ISSUE BRIEFS TO INFORM DEVELOPMENT AND IMPLEMENTATION OF HEALTHY PEOPLE 2030

Submitted to the Secretary of the U.S. Department of Health and Human Services

Secretary's Advisory Committee for Healthy People 2030

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TABLE OF CONTENTS

Acknowledgements

Introduction to the Briefs

Health and Well-Being

Health Equity

Health Literacy

Promoting Health and Well-Being: An Evolution

Law and Policy as Determinants of Health and Well-Being

Complex Systems Science and Modeling

Summary Measures of Health and Well-Being

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The Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2030 (Committee) is a federal advisory committee that has been charged with making recommendations to the Secretary of the U.S. Department of Health and Human Services (HHS) for developing and implementing national health promotion and disease prevention objectives for 2030. To investigate several cross-cutting topics that require additional clarification, definitions, and perspectives, the Committee appointed subcommittees, including participants who were both internal and external to the Committee. The subcommittees drafted briefs and submitted them to the Committee for final approval.

This report is the end product of this process. It comprises a compilation of briefs, prepared through the dedicated efforts of Committee members, as well as external contributors who were asked to participate.

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INTRODUCTION TO THE BRIEFS

The Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2030 (Committee) is a federal advisory committee composed of non-federal, independent subject matter experts. It has been charged with making recommendations to the Secretary of the U.S. Department of Health and Human Services (HHS) for the development and implementation of national health promotion and disease prevention objectives for 2030.

In its initial report to the Secretary, the Committee presented a set of ideas that form the basis for Healthy People 2030. The Healthy People 2030 framework (1) expresses these notions in vision and mission statements, overarching goals, and foundational principles. HHS made the framework available for public comment in fall 2017. Based on this feedback, the Committee later revised the framework. (2)

Through the public comment process, members of the public asked the Committee to provide guidance on several terms, topics, and issues in the framework. (2) The Committee initiated a series of issue briefs to clarify, discuss, and offer insights into these aspects of its thinking. The issue briefs address methods and measures that can be used to inform a plan to drive targeted actions and monitor progress, to stimulate discussion, and to benefit the development and implementation of Healthy People 2030.

The Healthy People 2030 framework describes a process through which the United States can ensure that all people achieve their health potential across the lifespan. Its vision of health and well-being for all people is a shared responsibility. It can be achieved through evidence-based interventions that address policies and the economic, physical, and social environments in which people live, work, and play. High-quality data that are accurate, timely, and accessible can be used to direct such interventions to populations most likely to benefit from them.

Health is shaped by our day-to-day experiences and opportunities. Factors that influence health in our homes, neighborhoods, schools, and jobs can be addressed through interventions at the community or societal levels. In the public health field, many use the phrase "social determinants of health" to describe these factors. The Committee is transitioning to the phrase "determinants of health" because it is more inclusive of and understandable to potential partners in other sectors, and recognizes differences between social, economic, and physical determinants.

Actions to improve the health and well-being of the population must take place across multiple sectors—not the health sector alone. Beyond traditional public health programs, such actions must include tools that give everyone a chance to be healthy. Examples of efforts that can help to avoid health disparities and achieve health equity include attaining health literacy through a systems approach, and enacting policies and laws that support health and well-being.

Over decades of work, the United States has not yet made the projected progress needed to improve health and well-being, eliminate disparities, and achieve health equity. To achieve better outcomes in this decade, Healthy People 2030 must invest in different ways of prioritizing time, money, and human resources. A more holistic approach, such as that followed by the Robert Wood Johnson Foundation (3) or relevant models in the international community, could

empower individuals and communities to take actions that support their own health and well-being, foster leadership for public health, promote intersectoral actions to build healthy public policies, and create sustainable communities and health systems in society.

The country's sociodemographic trends and projections underline the need for a different approach. Increased cross-sector collaboration will be needed to promote the health and well-being of an increasingly diverse U.S. population. (Recent changes to census data collection practices may skew data on underrepresented groups.) The U.S. population is also aging, which will increase the medical care burden, requiring resources of funding and a skilled workforce to deliver care. As the baby boomer generation grows older, a greater percentage of Americans are older adults. If these older individuals were living long, healthy lives, the life expectancy would be expected to increase. Despite an aging population, life expectancy showed no change in 2013 and 2014 and decreased in 2015 and 2016. (4)

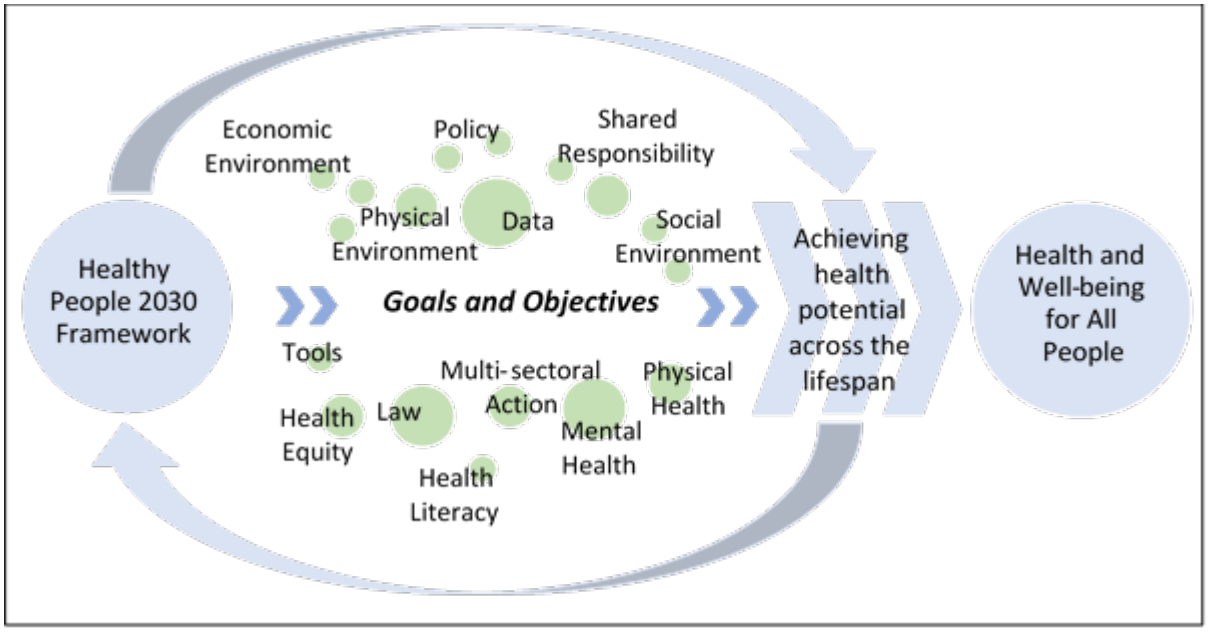
The United States spends more per capita on medical care and disease treatment than any other developed country. We face spiraling expenses that burden individuals as well as public and private payers. Yet, our nation lags behind other countries in major health measures such as infant mortality. Nearly 90 million American adults have difficulty understanding and using health information, leading to higher rates of hospitalization and health care costs. Health care reimbursement and delivery are becoming increasingly complex, placing greater emphasis on population health, care coordination, community engagement, and data integration and analytics. Such changes impact the traditional roles of public health agencies and primary care, and provide an impetus for their integration. Based on these observations, the country is arguably in need of a shift in focus, investments, and resources. The current, almost exclusive focus on disease treatments should be balanced by efforts to prevent disease and disability and to promote health and well-being.

These challenges require major efforts dedicated to workforce development, especially for workers in the public health sector. A nationwide survey (5) found that public health workers need leadership skills and knowledge that can enhance their ability to address society's needs and to strategically improve community health. Examples of key skill categories that cut across disciplines include systems thinking, policy engagement, persuasive communication, data analytics, problem solving, and diversity and inclusion. At the same time, investments in new advances in digital health technology that present opportunities to support the workforce and to help people and communities achieve their potential for health and well-being are needed.

