, and health informatics.

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FOREWORD

In the past five years, I have had the opportunity to visit a number of medical practices and health plans transitioning from paper medical records to electronic health records. In one of my favorite examples, Dr. Brent James of Intermountain Healthcare (IHC) in Utah brought me to meet a "late adopter" of the IHC electronic system. This physician ruefully reported on his longstanding reluctance to convert to electronic records, and then delightedly showed me what the change had done for him. He pulled up charts and graphs for the patients in his panel to demonstrate the good results and continuous improvement he had achieved for Hemoglobin A1C levels, an important indicator of diabetes control. I was watching someone who had shifted his focus from his individual patients to the overall population he serves. With digitization of records and registries supported by good analytic tools, healthcare providers can move up from the assembly line to a more strategic view of their work. This is an example of the power of population health on the front lines—at the provider level.

The National Committee for Quality Assurance (NCQA) has had an agenda rooted in population health since its inception. As we wrote standards for health plans and developed the Healthcare Effectiveness Data and Information Set (HEDIS), there were many heated arguments about the role of health maintenance organizations (HMOs) in holding the plan's entire population accountable, rather than limiting accountability to those who visited their physicians. The beauty of the population view is that it offers a systematic approach to improving well-being and a framework for keeping track of our nation's health status, indicating where we are improving and where we need to adopt new strategies.

Ten years ago, I had the opportunity to visit Bhutan, a country that is working on a project called the Gross National Happiness (GNH). Health status and healthcare were considered foundational elements of the GNH, along with indicators including average income, educational attainment, and forestation rate. The work being done in Bhutan is a

great example of population health at the national level: the King and Parliament developed a set of goals and have successfully worked with their public health system to achieve them.

Accountability for population health is a more complex concept in the United States. The fragmented nature of healthcare and health insurance systems contributes to the complexity. In almost all the developed nations of the world, it is well understood that the health of the citizens is a national responsibility. This goes beyond the rhetorical because the nation is either the insurer or the assembler of insurers in a scheme that covers all the citizens and because it is usually (and more obviously) the tax revenues of the country that are paying for or arranging for services. In the United States, insurance may be obtained from the federal government, a state government, an employer, directly from an insurance company, or through some combination of these. Because we do not have a national consensus that health care is a good to which all of our citizens are entitled, notions of accountability vary and often citizens are grateful that they have coverage and access to a source of care *at all*. Sorting out who is responsible for what is essential to achieving national goals.

Another key issue is our emerging understanding of the important role of citizens or patients in their own health. We have come to understand, in a much more definitive way, that the healthcare system has limits to what it can achieve and that the best health care can only be achieved with the cooperation and engagement of patients. Recent reports on the social determinants of health also highlight the importance of this issue. We have begun to understand how to motivate patients and engagement strategies will remain an important part of the agenda for the next decade. The challenge is to help patients achieve a level of understanding, motivate them to positively affect their own health, and, ultimately, to realize or build their own self-efficacy. With new technology, the patient record can become a tool shared by patients and their providers. This has the potential to make the engagement of patients around their care a reality on a broad scale.

Although there are important practical, ethical, and legal issues to be sorted out, much progress has been made by those who are already managing the health of populations. This book offers a primer on how the United States can better manage population health, from wellness and health promotion to chronic disease management, to care of the frail elderly, and palliative care for those at the end of life. While the issues are different, the underlying techniques of population management are consistent: measuring the current state, determining what needs to be done, reaching out to those in need of intervention, and establishing a new steady state. Although best individual results are achieved when each patient is supported according to his or her level of need, population health approaches address the broader landscape of healthcare consumers to preserve wellness and minimize the impact of illness.

There are unparalleled opportunities today to move a vigorous population health agenda. Many health plans and systems have established a track record and expertise in population health management, and they have good results to show for it. A growing number of medical practices have embraced the medical home model, which is based on

accountability for a panel of patients and care coordination across settings. Larger entities, like medical groups, hospitals, and integrated delivery systems, seek to become accountable care organizations committed to maintaining the health status of a population.

These developments will be facilitated by another revolution: the widespread adoption of health information technology (HIT), thanks to the commitment of the federal government to reward adoption and meaningful use of HIT. HIT opens a number of other new vistas: widespread implementation of decision support systems, real-time research using the data made available by electronic health records, and personal health records that can make patient engagement much more real and meaningful.

The road ahead, while exciting, is also fraught with challenges; however, the time to improve the health of Americans is now. Often, we are tempted to turn back or hunker down when the road ahead looks difficult. As with most challenges, going back or staying put may sound like the easy or safe option, but that is an illusion. It is increasingly clear that both the health and the health care of Americans are on a worrisome downward trajectory. A population health strategy, enabled by the new tools offered by technology and coupled with learning collaboratives, offers our best hope for a healthy future for individual Americans and for the nation as a whole.

Margaret O'Kane
President
National Committee for Quality Assurance

PREFACE

In July of 2008, the Board of Trustees of Thomas Jefferson University in Philadelphia, Pennsylvania, voted unanimously to approve the creation of the first School of Population Health in the United States, aptly named the Jefferson School of Population Health (JSPH). As part of a strategy to become a recognized national leader in health sciences education, the university has made an important public commitment to improving the health of its citizenry. As the first school of population health in the nation, we have a particular responsibility and burden. Our challenge is to train leaders for the future from across the healthcare spectrum who will go forward and improve the health of the population. This book provides a strong foundation for helping us meet that challenge.

A number of important questions must be answered as we develop a population health agenda. What exactly is population health, and how does it differ from public health? Why create a multi-authored textbook at this juncture? How did we organize such a book and who is the intended audience? We will tackle these issues in turn.