OVERVIEW OF TOPICS COVERED IN THE BRIEFS

As it introduces the Healthy People 2030 framework, (1) the Committee recognizes that the work ahead must address these urgent issues. The mission of Healthy People 2030 is to promote, strengthen, and evaluate the Nation's efforts to improve the health and well-being of all people. Achieving such progress will require organizational and policy supports, as well as organizational capacity to implement relevant programs and models. Individuals share some responsibility for their health, but supportive environments make healthy actions and choices easier. Interventions are needed at the personal and population levels and at the levels of systems, policies, and laws, to improve the contexts in which people live, learn, work, and play.

Healthy People 2030 objectives should reflect the array of factors described above and depicted in the figure below. The Healthy People 2030 objectives will support achievement of our population's full potential for health and well-being across the lifespan and ensure that the Nation makes measurable progress toward health and well-being for all people.



To provide a robust context for its recommendations, the Committee identified several cross-cutting topics for which additional perspectives are needed. It appointed small subcommittees to address these topics through issue briefs, whose subject matter cuts across all areas of Healthy People 2030 and provides detailed guidance to those engaged in the initiative's work. The briefs are not meant to be exhaustive. They address rapidly evolving issues and would benefit from monitoring and updates throughout the decade. Most of the briefs clarify definitions, terminology, and principles, whereas the "Complex Systems Science and Modeling" and "Summary Measures of Health and Well-Being" briefs describe tools to be used in generating and measuring progress across the decade. To the extent possible, care has been taken to present information in plain language.

Issue briefs in the following pages address these topics:

- Health and well-being
- Health equity
- Health literacy
- Health promotion and disease prevention
- Law and policy as determinants of health and well-being
- Complex systems science and modeling
- Summary measures of health and well-being

We expect that these briefs will require routine updates throughout the coming decade to incorporate new knowledge. We welcome the development of additional briefs on other topics and methods that are relevant to the vital implementation of Healthy People 2030.

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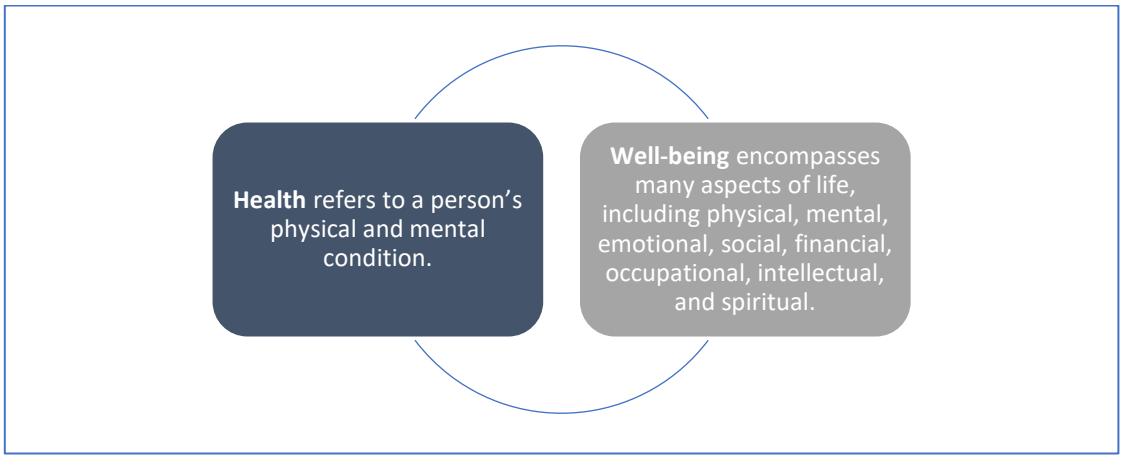
HEALTH AND WELL-BEING

This brief addresses the concept of **health and well-being**, which figures prominently in the Committee's reports to the Secretary. (1, 2)

INTRODUCTION

The phrase "health and well-being" appears throughout the proposed framework for Healthy People 2030. (1) The terms "health" and "well-being" describe separate but related states. The relationship between the 2 states is bi-directional: health influences well-being and, conversely, well-being affects health. (3) Health refers to a person's physical and mental condition; it implies fitness under changing circumstances and must be safeguarded against threats from illness, injury, or death. The definition of health incorporates both physical and mental health, and safety is considered an important determinant of health. Well-being is both a determinant and an outcome of health. (4) It encompasses both objective and subjective elements, reflecting many aspects of life and states of being. These include not only physical and mental, but also emotional, social, financial, occupational, intellectual, and spiritual elements. (5) For many people, well-being is a more unifying and motivating pursuit than health.



The Committee's recommendations for Healthy People 2030 refer to "health and well-being" in every aspect of the proposed framework, including the vision, mission, foundational principles, plan of action, and overarching goals. (1) "Well-being" appears alongside "health" not because the 2 terms are synonyms, but because they have a close, mutually-reinforcing relationship. Health contributes to well-being, and well-being usually contributes to health. (2, 6-11)

In certain circumstances, well-being may improve even if health is fading. For example, consider the idea of dying at peace, or of fully accepting a circumstance like deafness without experiencing it as a disability. Very often, health and well-being travel together, but they are not identical. (6)

Taken together, health and well-being describe health-related factors that are deeply rooted in personal and societal values such as social justice, and practical concerns such as safety, prosperity, and environmental integrity. The quest for equitable health and well-being—when

understood as life, liberty, and the pursuit of happiness—is a central tenet of American democracy. (12) Assuring equitable conditions for health and well-being is a key goal of good government, effective philanthropy, citizenship, and self-determination. (13)

HISTORICAL CONTEXT: WELL-BEING AND THE HEALTHY PEOPLE INITIATIVE

In 1948, the World Health Organization (WHO) acknowledged the need to consider positive aspects of life when it defined health as a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." (14) By 1990, Evans and Stoddart had designed a widely accepted framework that reinforced the importance of prioritizing well-being when attempting to produce health. (2) Eventually, the term "well-being" was incorporated into the Healthy People 2020 initiative alongside health-related quality of life (HRQOL). (15)

Both in concept and measurement, Healthy People 2020 currently approaches HRQOL and well-being from a multidimensional perspective that encompasses 3 complementary domains: 1) self-rated physical and mental health, 2) overall well-being, and 3) participation in society. These domains of health and well-being reflect

A DEFINITION OF "HEALTH AND WELL-BEING" FOR HEALTHY PEOPLE 2030

Within the Healthy People 2030 framework, health and well-being can be defined as how people think, feel, and function—at a personal and social level—and how they evaluate their lives as a whole (adapted from reference 16).

- **"Think"** reflects the ability to understand, evaluate, and solve problems in daily life; experience optimism; express gratitude; acknowledge self-worth; and believe that life and social circumstances are to some degree under personal control, even while seeking personal growth, autonomy, and competence.
- **"Feel"** reflects a sense of security and a feeling of satisfaction with life. It involves vigor and vitality, feeling healthy and full of energy, and being able to flourish psychologically, balance negative and positive emotions, and maintain fulfilling social connections.
- **"Function"** reflects physiological conditions within the body along with the ability to meet personal and collective (e.g., family, neighborhood, community) needs under changing conditions in society. It entails being accepted into and belonging to a community, providing and receiving support from others, and acting as a legitimate contributor to a common world.

How people think, feel, and function affects their beliefs about whether life has meaning and purpose. (17, 18) Together, each of these elements of health and well-being enables people to live meaningful lives and to integrate body, mind, and spirit. (19) Each state of being is strongly interdependent with the others. For example, how we think influences how we feel, and how we feel influences how we function. (20)

This definition affirms that health and well-being operate on more than one level. In keeping with the proposed Healthy People 2030 framework, broader conditions shape individual experiences of health and well-being, and those conditions can be influenced by organized individuals and groups. The role of social structures such as families, neighborhoods, communities,

organizations, institutions, policies, economies, societies, cultures, and physical environments is highly influential. (6, 15, 21-25) Finally, this definition recognizes that the way people evaluate their own lives as a whole is a meaningful indicator of health and well-being.

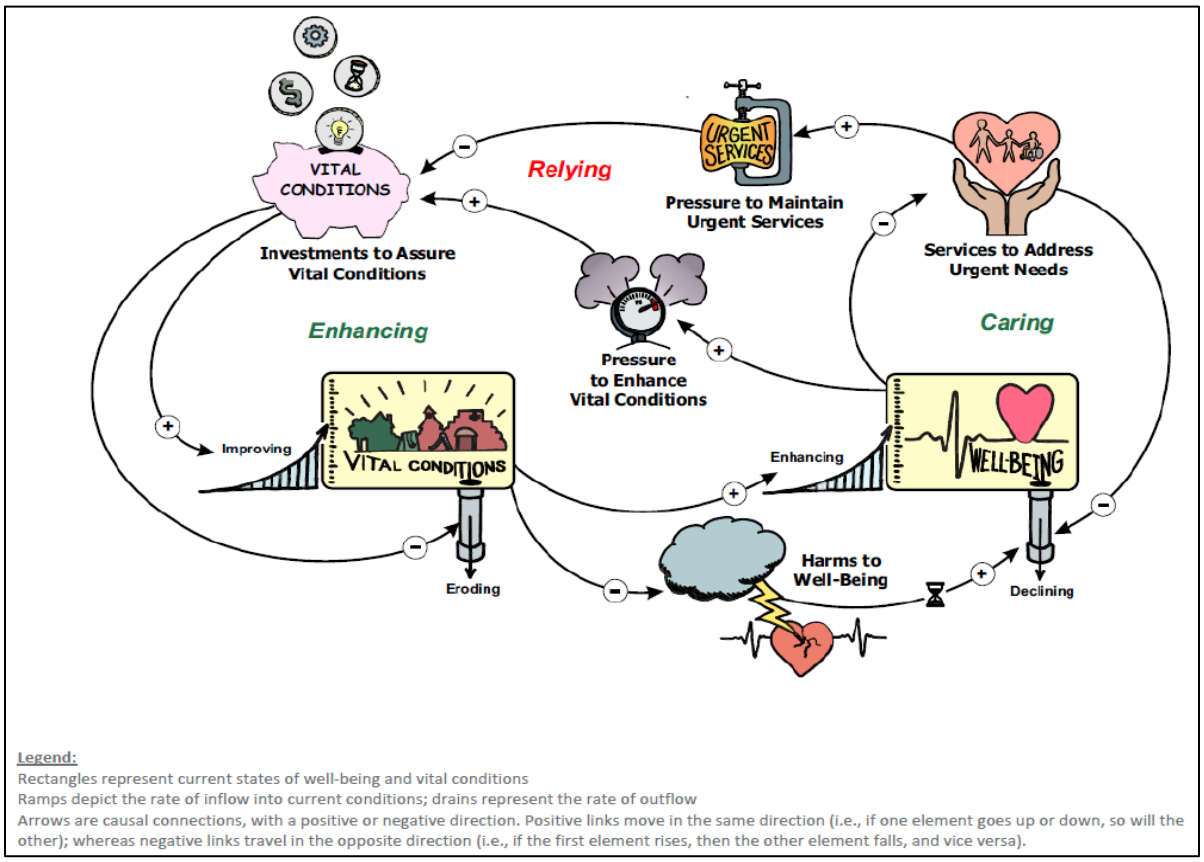
Due to these reciprocal influences between individual and societal health and well-being, the existence of meaningful indicators of health and well-being, and the fact that Healthy People is designed to gauge how these dynamics relate to changes in the health and well-being of the population over the course of the decade, it stands to reason that sound, systematic measurement is important as a central activity of the Healthy People initiative.

ALIGNING HEALTH AND WELL-BEING WITH HEALTH EQUITY AND SOCIAL DETERMINANTS

The proposed Healthy People 2030 framework deliberately links health and well-being with practical imperatives to achieve health equity and enhance social determinants through multisectoral policy. This constellation of connected priorities recognizes that health and well-being can be improved for all and experienced more equitably, but only by embracing the interdependencies among individuals and the wider systems within which we live.

Social cohesion, defined as “a group or population that works toward the well-being of all of its members, fights exclusion and marginalization, creates a sense of belonging, and promotes trust,” (26) has been recognized as a prerequisite for achieving health equity (23) and improving well-being. (26-28) No single actor has sole ownership, accountability, or capacity to sustain the health and well-being of an entire population. (23, 29, 30) For example, the 10 “causes of the causes” of poor health identified by Wilkinson and Marmot comprise, among other factors, psychological influences (e.g., social gradient, stress, and social exclusion), as well as elements of community infrastructure such as food and transport. (31) Improvements in health and well-being will therefore require multidimensional, multilevel, and multisectoral efforts that span the behavioral, psychosocial, socioeconomic, cultural, and political circumstances of the population.

Figure 1. ReThink Health, Rippel Foundation, 2017



As described in a 2010 WHO report, both the social determinants of health and the social processes that shape those determinants must be considered when formulating policy for health and well-being. (27) It is also important to acknowledge the "causes of the causes" of health (31), to implement well-being in all policies, (6) and to strengthen the capacity of communities to co-create their own futures. (28)

A SYSTEMS PERSPECTIVE ON HEALTH AND WELL-BEING

Each member of society may have her or his own view of personal health and well-being, but dynamic systems of investments and actions strongly shape the exposures, choices, and services that people experience in different settings. There is an important distinction between subjective states of being as rated by individuals, and the objective conditions that surround and support people as they strive to be healthy and well. Figure 1 shows how 3 interlocking dynamics can define the external ecosystem for health and well-being in a region. (23) Those dynamics involve a mix of caring for urgent needs, enhancing vital conditions, and relying on crisis response or long-term investment.

- **Caring for Urgent Needs**: Whenever health and well-being are in immediate jeopardy, a powerful caring response kicks in to address urgent needs, such as acute care for illness or injury, food assistance, shelter, addiction treatment, disaster relief, and others.

- **Enhancing Vital Conditions**: Health and well-being depend on a consistent set of vital conditions such as stable housing, healthy food, clean air, education, living wage jobs, and others. If any of those conditions erode, a variety of harms will predictably arise, driving the demand for urgent services to restore health and well-being.
- **Relying on Crisis Response or Long-Term Investment**: Competing pressures govern whether there is greater reliance on delivering urgent services or investing in vital conditions. Both are necessary, and the mix that is chosen depends on how leaders (e.g., policymakers, community representatives) contend with political pressures and a constantly evolving environment. Underinvestment in vital conditions will generate persistent need for urgent services along with related pressure to maintain them. Conversely, mounting harms and overstretched service industries will amplify pressure to enhance vital conditions.

Investments in health and well-being must maintain a delicate mix of positions to assure vital conditions, deliver urgent services, and build civic muscle. Decisions about how to craft such a portfolio are never easy and are often unstated. There is always a *de facto* portfolio in play, however; whether acknowledged or not, it can have far-reaching implications for health and well-being over a lifespan. Each new generation encounters a world that has been powerfully affected by how we choose to create the conditions for equitable health and well-being. This raises a poignant question about the nature of the health and well-being legacy that is passed from each generation to the next through, for example, genetics and social inheritance (social status that often persists across many generations). (30)

CONSIDERATIONS FOR MEASUREMENT

Based on the proposed definition, measurement of health and well-being will include how people evaluate their lives as whole. Instruments to measure well-being have been developed, and various dimensions of health and well-being may be measured separately (see reference 28 for a review of these instruments). However, holistic evaluations of peoples' lives may call for overarching measures such as life satisfaction or social cohesion at both the personal and population levels. (33-37) Furthermore, assessing progress toward improving health and well-being will depend on the inclusion of objectives in Healthy People 2030 that address health disparities, health literacy, multisectoral policies, and determinants of health and well-being.

CONCLUSIONS

Health and well-being are separate but related and mutually reinforcing experiences. Together, these terms express how people think, feel, and function at personal and social levels, and how they evaluate their lives in their entirety. The pursuit of well-being and the preservation of an intergenerational well-being legacy add value beyond the pursuit of health alone, because people flourish and thrive in conditions that enable both health and well-being. Health and well-being align with the elimination of health disparities, the achievement of health literacy, the formation of multisectoral policy, and the implementation of positive social determinants of health. Multisectoral policies and balanced investment portfolios are needed to ensure the conditions for equitable health and well-being over time.

Respectfully submitted by the Healthy People 2030 Health and Well-Being Brief Subcommittee:

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HEALTH EQUITY

This brief explores the concept of **health equity**, including how its use in Healthy People has evolved, related nomenclature, considerations for its measurement, and how to incorporate it in Healthy People 2030.