Population health is a term that is gaining greater traction in our everyday lexicon. Most thought leaders agree that population health refers to "the distribution of health outcomes within a population, the health determinants that influence distribution and the policies and interventions that impact the determinants."[1,2] Population health may also be looked at as "the aggregate health outcome of health adjusted life expectancy of a group of individuals, in an economic framework that balances the relative marginal returns from the multiple determinates of health. This definition proposes a specific unit of measure of population health and also includes consideration of the relative cost-effectiveness of resource allocation to multiple determinates."[1] Finally, other observers have noted that the term "public health has increasingly seemed too confining, whereas, the term population health has been increasingly used because it suggests a broad set of concerns, a particular perspective, rather than a specific set of activities, actors or approaches."[2]

For the authors, population health is an idea whose time has come. It is embodied in the creation of the JSPH. Population health sends an undeniably strong signal that we must take a broader perspective if we are truly to improve the health of the public. We must explicitly recognize the systems nature of care. We must strive for a better understanding of the evidentiary basis of what we do every day at the bedside and across every setting where care is provided—in assuring wellness, preventing and treating illness, and supporting populations across the life span. Finally, we must be accountable as stewards of the vast public resources for which we are accountable to our citizens.

Why a new textbook? As we launched the JSPH, it became clear that there was no single unifying treatise that captured the philosophy and mission of our school. While there have been many contributors to the science of population health, no one had brought forth a single volume as a survey of the field. No one had previously articulated the scope of the field and the need for innovative approaches, new strategies, and new practices. This text breaks new ground, and in so doing, it both suggests solutions and raises many new questions.

We hope our readers would also agree that our nation faces a population health challenge of unprecedented scope. The failure of health reform to actually tackle the issues of health and instead focus nearly exclusively on insurance reform is another reflection of how difficult this cultural challenge of improving the health of the population will be in our nation. The launch of a new school, contiguous with one of the nation's oldest and largest private medical colleges, gives us a platform and a voice that population health so desperately needs.

In his eloquent and inspiring address, "Healing and Heeling," at the Association of American Medical Colleges (AAMC'S) 2007 annual meeting, Daniel D. Federman, MD, Senior Dean for Alumni Relations and Clinical Teaching at Harvard Medical School noted that "I believe we should enlist some medical students as agents of change committed to designing a system of care that is equitable, cost-effective, prevention oriented, universal and thus, moral."[3] Now, simply change the words *medical students* to *all health science students* and one recognizes the mission of the Jefferson School of Population Health and the need for a unifying textbook to provide a platform and the tools necessary for creating such a moral system.

How is this book organized? We present three sections, including an introductory chapter (The Population Health Mandate), where we carefully define the field and describe its current state and evidentiary foundation. Section I, Providing Population Health, describes current activities, the navigation of the system, continuity of care, and the critical concepts of quality, patient safety and risk management. Section II, The Business of Health, recognizes the business case for population health and describes the financial tools, information technology, decision support and marketing necessary to bring those tools to fruition. Section III, Making Policy to Advance Population Health, is a description of the national policy discussion as it relates to improving the full spectrum of care and the educational challenges and political landscape that we will face. The concluding section, The Future of Population Health, provides a glimpse into the next decade.

Who should read this book? The editors are grateful for the participation of a large number of nationally recognized experts from across the spectrum of population health

practitioners. The book is principally organized for graduate work in population health and it could serve as the foundation for courses in schools of public health, health administration, medical care, nursing care, and pharmaceutical sciences. Every section contains content of importance to anyone else who cares about how we might more effectively improve the health of our population. Practitioners in the field will be interested in this book; perhaps even undergraduates in colleges and universities across the country who will answer the call laid out by the Institute of Medicine to improve the public's understanding of these themes. We also hope that many schools of medicine facing the challenge of educating the physicians of tomorrow will adopt this book.

Many persons played a role in the genesis of this book. As the senior editor, I would particularly like to thank our university president, Robert L. Barchi, MD, PhD, for his visionary leadership and support in the creation of the JSPH. I also want to recognize other current campus leaders including Michael Vergare, MD, Senior Vice President for Academic Affairs, and Thomas J. Lewis, Chief Executive Officer of our university hospital. This triumvirate of Drs. Barchi, Vergare, and Mr. Lewis represent a senior leadership team practically unrivaled in any other health sciences university in the country. I am also grateful to the faculty and staff of the JSPH who have traveled this unmarked path with us together in the successful launch of our new school. As authors, we would like to thank others who have built the foundation that has led to the development of this new discipline and school. Without the pioneers in utilization management, case management, disease management, health informatics, public health, and health and productivity we would not be able to realize, measure, or improve the health status of communities. We would also like to mention our gratitude to friends and family who have supported us as we pursue our passion for improving the health of populations.

Finally, we are grateful to our current and future students who challenge us with their complex questions and whose quest for solutions will bring about much-needed improvements in population health.

As authors, we take responsibility for any errors of omission or commission. Most importantly, we greatly value your feedback as readers and would appreciate hearing from you as fellow travelers on the unmarked path of population health. We are particularly interested in the value of the text as a pedagogic tool as well.

One of the hallmarks of good leadership is to help prepare the leaders of tomorrow. We hope that *Population Health: Creating a Culture of Wellness* will go a long way in pursuit of training the future leaders in our discipline.

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THE POPULATION HEALTH MANDATE

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Executive Summary

The population health mandate is to promote health and prevent disease; the strategy is to create an epidemic of health and wellness.

The need for population health management has never been more urgent. More than 43.8 million[1] Americans are uninsured and almost half (45%) of the United States (U.S.) population suffers from at least one chronic condition.[2] Healthcare quality is suboptimal and patient safety is lagging.[3] The public health system is egregiously underfunded, and while healthcare reform is a national priority, it will take at least 10 years before any benefits are realized.[4]

Population health refers broadly to the distribution of health outcomes within a population, the health determinants that influence distribution, and the policies and interventions that impact the determinants.[5,6] Accordingly, population health is holistic in that it seeks to reveal *patterns and connections* within and among multiple systems and to develop approaches that respond to the needs of populations. Population health tactics include rigorous analysis of outcomes. Understanding population-based patterns of outcomes distribution is a critical antecedent to addressing population needs in communities. That is, patterns inform the selection of effective population health management strategies to diminish problems and develop strategies to prevent reoccurrence in the future.