INTRODUCTION

Historical roots of the concept of equity in health go back more than a century. (1) Following the World Health Organization's (WHO) Alma-Ata conference of 1978, the WHO's Regional Office for Europe established an equity in health program to examine issues of unemployment, poverty, and health. In 1992, that office commissioned a report by Margaret Whitehead to clarify health equity concepts and principles. (1) The Whitehead report showed that across Europe, disadvantaged groups had worse rates of survival and premature death than more advantaged groups. (2) It presented 7 key determinants of health for which differences could be identified across populations. Of these, some were unavoidable (e.g., resulting from biological difference) and some were avoidable (e.g., resulting from exposure to unhealthy, stressful living and working conditions).

Over the past 20 years, an increasingly robust evidence base has documented that the physical, social, and economic circumstances in which people live, work, play, and learn affect their health and well-being. (3) These circumstances, referred to as "social determinants of health,"* are shaped by the distribution of money, power, and resources at global, national, and community levels. They are "mostly responsible for health inequities." (4) Since determinants of health may refer to social, physical, or economic contexts, we use the more general phrase, "determinants of health" instead of "social determinants of health." Research shows that interventions to promote good health in individuals and entire communities can include improving housing standards, reducing food insecurity, reducing economic insecurity and unemployment, increasing levels of educational attainment, and reducing stress from discriminatory practices. (5)

Healthy People 2030 envisions "a society in which all people can achieve their full potential for health and well-being across the lifespan." (6) A foundational principle is that "achieving health and well-being requires eliminating health disparities, achieving health equity, and attaining health literacy." Having clear, shared definitions of health equity and related concepts is important to the process of developing Healthy People 2030 objectives. This brief presents definitions of key terms related to health equity, current frameworks of health equity, and approaches to measuring health equity.

* The Healthy People 2030 Social Determinants of Health and Health Equity Subcommittee proposes using the term "determinants of health" as a broader expression that encompasses social as well as other types of determinants of health (e.g., environmental). The purpose is to help stakeholders outside of the health sector see where they can play a role in helping achieve health equity. See more information in the definitions section of this brief.

THE CONCEPT OF HEALTH EQUITY

The WHO/Whitehead report defined health inequities as “differences in health that are unnecessary, avoidable, unfair, and unjust.” (2) A decade later, University of California, San Francisco (UCSF) researcher Paula Braveman sought to build on the WHO definition in a more precise manner that would facilitate measurement. In a 2003 article, she defined equity in health as “the absence of systematic disparities in health...between groups with different levels of underlying social advantage/disadvantage—that is, wealth, power, or prestige.” (7)

Healthy People 2020 defines health equity as “attainment of the highest level of health for all people.” Within Healthy People 2020, discussion of health equity explains, “Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and health care disparities.” (8) This definition suggests that efforts to attain health equity should ensure all people have equal access to opportunities that enable them to lead healthy lives. Over the past decade, public health researchers and practitioners have continued to build on this definition. They emphasize that achieving health equity requires efforts beyond the “opportunity” for health and well-being; fair and just access to opportunity is also needed.

Both private- and public-sector organizations currently use the term “health equity” to describe a vision, a value, and an intended goal. A 2017 report for the Robert Wood Johnson Foundation states, for purposes of discussion and consensus-building, “Health equity means that everyone has a fair and just opportunity to be healthy. This requires removing obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care.” (9) Recent changes to census data collection practices have implications for health equity, because they may skew data on underrepresented groups. (10)

Health equity relates to several other concepts, each of which differs in meaning yet is linked to the others. To fully understand health equity, it is important to examine key distinctions between inequality and inequity in health (Figure 1). Some health inequalities are unavoidable because they can be attributed to biological differences or free choice. Health inequities, on the other hand, are avoidable. (11, 12)

Figure 1. "Why Equality Isn't Good Enough"

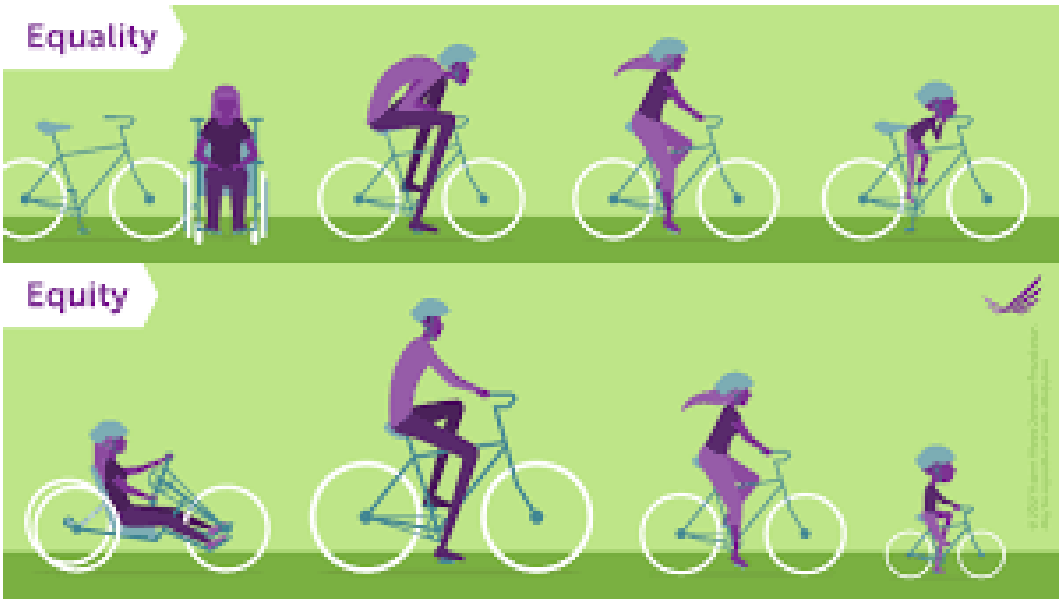


Figure 1. Why "Equality" Isn't Good Enough. Adapted from Achieving Health Equity, Robert Wood Johnson Foundation, n.d. Retrieved from https://www.rwjf.org/en/library/features/achieving-health-equity.html

Several terms that relate to health equity are sometimes used inappropriately or interchangeably. The following definitions help to clarify distinctions between them:

* **Health Disparities**: Differences in health and well-being outcomes without an identified cause among groups of people.

* **Health Care Disparities**: Racial or ethnic differences in quality of health care received that are not due to access-related factors or clinical needs, preferences, or appropriateness of intervention. (13)

* **Health Inequalities**: Differences in health status, or in the distribution of health determinants among different population groups (e.g., differences in mobility between older and younger populations, or in mortality rates between people from different social classes).

* **Health Inequities**: Differences in health and well-being outcomes that are avoidable, unfair, and unjust. Health inequities are affected by social, economic, and environmental conditions.

The emphasis on health equity within Healthy People 2030 marks a critical shift away from focusing on disease outcomes, which are often attributed to individual behaviors. A health equity approach addresses historical and current structural and systematic prejudice and discrimination that result in health disparities. Prejudice and discrimination lead to unfair practices within public and private institutions, broader health systems, and society at large.

Drawing distinctions between health equity and related concepts can help to guide action. For example, policies and practices that promote health equity must reduce or eliminate health inequities and health care disparities that are determinants of people's health and well-being. Such interventions would not necessarily eliminate all health disparities, but they would reduce

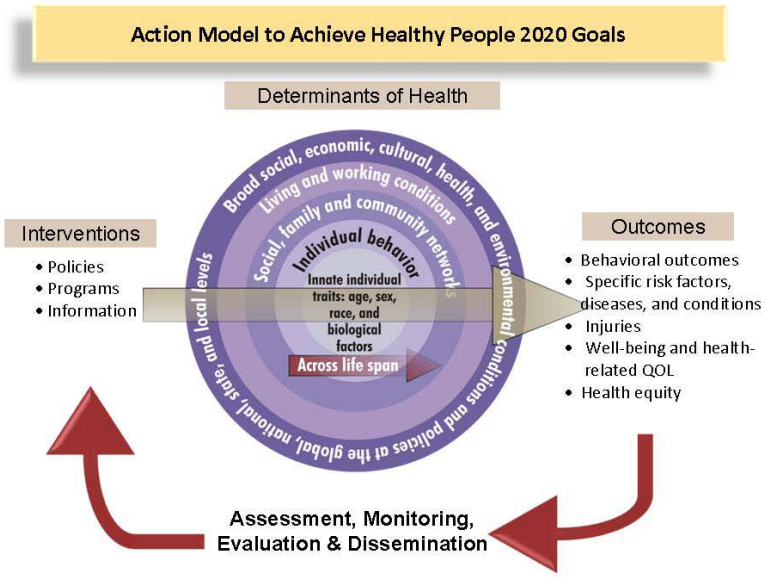
health inequalities and provide a foundation for moving closer to health equity. A society with fair and just societal conditions, free of inequities and health care disparities, offers people opportunities to attain the highest level of health and well-being throughout their lifespan.