In 2008, the National Priorities Partnership convened by the National Quality Forum set out to address four major healthcare challenges that affect all Americans: eliminating harm, eradicating disparities, reducing disease burden, and removing waste.[7] One of the six priorities identified to address these challenges is *improving the health of the population.* This goal is ambitious, but also fundamental to healthcare reform. Improving the health of the population will require improved efforts to promote healthy behaviors and to prevent illness. The so-called "silos" in healthcare delivery must be dismantled—providers

must cooperate to advance seamless, coordinated care that traverses settings, health conditions, and reimbursement mechanisms. Interdisciplinary teams of healthcare providers committed to diligent management of chronic conditions and providing safe, high quality care will play a central role. Policy makers will be called upon to craft policies that support illness prevention, health promotion, and public health, and healthcare professionals must continue their efforts to enforce recommendations in communities. All of these efforts must align to promote health and wellness and to advance a new population health agenda. Population health is no longer a strategy, it is a mandate that has the potential to trigger *an epidemic of health and wellness*.

Learning Objectives

1. Explain the concept of population health.
2. Recognize the need for a population health approach to healthcare education, delivery, and policy.
3. Discuss the integration of the four pillars of population health.
4. Utilize this text as a resource for further population health study and practice.

Key Words

chronic care management
health policy
National Priorities Partnership (NPP)
population health
population health management
public health
quality
safety

INTRODUCTION

The term **population health** is not new, yet there is no clear consensus on a single definition. In the evolving healthcare environment where the need for positive change is evident, population health is viewed across constituencies as a solution to key gaps in healthcare delivery. In this text, population health is defined as the distribution of health outcomes within a population, the health determinants that influence distribution and the policies and interventions that impact the determinants.[5,6] Population health represents the confluence of the healthy and the unhealthy, the acute and the chronic, the clinical and the nonclinical and the public and the private. There are many determinants that affect the health of populations, but the ultimate goal that healthcare providers, public health professionals, employers, payers, and policy makers set out to achieve is the same: healthy people comprising healthy populations that create productive workforces and thriving communities.

Population health is both a concept of health and a field of study.[5] Populations can be defined by geography or grouped according to some common element, such as employees, ethnicity, or condition. As the name implies, population health involves everyone; it

does not exclude any one person or group and each individual and group comprising a population may wear many labels. For example, a man of Mexican descent who works for a carpenters union may be part of the Mexican community, as well as employee and union populations. To address needs at the population level, all of these associations must be considered. As a field of study, attention must be given to multiple determinants of health outcomes including medical care, public health interventions, and the social environment, as well as the physical environment, individual behavior, and the patterns among each of these domains.[6] This book provides the foundational knowledge and tools to consider population needs at all levels and develop strategies to meet those needs. As authors, our purpose is to promote an understanding of population health and encourage discussions and engagement of key stakeholders (healthcare providers, public health professionals, payers/health plans, employers, and policy makers) in population health.

THE CURRENT STATE OF POPULATION HEALTH

Health care in the United States (U.S.) is complex. Many argue that while we refer to health care as a "system", health care is neither structured nor does it function as a true system. Consider the characteristics of systems, such as interactivity of independent elements to form a complex whole, harmonious or orderly interaction, and coordinated methods or procedures. Health care may well represent the antithesis to a true system. Despite the devotion of more than 17% of its GDP to health care (projected to top 20% by 2018[8]), the United States performs low on five dimensions of performance: quality, access, efficiency, equity, and healthy lives compared to similar developed countries such as Australia, Canada, Germany, New Zealand, and the United Kingdom. The common element among these five nations is a universal healthcare delivery system, and some argue that the absence of universal health care in the United States explains the access disparities, inequity, and poor outcomes in addition to the exorbitant and uncontrolled costs.[9] Despite spending considerably more than any other nation on health care, the United States has a long way to go to improve the health of the nation. For example, 8% of adults (18–64 years of age) reported that they did not receive needed medical care in 2006, 10% received delayed care, and 9% indicated they did not get needed prescription drugs in the last 12 months as a result of cost.[10] Major disparities exist based on socioeconomic status. More than 43.8 million[1] Americans are uninsured and almost half (45%) of the U.S. population suffers from at least one chronic condition.[2] Healthcare **quality** is suboptimal and patient **safety** is lagging.[3] The public health system is egregiously underfunded,[11] and while healthcare reform is a national priority, it will take at least 10 years before the benefits are realized.[4] The need for **population health management** has never been more urgent.

Advances in science and technology have contributed to increases in life expectancy of more than 30 years in the past century,[12] but growth in the older population has introduced new pressures on healthcare providers to support this burgeoning population of older adults, many of whom have one or more chronic diseases. For example, 65% of men and 80% of women aged 75 years and older had a diagnosis of high blood pressure or were taking

antihypertensive medication in 2003–2006 and nearly a quarter of adults aged 60 years and older had diabetes.[10] Chronic conditions require frequent monitoring and evaluation, placing a strain on the healthcare system and making the need for care coordination even more apparent. In essence, health care in the United States is a sick care system, fueled by payment policies that reward both consumers and providers for health care that is sought primarily when illness strikes or in an emergency. While caring for the sick will always be part of health care's mission, we must finally move away from the historically disproportionate emphasis on sick care to more fully embrace health promotion and disease prevention.

POPULATION HEALTH DEFINED

Population health is the distribution of health outcomes within a population, the determinants that influence distribution, and the policies and interventions that impact the determinants.[5,6] These three key components—health outcomes, health determinants, and policies—serve as the foundation for this book. Health determinants are the varied factors that affect the health of individuals, ranging from aspects of the social and economic environment to the physical environment and individual characteristics or behaviors.[13] While some of these factors can be controlled by individuals, some are external to an individual's locus of control. For example, individuals may be coached to adopt healthier lifestyles, thereby reducing their risk for lifestyle-related diseases such as hypertension, diabetes, and smoking-related illnesses. Those same people may be genetically predisposed to cardiovascular disease or may reside in geographic locations where exercise outdoors is unsafe or air quality is extremely poor—that is, a subset of health determinants are outside of their control.

Health determinants are a core component of the ecological model used in **public health** to describe the interaction between behavior and health.[14] The model assumes that overall health and well-being are influenced by interaction among the determinants of health.[15] At the intrapersonal level, knowledge, attitude, and beliefs of individuals affect their behavior. Relationships with peers, family, and friends influence behavior at the interpersonal level and at the community level there are institutional factors such as rules, regulations, and other community factors that influence social networks. At the public level, policies and laws regulate certain behaviors.[14] These variables have a cumulative effect on health and the ability of individuals and populations to stay well in the communities where they live, work, and play.

Interaction among the determinants of health leads to outcomes, which comprise the second component of the population health definition. Population-level and individual disparities and risk factors exert significant influence on health-related outcomes. Health outcomes could be improved through access to and the provision of quality health care to all populations, regardless of insurance status, with a primary focus on health maintenance and prevention to decrease health risks. Policy development is a mechanism that supports population health management and improvement. Support and guidance for these efforts is provided by policies at local, state, and federal levels.

Public health is a core element of population health that focuses on determinants of health in communities, preventive care, interventions and education, and individual and collective health advocacy and policies. However, population health is not synonymous with public health. The principal characteristic that differentiates population health from public health is its focus on a *broad set of concerns*, rather than specific activities.[5] Population health efforts generate information to inform public health strategies that can be deployed in communities. The combination of information gathered to define problems and build awareness coupled with strategies to address needs comprises **population health management**.

As an example, consider a hypothetical community member—Wendy McDonald—whose situation illustrates the importance of considering multiple factors when using a population health approach. Wendy is obese and lives in a community where healthy food is unavailable and she does not have the resources to travel to access more nutritious options. Safe neighborhood parks and recreation centers are lacking, making physical activity a challenge for Wendy in her neighborhood. Inadequate insurance restricts her ability to receive primary medical care or guidance from a healthcare provider on how to address her obesity, and she is unaware of the disease risk factors that it presents. The population health approach provides the conceptual model underlying approaches to care delivery. Primary care practice in communities such as Wendy's could be reengineered as a patient-centered medical home, providing a comprehensive, integrated approach to disease and **chronic care management** that would support health promotion and disease prevention, leading to better short- and long-term health outcomes. In the community, a population health approach to address the challenges that Wendy faces could include adding green space for recreation and supporting healthy food options through tax credits to food stores that offer them. Underlying both of these approaches are policies that support community improvements and make health a priority, leading to better health outcomes.

The population health mandate requires that we focus on both health promotion and disease prevention. While we cannot abandon our current focus on caring for the ill, we will only advance health if we proportionately focus our efforts on promoting healthy habits and preventive care. During his 2009 plenary presentation at the Institute for Healthcare Improvement (IHI) National Forum on Quality Improvement in Health Care, Don Berwick, President and CEO of IHI, remarked, "health care has no inherent value, health does." We value our health and that of our families, communities, cities, states, and our country. Under the current healthcare model, we seek care to restore health when it is compromised and seek prevention primarily when we are sufficiently fearful about potential loss of health. Under an aspirational model of health and wellness promotion, we would seek preventive care because we value optimum health, not just because we fear health will become compromised. To that end, population health must promote health and prevent disease and create a new epidemic of health and wellness.

FOUNDATIONS OF POPULATION HEALTH

The Science

Health is a state of well-being; population health provides a conceptual framework for the study of well-being and variability between populations.[5,16] The healthcare enterprise is one small contributor to a population's overall health, yet it receives the greatest volume of resources and attention. Interactions between the healthcare, business, and political communities are rarely considered in the current illness-focused model for healthcare delivery, yet they are the drivers of population health outcomes. There is significant and as yet unrealized opportunity to advance the population health agenda and to improve health through efforts focusing on personal behavior and health promotion within each of these interactions.[17]

For healthcare providers, the expectation that they must care for *their* patients in *their* practice setting is rapidly changing as new models for affecting outcomes at the population level are being introduced. Treatment of populations aims to increase recommended prevention and screening practices and improve adherence to recommended treatment according to evidence-based, nationally recognized guidelines. These aims require teams of healthcare providers cooperating within and across settings. While individualized treatment has been the traditional approach to patient care, population level interventions that integrate a set of common aims and standards are needed to support significant and sustainable health improvements in the United States.

A key priority area in population health is management of chronic disease. Nearly half of all Americans have one or more chronic diseases, and the current and projected prevalence are only partly explained by population growth. Importantly, the emergent burden of chronic disease is the strongest signal that our current strategies are not effectively helping people get well and stay well.[2] This burgeoning population drives both cost and utilization of healthcare services.

Although we have a great deal of evidence to inform strategies to improve population health, processes remain poorly defined and implementation success is variable. While numerous national goals for population health have been proposed and targeted outcomes have been defined, the challenges of translating best practices into action remains. The Chronic Care Model provides an example of a conceptual model that could guide development of effective programs to provide better chronic care to patents. The devil is, of course, in the details. Each of the six system components that comprise the Chronic Care Model is covered in some detail in subsequent chapters of this book (Figure FM-1).

The greatest contributor to premature death from preventable chronic illness is patient behavior. Of the six model components, the degree to which patients are informed and active is critical to improved patient outcomes. Informed, active patients are more likely to learn self-management strategies and to adopt healthy behaviors. To effectively help patients manage their chronic conditions, providers need an array of tools. Because they typically have neither the time nor resources to consult the evidence base to support