HEALTH EQUITY IN HEALTHY PEOPLE

Since the launch of the Healthy People Initiative in 1980, (14) growing awareness over decades of the problem of health disparities led Healthy People 2020 to adopt the concept of health inequity for the first time. This constituted a change in the initiative's thinking about differences in health and well-being outcomes across population groups.

- At its beginning, Healthy People had 2 overarching goals: to decrease mortality over the life course and to increase independence among older adults.
- Ten years later, Healthy People 2000 had 3 overarching goals, 1 of which was to "reduce health disparities." (15)
- The following decade, Healthy People 2010 committed the Nation to "eliminate health disparities." (16)
- That pledge prompted Public Law 106–525 (the Minority Health and Health Disparities Research and Education Act of 2000), requiring a study of the Department of Health and Human Services' data collection systems and practices relating to data on race or ethnicity. (17)
- A final review of progress on Healthy People 2010 objectives at the end of the decade revealed that in many cases health disparities had not been eliminated and in some instances had increased. (18) Increased health disparities often could not be explained by physiological or medical differences between population groups, but were clearly associated with social, economic, and physical environmental conditions.
- The Healthy People 2020 goal to achieve health equity, eliminate disparities, and improve the health of all groups underscored an important shift in understanding determinants of health. It represented a clear commitment to equity by Healthy People. (19) This goal is reflected in the previous Secretary's Advisory Committee's proposed Action Model to Achieve Intended Goals (see Figure 2). (20) This complex action model highlights multiple levels of influence for addressing determinants of health, from innate individual characteristics to broad social conditions.
- It notes the critical role of policies, programs, and interventions in achieving desired outcomes, and emphasizes the importance of data and ongoing feedback through assessment, monitoring, evaluation, and dissemination.

Figure 2. Healthy People 2020 Action Model to Achieve Intended Goals



CURRENT HEALTH EQUITY FRAMEWORKS

Achieving health equity requires eliminating avoidable, unjust, and unfair health inequities and health care disparities through short- and long-term actions that include:

- Attending to the root causes of health inequalities and health disparities, specifically social and environmental determinants of health, health care disparities, and health inequities
- Attending to groups that have experienced major obstacles to health associated with socioeconomic disadvantages and historical and contemporary injustices
- Promoting equal opportunities for all people to be healthy and to seek the highest level of health and well-being possible (i.e., health equity) by eliminating prejudice and discrimination fueled by racism, classism, sexism, ageism, ableism, and other forms of oppression
- Distributing socioeconomic resources needed to be healthy in a manner that progressively reduces health inequalities and disparities and improves health and well-being for all
- Maintaining a desired state of equity through continuous efforts after health inequities and avoidable health inequalities are eliminated

As illustrated in Figure 3, achieving equity in health outcomes requires multisectoral stakeholders to engage in efforts at every level of society—at the individual and community levels, and in social, built, and natural environments. (21) When a society maintains conditions that support equity and improve health and well-being, everyone benefits.

Figure 3. Factors Needed to Achieve Optimal Health, Mental Health, and Well-Being

Many organizations are developing and customizing frameworks to address health equity through their domains of expertise. Three examples of health equity and health disparities frameworks address different areas where inequities can exist. Although they use different terminology, these frameworks demonstrate that institutions and organizations are becoming increasingly capable of developing knowledge and interventions to reduce health inequities and eliminate disparities in health and well-being outcomes that are avoidable, unfair, and unjust.

Example #1. The Institute for Healthcare Improvement offers the following ways for health care organizations to improve equity and reduce health care disparities within their own organizations (Figure 4). (22) The framework can lead to specific actions and measurable objectives that organizations can take to assess their progress over time.

Figure 4. Framework for Health Care Organizations to Improve Equity

Example #2. The National Institute on Minority Health and Health Disparities (NIMHD) provides a research framework "as a vehicle for encouraging NIMHD- and NIH-supported research that addresses the complex and multi-faceted nature of minority health and health disparities, including research that spans different domains of influence (Biological, Behavioral, Physical/Built Environment, Sociocultural Environment, Healthcare System) as well as different levels of influence (Individual, Interpersonal, Community, Societal) within those domains." (23) The NIMHD framework recognizes different domains, levels, and types of influences that impact health outcomes of individuals, families, communities, and the population at large (see Figure 5). It offers researchers many different areas that can be investigated to increase understanding of health disparities and health inequalities.

Figure 5. The NIMHD Minority Health and Health Disparities Research Framework

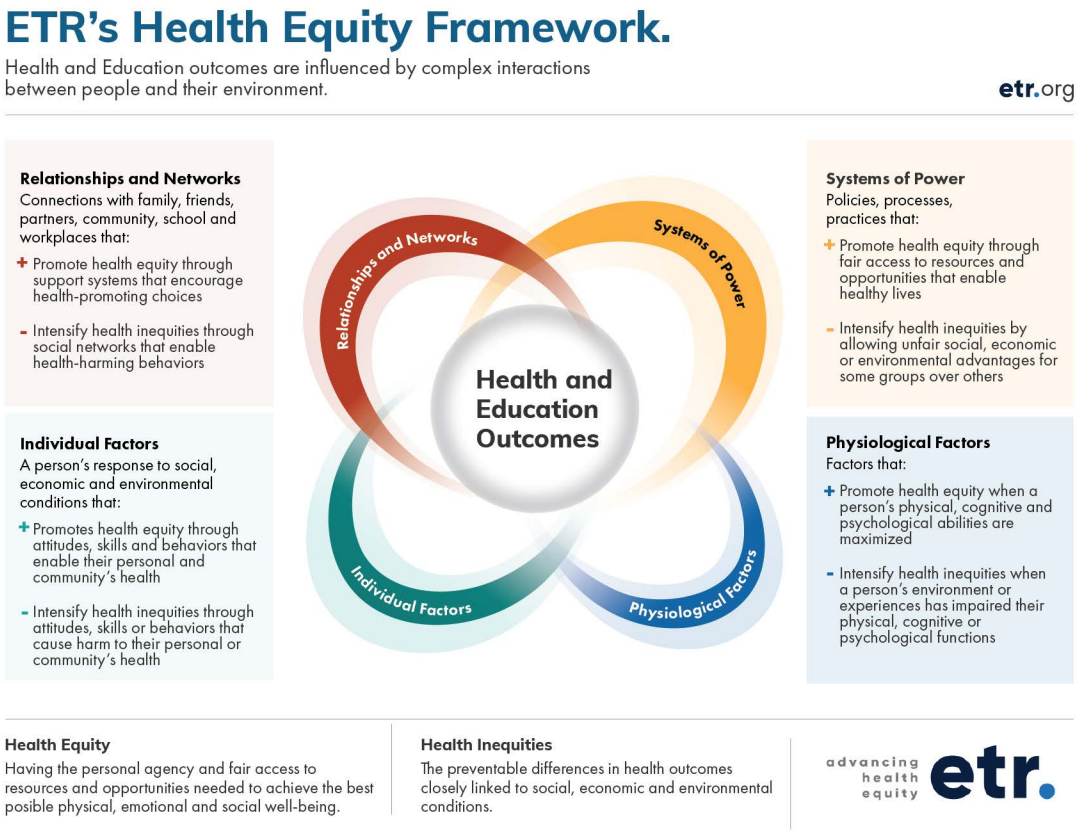
NIMHD Minority Health and Health Disparities Research Framework Health Disparity Populations: Race/Ethnicity, Low SES, Rural, Sexual/Gender Minority Other Fundamental Characteristics: Sex/Gender, Disability, Geographic Region				
Domains of Influence	Levels	of	Influence	
	Individual	Interpersonal	Community	Societal
Biological	Biological Vulnerability and Mechanisms	Caregiver-Child Interaction Family Microbiome	Community Illness Exposure Herd Immunity	Sanitation Immunization Pathogen Exposure
Behavioral	Health Behaviors Coping Strategies	Family Functioning School/Work Functioning	Community Functioning	Policies and Laws
Physical/ Built Environment	Personal Environment	Household Environment School/Work Environment	Community Environment Community Resources	Societal Structure
Sociocultural Environment	Sociodemographics Limited English Cultural Identity Response to Discrimination	Social Networks Family/Peer Norms Interpersonal Discrimination	Community Norms Local Structural Discrimination	Societal Norms Societal Structural Discrimination
Health Care System	Insurance Company Health Literacy Treatment Preferences	Patient-Clinician Relationship Medical Decision-Making	Availability of Health Services Safety Net Services	Quality of Care Health Care Policies
Health Outcomes	Individual Health	Family/Organizational Health	Community Health	Population Health

Lifecourse

The NIMHD Minority Health and Health Disparities Research Framework. Adapted from NIMHD Research Framework, National Institute of Minority Health and Health Disparities, n.d. Retrieved from https://www.nimhd.nih.gov/about/overview/research-framework.html

Example #3. ETR, Inc., a non-profit organization dedicated to improving health and increasing opportunities for youth, families, and communities, provides an example of its health equity framework, which focuses on both health and education outcomes (see Figure 6). (24) The framework helps ETR target its work to ensure it is addressing influences on the choices people and communities make about their health. It is used to design, implement, and evaluate projects and initiatives.

Figure 6. ETR's Health Equity Framework



HEALTH EQUITY MEASUREMENT

To attain health equity, it is necessary to develop a series of measures that can be used to assess changes in health equity, reductions in health inequality, and improvements in physical, social, and economic conditions and health outcomes over the long term. Additional measures may include those that track implementation of policies and programs to reduce health inequities and health inequalities.

Braveman suggests issues to consider in specifying components of measures of health inequality. (25) She recommends 3 basic components: 1) an indicator of health or a modifiable determinant of health (e.g., health care, living conditions, or policies that shape them); 2) an indicator of social position (a way to categorize people into groups based on social advantage or disadvantage, e.g., income, education, ethnic group, or gender); and 3) a method for comparing indicators for health or health determinants across different social positions. An example might include a ratio of rates of the health indicator among those who are in the least advantaged and most advantaged social positions.

Braveman and colleagues recommend a systematic approach to conducting such measurement, which can inform efforts to reduce the gap. (26) The following is a summary of their approach:

- Choose the health or health-related indicators of concern and categorize people by social position.
- Calculate rates of the health indicator in each social grouping and display this graphically.
- Calculate rate ratios (e.g., relative risks) and rate differences to compare each stratum with the a priori most advantaged stratum that corresponds to it (e.g., all other income groups compared to the highest income group).
- Examine changes over time in the rate ratios and rate differences; if feasible, use a summary measure to assess multiple parameters at the same time.
- Conduct multivariate analyses in the overall sample and within strata shown to be at elevated risk compared to the most advantaged stratum, to identify issues warranting further attention through research or action.

They argue for comparing the population group of interest with groups that are in the most advantaged social position, instead of comparing with a group that has average measures or the group with the best level, for a health indicator. The rationale is that the health of the most advantaged social position shows a minimum level that should be biologically possible for everyone. Although the most advantaged group will not have the highest level of health on every indicator, Braveman et al. argue it is rare that members of the most privileged social position do not have the highest levels of health. Abandoning comparison between social positions in favor of comparison with the healthiest groups runs the risk of removing distributive justice[†] issues from consideration and from policy agendas.

There have been several efforts to operationalize health equity measurement:

Example #1. In 2016, the National Quality Forum convened a multistakeholder committee to recommend how performance measurement and its associated policy levers can be used to reduce disparities in health and health care, and to promote health equity. Its final report intended to provide a roadmap for promoting health equity and presented a framework for the domains of health equity performance measurement. The report detailed examples of measures for the subdomains of structure of equity, culture of equity, and partnerships and collaboration. In addition, the report summarizes "disparities-sensitive measures," which can help detect disparities in care. In addition, the committee proposed applying the following criteria to all outcome measures intended to assess equitable high-quality care:

1. Measures for which the denominator includes a large number of patients affected by a social risk factor or set of risk factors;

2. Measures for which the denominator is specified for non-inpatient settings (i.e., focus on ambulatory care settings); and

[†]"The economic, political, and social frameworks of each society—its laws, institutions, policies, etc.—result in different distributions of benefits and burdens across members of the society. These frameworks result from human political processes and they constantly change both across and within societies over time. The structure of these frameworks is important, because distributions of benefits and burdens resulting from them fundamentally affect people's lives. Arguments about which frameworks and/or resulting distributions are morally preferable constitute the topic of distributive justice." Source: https://plato.stanford.edu/entries/justice-distributive/

3. Outcome measures for which there is a clear link between the outcome being measured and a set of actions.

Example #2. The Connecticut Health Equity Index (27) measures health equity by focusing on the root causes of differences in health status, with 141 measures from more than 50 different sources. It assesses 7 social determinants of health, including civic involvement and political access, community safety and security, economic security, education, employment, environmental quality, and housing.

Example #3. Oregon has established 6 Regional Health Equity Coalitions—community-driven, multisector groups that seek to increase health equity for underserved and underrepresented populations experiencing health disparities. These coalitions established core measures of success to assess progress on increased and authentic community engagement, strengthened organizational capacity, system change, changes to social norms and the environment, and policy change. (28)

HEALTH EQUITY IN HEALTHY PEOPLE 2030

The evolution of the term “health equity” over the past decade provides Healthy People 2030 the opportunity to refine how this concept is used today and how it may evolve by 2030. It is also a concept that informs actions needed to attain it. Examples include addressing specific determinants of health and well-being, highlighting injustice, and underscoring the need to focus on reducing inequities and improving health care access and quality for all people.

The Healthy People 2030 framework emphasizes the need for healthy physical, social, and economic environments that strengthen the potential to achieve health and well-being. Health equity is at the core of its vision, mission, foundational principles, and overarching goals for Healthy People 2030.

The capacity of Healthy People 2030 to measure its success in achieving health equity will depend on ongoing surveillance of health inequalities between more and less advantaged social groups. It will be important to assess both the magnitude of these inequalities and how they change over time in relation to policies and conditions that influence health and well-being.

Some of the measurement challenges that were outlined in Healthy People 2020 continue today. Others, however, have evolved:

- Many routine data sources have insufficient data for certain highly disadvantaged groups (e.g., American Indians); this limits the ability to reliably estimate health needs for these groups.
- There is a complete absence of data on some groups, such as sexual orientation minorities.
- There is a complete absence of data on emerging gender spectrum identities, including non-binary genders.
- Adequate information is unavailable on social, economic, and physical environmental conditions to understand either racial and ethnic or socioeconomic disparities; this can often result in erroneous assumptions about underlying reasons for the disparities.

Nevertheless, the health care and public health systems have the potential to advance the ability to measure health equity within organizations and populations. Over the next decade, advancements in technologies, consolidation of electronic health records, partnerships among health and social service systems, and discoveries in biomedicine will improve the ability of the United States to identify emerging priorities in health and well-being.

CONCLUSIONS

Achieving health equity is a visionary goal that, as noted in Healthy People 2020, would require the absence of all inequities in health, health care, and the living and working conditions that influence health and well-being. No society has achieved this, but some have come closer to the ideal than the United States.

To achieve health equity, health systems throughout the Nation will also be challenged to work together with diverse and atypical partners, including local communities and policymakers, to disrupt structural and systemic inequities that lead to health inequities over time.