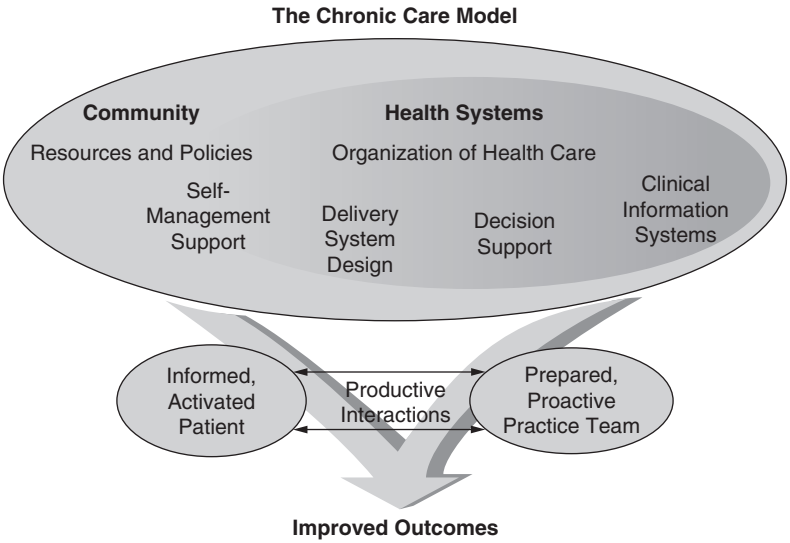


Figure FM-1 The Chronic Care Model

their clinical decisions, they need robust clinical decision support tools at the point of care. Further, they need a reimbursement model that rewards appropriate interdisciplinary communication, collaboration, and follow-up, as well as access to interoperable technologies that permit data sharing in real-time. All of these components must be supported by clinical information systems that track progress in management of chronic conditions. These practice-based components combined with community efforts (such as community-wide screenings, in-home support for elderly persons, or nutritious school lunch programs) and active participation of patients who productively interact with healthcare providers will support effective, quality chronic care management while reducing health risks and costs.[18]

One of the greatest challenges to improving the population's health is translating evidence into practice. A few state initiatives provide examples of successful population health strategies in action. In Vermont, state legislation has supported efforts to provide high quality care and control costs. The Vermont Department of Health implemented a Blueprint for Health, which focuses on improving health and the healthcare system through prevention. Vermont's statewide approach to wellness and disease prevention includes the establishment of medical homes and community health teams of nurses, social workers, dieticians, community health workers, care coordinators, and public health prevention specialists. The major commercial insurers and plans are participating, assuring that financial incentives are aligned with the state's goals. Future plans seek to include Medicare and Medicaid in such financial reform efforts within the state.[19]

In Wisconsin, David Kindig, a key thought leader in population health, is driving efforts to earn the designation of "healthiest state." The state earmarked 35% of monies realized from the sale of insurance stock to improve public health. Through a collaboration between public health and **health policy** practitioners across the state of Wisconsin, efforts to assess the state's population health and develop a plan to achieve health with less disparity are underway.[20,21] Both the Vermont and Wisconsin initiatives demonstrate that population health extends beyond health care. Achieving health and well-being at the individual, population, state, and national levels requires the collective efforts of healthcare providers, public health professionals, payers and health plans, employers, and policy makers.

The Business

As illustrated by the initiatives in Vermont and Wisconsin, there is a shared responsibility for population health. The cost burden of health care is shared between these constituents, although the distribution of costs is not always proportionate. Because more than 60% of Americans obtain health insurance coverage through their employers, businesses have a significant stake in their employees' health.[22] As healthcare costs continue to escalate, businesses are searching for strategies to decrease the cost of health benefits to employees without compromising quality. In no small way, the health of its employees determines the health of a business—a healthy employee is more productive while in the workplace and misses fewer days of work. The bottom line is that prevention generates a positive return on investment for employers. In 2009, an average of $3.27 in healthcare costs were saved for every dollar spent on employee wellness programs.[22] In this scenario everyone benefits—employees are healthier, businesses can operate more cost-effectively through improved employee performance and reduced health benefits costs, and health plans reduce outlays for preventable morbidity.

Worksites provide an ideal venue for promoting health and wellness, because consumers spend the majority of their time at work. While the business case for promoting wellness is clear, competing priorities present a challenge in many organizations. Corporate cultures, incentives for participation in the initiative, and employee health behaviors are potential barriers to implementing a workplace wellness program. However, workplace programs may be effective in two major domains of health: promoting behavior change to prevent illness, and supporting employees to self-manage chronic conditions. In the first instance, we know that 40% of premature deaths can be attributed to behavior and that behavior is a key contributor to both main causes of preventable death: obesity and smoking.[22] Workplace smoking cessation programs, for example, have been shown to be effective in mitigating risk for health effects of smoking, which cost employers $3,391 per smoker per year.[23] Unmanaged or mismanaged chronic conditions place undue burden on the healthcare system and draw on scarce resources. Employer involvement in health plan-supported disease management efforts provides employees with access to education and tools necessary to properly manage chronic diseases. In the case

of employer sponsorship of health and wellness programs, the best available evidence supports common sense—that employees who are well provide the greatest benefit to their organization.[24,25]

The Politics

Prevention, health, and wellness efforts must be supported by policy and regulation to advance the population health agenda. Just as in any improvement effort, building awareness is the first step toward making lasting change. Throughout this book you will learn more about the key roles of population members in identifying population health needs and the importance of data and measurement on which to base causal inferences and actions. For example, the current rates of obesity and smoking in the United States, the top two causes of preventable death, represent needs that must be addressed through population-based initiatives.[22] Policies that drive population health efforts must be created at the local, state, and national levels. Policy making serves as the foundation of the population health infrastructure. Implementation of policies to improve the health of the population often requires significant resources, causing stakeholders to face difficult decisions about priorities. In both Vermont and Wisconsin, federal monies made initiatives possible to improve health in their state.[19–21]

The workforce that will provide high-quality, population-based health care in the future must be trained now. Education reform is needed to ensure the competency of future leaders and practitioners in health care, public health, business, and health policy. Finally, research is needed to inform strategies to address population health needs. Similar to the benefits of disease management and wellness initiatives realized by employers, policies that support health and wellness will also contribute to the wealth of the nation.

FRAMEWORKS FOR INNOVATION

Healthy People 2020

A few key initiatives provide a framework for innovation that aspires to make population health efforts the norm rather than the exception. As in all industries, common goals and objectives, guidelines and standards in healthcare provide an understanding of expectations and drive efforts to provide safe, quality care. Since 1979, the U.S. Department of Health and Human Services (DHHS) has been leading efforts to promote health and prevent disease through identification of threats and implementation of mechanisms to reduce threats. *Healthy People* sets national health objectives for a 10-year period based on broad consensus and founded on scientific evidence.[26] The current version, *Healthy People 2010*, focuses on two key overarching goals: to increase quality and years of healthy life and eliminate health disparities. To provide a blueprint for health promotion efforts, *Healthy People 2010* delineates 28 focus areas ranging from access to care to communication. In addition, clinical conditions were defined as priorities to achieve the two broad goals.[27] The next iteration, *Healthy People 2020*, contains 38 focus areas. The four overarching goals outlined in the 2020 version include: attaining high quality, longer lives free of

preventable disease, disability, injury, and premature death; achieving health equity, eliminate disparities, and improve the health of all groups; creating social and physical environments that promote good health for all; and promoting quality of life, healthy development, and healthy behaviors across all life stages.[28] The *Healthy People* objectives are primarily used by public health professionals to drive community efforts based on defined needs. Containing both clinical and non-clinical measures, *Healthy People* can also serve as a guide for population health efforts and a roadmap for interdisciplinary collaboration, creating a shared responsibility for health and wellness.

Triple Aim

In 2007, the Institute for Healthcare Improvement launched the Triple Aim, an example of population health in action. The Triple Aim provides an agenda for optimizing performance on three dimensions of care: (1) the health of a defined population, (2) the experience of care for individuals in the population, and (3) the cost per capita for providing care for this population.[29] "Population" is defined by enrollment or inclusion in a registry. Groups of individuals defined by geography, condition, or other attributes can be considered a population if data are available to track them over time. At the core of this initiative are efforts to optimize value. A number of integrators across the United States are working to implement strategies to achieve the Triple Aim. At the macro-level, integrators pool resources and make sure the system structure supports the needs of the population. At the micro-level, integrators ensure that the most appropriate care is provided to patients.[29] Healthcare institutions that are successful at meeting the Triple Aim would reduce hospitalizations, apply resources to patient care that are commensurate with their needs, and build sustained relationships that are mindful of patient needs.[30] While there is still a great deal of work to be done to optimize performance on the three objectives and achieve this ideal situation, the Triple Aim has built awareness and offers a framework for population health management. (See Chapter 10 for more information on the Triple Aim.)

National Priorities and Goals

Many groundbreaking reports have grabbed the public's attention and set priorities for improvement, but few have enacted an action plan to reach the goals. The **National Priorities Partnership (NPP)** is unique. The Partnership represents the confluence of key thought leaders with a variety of backgrounds who joined together to achieve a common goal: to create a plan for transformational change in the way we deliver care. This collaboration of representatives from 28 multi-stakeholder organizations was convened by the National Quality Forum to develop a set of National Priorities and Goals. The Partners recognized that "we must fundamentally change the ways in which we deliver care" to improve access to safe, effective, and affordable health care and envisioned a plan to achieve transformational change. The priorities were set with four key challenges in mind: eliminating harm, eradicating disparities, reducing disease burden, and removing waste.[31] To address these challenges, six priority areas were identified based on opportunity

for the greatest impact; these include patient and family engagement, population health, safety, care coordination, palliative and end-of-life care, and overuse. Workgroups were established for each priority area to identify high-leverage areas where there is greatest opportunity for substantial improvement and to develop strategies to address those areas.[31] The collaboration within the workgroups represents the establishment of a population health action plan that the NPP will be integral in carrying out.

The second priority area identified by the Partners was to improve the health of the population. To achieve this priority, health and wellness must be fostered at the community level through a partnership between public health and healthcare systems. The goal is to promote preventive services, healthy lifestyle behaviors, and measurement based on a national index to assess health status.[31] The strategies developed by the workgroup endeavoring to achieve this goal will form the future of population health. These priorities and goals will continue to spur action and innovation and serve as a model for population health improvement.