Respectfully submitted by the Healthy People 2030 Health Equity Brief Subcommittee:

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HEALTH LITERACY

This brief addresses the topic of **health literacy**, highlighted in the Committee's Healthy People 2030 framework. (1)

INTRODUCTION

A considerable body of literature links limited health literacy to poor health outcomes, health disparities, increased health care costs, and lower health care quality for patients. Health literacy has become a priority for health practice and policy in the United States and many other countries. Health literacy is recognized as a means of improving population health and reducing health disparities by the World Health Organization (WHO); the U.S. Department of Health and Human Services; the National Academies of Sciences, Engineering, and Medicine; the Joint Commission; the National Committee for Quality Assurance (NCQA); and many other leading public health agencies and organizations.

An early definition of health literacy that is still often used describes it as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." (2, 3)

The Committee suggests expanding the focus of Healthy People 2030's view on health literacy. As health literacy research and practice have accumulated, we now more fully understand that responsibility for health literacy extends beyond individuals to include the organizations and professionals who create and deliver health information and services. In this brief, the Committee explains the rationale for and implications of this perspective. We emphasize its importance in aligning society's actions for health literacy with the complex factors that affect people's ability to find, understand, and use health information. In keeping with the published literature and the Healthy People 2030 framework, the Committee proposes that *"*health literacy occurs when a society provides accurate health information and services that people can easily find, understand, and use to inform their decisions and actions*."* (1)

The Committee has highlighted the concept of "health literacy" in its Healthy People 2030 framework. (1) One of the framework's 7 foundational principles states, "Achieving health and well-being requires eliminating health disparities, achieving health equity, and attaining health literacy." One of the framework's 5 overarching goals is to "Eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all." Health literacy is among the cross-cutting topics that provide a robust context for the Committee's recommendations. This brief provides a summary of developments in health literacy studies and addresses the relevance of findings and insights for the national health promotion and disease prevention objectives.

HISTORICAL CONTEXT FOR HEALTH LITERACY

Research on health literacy builds on the results from several waves of rigorous national and international surveys conducted in industrialized nations. These surveys focused on literacy,

math, and problem-solving skills of adults. Findings indicated that adult literacy skills in the United States (as well as in other industrialized nations) are low for significant portions of the population and hamper economic and civic engagement. (4-7) Limited literacy was found across the socioeconomic strata in all participating countries. It was disproportionately found among people who were living in poverty, from lower-resourced areas of a country, from minority or immigrant population groups, or over the age of 55. Some clinicians were alarmed by the implications of these results for patients' understanding of their health conditions and clinical recommendations, and the findings spurred subsequent research into the link between low literacy and poor health outcomes.

The 2004 Institute of Medicine (IOM) report, Health Literacy: A Prescription to End Confusion, brought attention to the fact that nearly half of all American adults—90 million people—have difficulty understanding and using health information. (2) The report documented the nature of this challenge, as well as the effects of low health literacy on health outcomes. It also noted higher rates of hospitalization and use of emergency services by patients with limited health literacy. Subsequent studies have explored associations between health literacy and an extensive list of chronic conditions, such as diabetes, cancer, cardiovascular disease, HIV, asthma, and dental diseases. (8-11)

People who experience the greatest health burden are often the ones who have the least access to health information, health care, and supportive social services. Compared to those with strong health literacy skills, people with limited or low health literacy were found to engage in fewer activities related to health protection, disease prevention, screening, or chronic disease management. (8, 9) They also experienced higher morbidity rates and earlier mortality. Examples of intervention studies focused on providing health literacy support for individuals and systems are provided in Appendix A.

Educators and literacy experts have noted that literacy and health literacy are context dependent; they are not fixed character traits. For example, individuals' health literacy may be compromised in the face of physical pain and anxiety. People's literacy and health literacy skills can be applied more effectively when they encounter health systems and health information that are aligned with their skills and needs. For example, certified medical interpreters who are trained in health literacy can help reduce communication barriers between patients and providers who speak different languages. This insight offers promise for health promotion, health education, health communication, and health care efforts that attend to health literacy.

DEFINING HEALTH LITERACY FOR HEALTHY PEOPLE 2030

Literacy and health literacy share common skills (i.e., reading, writing, basic math, speech, and comprehension), but are not identical. Health literacy includes additional skills, such as knowledge of health conditions and factors that promote health and well-being, the capacity to navigate the health care and social service systems, and the capacity to communicate effectively about health events and issues. Health literacy applies literacy and other skills to a health context.

Examples of health context include seeking information about health and well-being, using health care services, completing health-related forms, and understanding and following

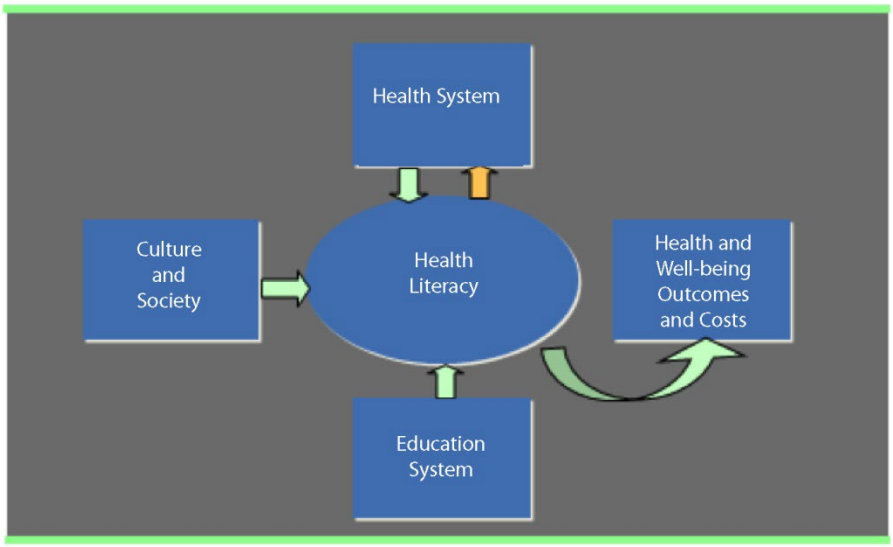
protocols for diet, physical activity, and therapy. People may seek and receive information or services from health care providers, mass and social media, government agencies, and health care facilities and institutions, among many sources.

The role of context in affecting how people use their skills has not always been reflected in health literacy definitions. WHO's 1998 Health Promotion Glossary introduced health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health." (12)

The 2004 IOM report used a similar definition developed in 2000 by Ratzan and Parker. It refers to health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." (2, 3)

The IOM report clarified that health literacy also depends on the skills, preferences, and expectations of those who provide health information and care, such as health care providers. It is mediated by education and affected by culture and language, as well as the characteristics of health settings. These factors influence how people interact with health care and serve as "intervention points" for improving health literacy (see Figure 1). Examples of intervention types include those meant to address the quality of health information and materials, the communication skills and knowledge of health professionals, and the characteristics of health care and public health practices, facilities, and systems. (2, 13-15)

Figure 1: Potential Points for Intervention in the Health Literacy Framework



Potential Points for Intervention in the Health Literacy Framework. Adapted from Figure 2-2 in Kindig, D. A., Panzer, A. M., & Nielsen, L.B. (Eds.). (2004). *Health Literacy: A Prescription to End Confusion*. Washington, DC. National Academies Press. https://doi.org/10.17226/10883

Health information that is poorly organized or that contains specialized language (jargon) is not accessible to most individuals. Health care providers, mass and social media, health and safety labels and pamphlets, and health care delivery systems and facilities provide information through multiple channels. Sometimes this information conflicts. Health promotion programs or health care services that require sophisticated literacy skills are challenging for most users.

After WHO and IOM defined health literacy, research and practice contributed new information that highlighted multidimensional aspects of health literacy. Such information includes understanding the role of health care providers and health systems in mediating health literacy, and the perspective that health literacy is a process. (16-19)

Consistent with the published literature and with the Healthy People 2030 framework, the Committee has proposed that "health literacy occurs when a society provides accurate health information and services that people can easily find, understand, and use to inform their decisions and actions." (1)

This definition emphasizes aligning information and services that society (health care providers, mass and social media, health care facilities and organizations) provides with the capacities and skills of people (individuals and communities). This alignment is key to eliminating health disparities and achieving health equity. To attain health literacy, interventions that target the complex factors that contribute to or mediate health literacy are needed.