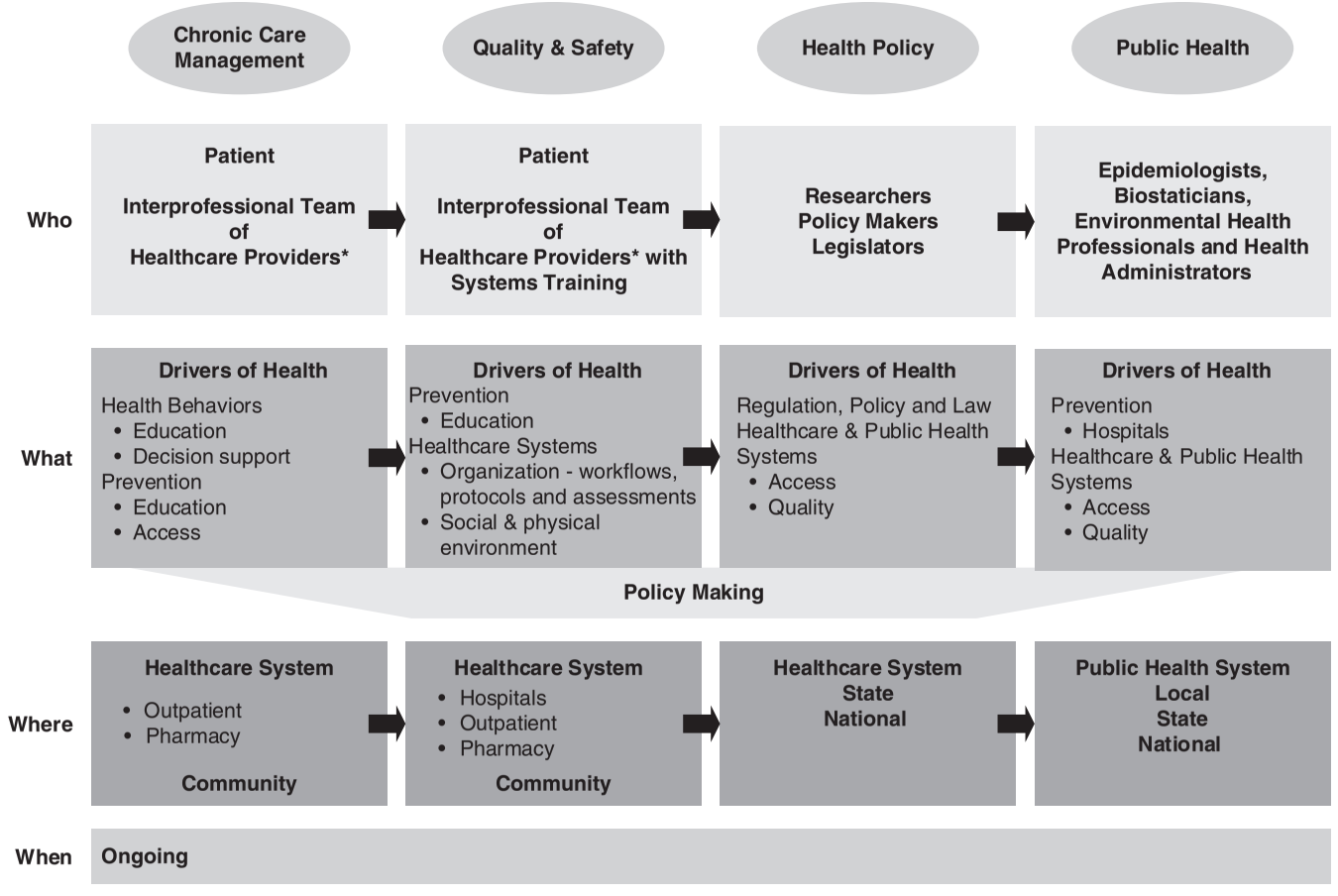
WORKING IN POPULATION HEALTH

In order to achieve the ambitious goal of improving the healthcare system in the United States, we must be prepared to broaden our current focus, the results of which will allow managed withdrawal from our addiction to acute, episodic health care. This will mean making a commitment to incorporate population health primary prevention strategies in our lives, as well as better coordinating care for those suffering from chronic illnesses. Key thought leaders and policy analysts are in agreement that focusing on primary prevention strategies, i.e., health promotion and wellness activities, will ultimately improve the overall health of our citizens and decrease the costs associated with over-medicalization. Three lifestyle modifications—eliminating and reducing tobacco use, weight reduction, and increasing regular physical activity—have been consistently identified in population-based epidemiologic research as most likely to reduce the prevalence of chronic conditions. In addition to lifestyle changes, utilizing preventive services such as cancer screenings, blood pressure and cholesterol monitoring, and health counseling promotes early detection of disease. Secondary prevention healthcare strategies are important for early detection of disease. These prevention efforts will reduce barriers to early treatment or completion of therapy, leading to improved treatment outcomes and reduced disease chronicity. Detecting an early stage breast cancer during mammography followed by initiation of treatment is an example of secondary prevention. The third population health preventive strategy, tertiary prevention, focuses on minimizing disease complications and co-morbidities through appropriate, evidence-based treatment and—critical to reducing healthcare costs—by coordinating and providing continuity of care for chronic conditions. This is best accomplished by incorporating the Chronic Care Model into healthcare systems and monitoring disease-specific indicators to ensure quality care and maximize quality of life for patients and their families.[32] Prevention and disease management are integral to maintaining population health and encouraging wellness. All healthcare professionals have a role to play.

Population health rests on four pillars: chronic care management, quality and safety, public health, and health policy (Figure FM-2). The interaction between each of these pillars in education and practice lays the foundation for achieving population health goals and strategies (Figure FM-3). Only 55% of U.S. adults receive recommended preventive care, acute care, and care for chronic conditions such as hypertension (high blood pressure) and diabetes.[33] This daunting figure illustrates the need for collective patient, provider, public health, employer, health plan, and policymaker efforts to improve health and wellness. Given the large proportion of the population suffering from chronic conditions, we must consider how we can improve coordination of care across the many settings where care is delivered, and promote evidence-based clinical management and effective self-management. Both behavior and prevention play an important role in chronic care management. Access to screening and counseling for chronic conditions is integral to effective treatment. For the diabetic patient, regular HbA1c blood tests are needed to assess whether the disease is under control. Education is another key component in chronic care management because treatment decisions need to be made jointly by the patient and the provider. Patients' understanding of their disease and treatment options is integral to well-informed healthcare decisions. Taken together, these approaches will support quality of life and function, contribute to the health of populations, and reduce the use of costly acute care for preventable problems arising from poorly managed chronic illness.

Similar to chronic care management, the second pillar, quality and safety requires collective efforts of patients and interprofessional teams of healthcare providers. Quality and safety improvement relies on activated patients as well as provider teams that are motivated to examine and modify the structure of healthcare delivery and the processes or workflows that lead to errors. Since the 1999 Institute of Medicine Report, *To Err Is Human*, a number of organizations have identified best practices and made recommendations on how to design systems and processes to make health care safer.[34] Synergy between these groups will be integral to achieving gains in quality and safety. Local, state, and national public health efforts must support and complement the work being done in local healthcare institutions. The resulting public attention and awareness of quality and safety goals can serve to activate consumers.

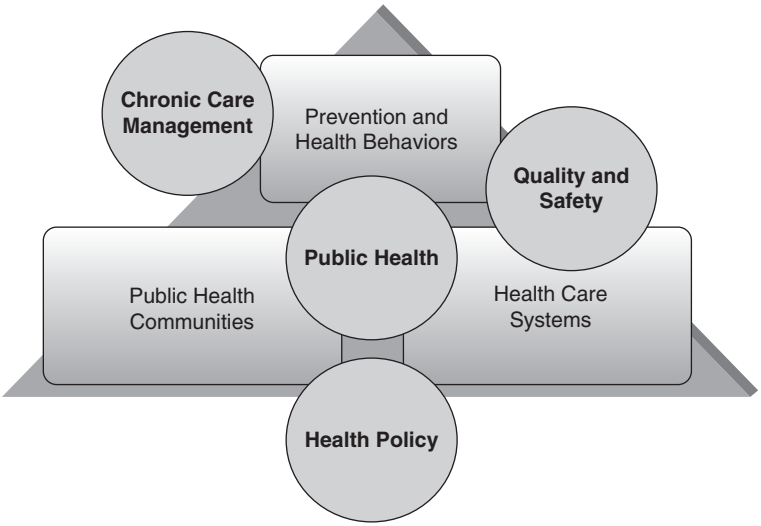
Through interaction with communities and healthcare institutions, public health professionals serve as educators and advocates. The third pillar, public health, provides a framework for identifying health determinants, health disparities, and disease burden and for implementing strategies to address community-wide health concerns. As the fourth pillar, policy efforts support population-focused chronic care management, quality and safety, and public health. For example, current pay-for-performance initiatives represent policy support that will drive adoption of community-wide quality and safety standards. Taken a step further, making the data available for other healthcare constituents and consumers to review and compare their performance (i.e., transparency) creates a sense of accountability for performance, which the evidence supports creates an impetus for improvement. Future policy changes supporting transparency and public accountability



* An interprofessional team of healthcare providers includes both clinical (physicians, nurses, pharmacists, allied health professionals, dentists, radiologists) and nonclinical (healthcare administrators, quality, safety, and public health professionals) professionals.

Data from Booske BC, Kindig DA, Nelson H, Remington PL. *What Works? Policies and Programs for a Healthier Wisconsin-Draft.* University of Wisconsin Population Health Institute, January 2009.

Figure FM-2 The Four Pillars of Population Health



Public health communities and healthcare systems serve as the foundation on which the population health infrastructure rests. Healthcare providers, researchers, policy makers, legislators and public health professionals who work in the public health communities and healthcare systems partner with patients to focus on prevention and healthy behaviors. Professionals in chronic care management, quality and safety, public health, and health policy must work together to develop a framework to prevent conditions that burden the population both physically and economically. Interdisciplinary collaboration will strengthen the foundation of the population health infrastructure and lead to improved population health management.

Figure FM-3 An Interdisciplinary Model for Population Health

for health and wellness will be necessary to meet the population health mandate. Taken together, the population health goals, strategies, and implementation tactics associated with the four pillars of chronic care management, quality and safety, public health, and health policy will drive population health efforts to achieve health and wellness.

ORGANIZATION OF THIS BOOK

Population Health: Creating a Culture of Wellness aims to integrate evidence, practice innovations, and business perspectives that have neither been well defined nor articulated in the past. Because population health is a rapidly evolving discipline and science, there is disagreement, and even controversy, about the inherent value of many of the key concepts and their conceptual and operational definitions. We hope that the diverse perspectives of the authors, each an expert in her or his field, will trigger rich dialogue among students and professionals, thoughtful consideration of the premises, and ultimately—*change*.

The book is organized into three sections representing the perspectives of healthcare providers and public health professionals, businesses such as payers and employers, and policy makers. This book has been designed to serve as a primer on population health for

students and professionals alike. Each of the chapter topics has been carefully selected to provide an overview of current thinking and strategies that must be initiated to create a healthcare system that emphasizes health and wellness to the same degree—and eventually a greater extent—as treatment of acute illness. The first section, *Providing Population Health*, covers the need to change our approach to healthcare delivery by providing an overview of the current efforts and recommendations for improvement. The second section, *The Business of Health*, provides a discussion of the value proposition for health and tools that can be utilized in practice to promote wellness. The third section, *Making Policy to Advance Population Health*, provides an overview of policy and ethical considerations and offers support for education as well as research and development to learn more about how to make population health efforts successful. Each of the chapters can be used independently to broaden knowledge on a specific topic or combined with other chapters in a section to provide a comprehensive overview of each of the perspectives. Each author has included study and discussion questions at the conclusion of the chapter to assess accomplishment of the learning objectives. These questions can also serve as a tool to generate conversation with peers. "Suggested Readings and Web Sites" are also included in each chapter to provide additional resources related to the chapter contents.

This text has been designed to serve as an educational foundation for both professionals and students on the genesis and growth of this important topic. It describes a population-based approach to education applicable to professionals in disease management, chronic care management, quality and patient safety in addition to students studying those topics in addition to public health, health policy, healthcare administration, medicine, nursing, and other related health professions. The contributing authors are key thought leaders in their fields with broad experience across the domains of population health management. We invite you to adapt and rigorously apply the tools and strategies described in this text to address population health needs in your practice, business, or policy realm and to advance the nation's population health mandate—indeed, to spark a new *epidemic of health and wellness*.

CONCLUSIONS

We are faced with many challenges in health care and the strategies we use to address both existing and emerging challenges will determine the future health of our nation. Traditionally, our focus has been on health care that is reactive, but we realize to improve the health of our nation, we must be proactive in promoting health and wellness.[25] Currently available evidence has identified population needs, but there has not yet been a population health action plan defined to address those needs. In the words of Goethe, "Knowing is not enough; we must apply. Willing is not enough; we must do."[15] The National Priorities Partnership represents the best example of an action plan, but it will require the collective efforts of many to truly create transformational change. After reading

this text you will be primed to participate in population health efforts to promote health and wellness. As a student or a population health professional, we hope that you will consider this text a call to action.

STUDY AND DISCUSSION QUESTIONS

1. What is population health?
2. Why is a population health approach needed to promote health and wellness?
3. How do the four pillars of population health work together to improve population health?
4. What is your role in population health?

SUGGESTED READINGS AND WEB SITES

READINGS

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WEB SITES

Dartmouth Atlas of Health Care: http://www.dartmouthatlas.org/

DMAA: The Care Continuum Alliance: http://www.dmaa.org/

Institute for Healthcare Improvement (IHI) http://www.ihi.org/ihi

Triple Aim http://www.ihi.org/IHI/Programs/StrategicInitiatives/TripleAim.htm

National Priorities Partnership: http://www.nationalprioritiespartnership.org/

Partnership to Fight Chronic Disease: http://fightchronicdisease.org/index.cfm

Trust for America's Health: http://healthyamericans.org/report/61/shortchanging09

Understanding the U.S. Public Health System: http://www.cahpf.org/GoDocUserFiles/207.CHI%20Brief%20United%20States.pdf

U.S. Preventive Services Task Force (USPSTF): http://www.ahrq.gov/clinic/uspstfab.htm

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