Continued investments are needed to enhance the health literacy skills of individuals and populations, but such interventions are insufficient. Individuals' health literacy skill levels may change depending on health status, cognitive decline, and interactions with health care settings and situations. Multiple sources and sectors (society) should provide health information and services that align with the known skills of individuals and communities (people). Otherwise, disease prevention, health promotion, and health care information and directions could remain out of reach for those who need such tools and resources.

HEALTH LITERACY MEASUREMENT

Definitions shape measures for study and evaluation. The Healthy People health literacy objectives have stimulated assessments of patients' reading and math skills, how patients and providers communicate, and the quality of health information. (20, 21) To date, there are over 100 measures of individuals' health literacy and numeracy skills, which reflects the early focus on individuals instead of organizations and professionals. (22) To provide state and local data on health literacy, the Centers for Disease Control and Prevention's (CDC) Office of the Associate Director for Communication sponsored new health literacy measures for the Behavioral Risk Factor Surveillance System Survey (BRFSS). Fifteen states, the District of Columbia, and Puerto Rico used these measures in their 2016 surveys. (23) Examples of select measures, including the ones in BRFSS, are provided in Appendix B.

Assessments of a broad range of individual skills and information quality are currently in use. These include assessments of consumer comprehension (i.e., how laypeople comprehend verbally delivered information such as the concept of being "at risk" or numerical concepts), or how professionals communicate such concepts. Patients' perceptions of provider skills are also assessed. Methods such as task analysis are being used to identify degrees of difficulty (i.e.,

steps and capacities needed to complete activities) of routine activities such as information-seeking, decision-making, or self-management.

The CDC (24, 25) and the Agency for Healthcare Research and Quality (AHRQ) now make available sophisticated tools that can be used to analyze usability, accessibility, and user comprehension of health information products. They also offer tools to improve providers' spoken communication with patients, referrals, and practice assessments. (26, 27)

As the concept of health literacy evolves, additional assessment components will be needed. Healthy People 2030 must generate new measures of population level health literacy, professional communication skills, and system performance for health literacy objectives. The "ten attributes of health literate health care organizations," though not a formal set of measures, suggests a path for monitoring performance of the health care system, including providers and public health organizations. (28)

It is important to assess the accessibility, amount, accuracy, and types of information available to populations and communities, as well as the availability of communication and technology resources. Such assessments can highlight gaps and opportunities to deliver more useful information. (28) Through its attention to measures of health literacy, the field demonstrates its vibrancy and commitment to understanding the full scope of effects of health literacy on population health and well-being.

HEALTH LITERACY AND THE HEALTHY PEOPLE INITIATIVE

The evolving science base for health literacy led to its inclusion in the Healthy People initiative. Objectives specific to health literacy were introduced in Healthy People 2010 and included in Healthy People 2020. Concurrently, health literacy measures were added to existing national surveys. Health literacy is highlighted in the Healthy People 2020 Social Determinants of Health topic area as a determinant of health and health care. (29)

In Healthy People 2010 the topic of health literacy appeared as an objective in the Health Communication focus area. (31) The narrative for this objective helped draw connections among health literacy, health disparities, and health equity, stating, "Often people with the greatest health burdens have the least access to information, communication technologies, health care, and supporting social services." (31) The narrative went on to explain, "Closing the gap in health literacy is an issue of fundamental fairness and equity and is essential to reduce health disparities." (31)

To collect data for the Healthy People 2010 health literacy objective, the U.S. Department of Education developed a new health literacy module and added it to its National Assessment of Adult Literacy. The assessment found that only 12 percent of the adult, English-speaking population had proficient health literacy skills. (7) Other focus areas within Healthy People 2010, such as Educational and Community-Based Programs and Oral Health, also used the term "health literacy."

Healthy People 2020 continued health literacy objectives, including them in the Health Communication and Health Information Technology topic area. (32) The Healthy People 2020 health literacy objectives are "Improve the health literacy of the population" and "Increase the

proportion of persons who report that their health care providers have satisfactory communication skills."

For the Healthy People 2020 health literacy objectives, AHRQ modified health literacy questions in the Medical Expenditure Panel Survey (MEPS) in 2010. (32, 33) The questions ask patients to report on their providers' use of health literacy techniques to communicate clearly. Healthy People objectives that report data from the MEPS questions on providers' communication skills offer information on patients' satisfaction with such skills. The next crucial step in advancing health literacy can focus on systems change, which could include developing and implementing measures of health system performance that align with patients' health literacy skills.

A SYSTEMS PERSPECTIVE ON HEALTH LITERACY

Understanding of system-level factors that contribute to limited health literacy has increased, highlighting the need for health literacy interventions within the health and education systems. Studies have shown that health system errors result when health care providers do not consider culture and language, or do not follow evidence-based protocols. Thus, the National Academy of Medicine has recognized health literacy as 1 of 2 cross-cutting priority areas for improving health care quality. (34-37) Investments continue to be made to incorporate health literacy into curricula for K-12, adult, and health professional education. Such investments are important to enhance health literacy skills of the public at all life stages, as well as communication skills of health professionals. (38, 39)

Health professional schools are only beginning to incorporate health literacy and communication skill competencies into their curricula. Health professional associations, public health agencies, and health care organizations are developing protocols and policies for designing and developing health materials and tools. These policies, guidelines, and standards are used to assure and monitor development of accessible, accurate, and actionable health information and services. Select examples include resources and continuing education initiatives developed by the American Academy of Pediatrics, American Academy of Nursing, American Dental Association, and the American Public Health Association. These efforts serve to identify and remove literacy- and health literacy-related barriers to health services and care, and are geared toward reducing health disparities and supporting equity.

Various strategic efforts reflect growing awareness of the value of health literacy. The National Prevention Strategy and the National Standards for Culturally and Linguistically Appropriate Services (CLAS) integrate health literacy into their frameworks to increase accessibility and usefulness of information and services. (40, 41)

The 2010 National Action Plan to Improve Health Literacy highlighted that improving health literacy is critical to achieving the Healthy People 2020 objectives and the success of the Nation's health agenda. (42) Its 2 guiding principles are "(1) everyone has the right to health information that helps them make informed decisions, and (2) health services are delivered in ways that are understandable and beneficial to health, longevity, and quality of life."

In addition, the Health Literate Care Model and the AHRQ Health Literacy Universal Precautions Toolkit reflect ways in which health literacy principles can be integrated in all aspects of health

care delivery. (27, 43) Appendix C offers selected links to health literacy policies and initiatives for professional organizations.

The emerging perspective of the health literacy field is that existing systems must change to enhance and sustain the population's health literacy. (42) Conceptual models of health literacy and public health identify health literacy as a process, providing opportunities for further research and development of measures. (16-18, 44, 45) Health and health care organizations that incorporate health literacy as an organizational value in their operations can help consumers, patients, caregivers, and health providers to navigate, understand, and use health information and services. (28) Incorporating health literacy helps people to participate in shared decision-making, administer appropriate self-care, and contribute to patient-centered care and community-based actions that support health.

CONCLUSIONS

Healthy People 2030 can catalyze new, system-wide health care and public health-oriented policies, standards, and measures that strategically include attention to health literacy. (46) Health literacy is a determinant of health. Limited health literacy has been associated with poor health outcomes, health disparities, reductions in health care quality, and increased health care costs. Health literacy can vary by context; it is shaped by interactions between the skills of people and the requirements of health and social systems. People's literacy and health literacy skills can be more effectively used over time due to improvements in the quality and delivery of health information.

To attain health literacy, interventions targeting the complex factors contributing to or mediating health literacy are needed at all levels: individual, community, and society. Health literacy occurs when a society provides accurate health information and services that people can easily find, understand, and use to inform their decisions and actions. The emphasis is on aligning the information and services that society provides with the capacities of people. This alignment is pivotal to eliminating health disparities and achieving health equity.

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Appendix A. Selected Examples of Health Literacy Interventions

The peer-reviewed literature of studies testing the effectiveness of health literacy interventions on health behaviors and health outcomes is vast. Most intervention studies have focused on providing support for individuals with low health literacy. A wide range of interventions have been tested, individually or in combination. Studies have addressed specific aspects of self-care, health care, and chronic conditions. The following references highlight select interventions used to improve patient activation, enhance the patient experience (including shared decision-making), and improve health outcomes. Concurrent with the ongoing research, the Agency for Healthcare Research and Quality (AHRQ) has supported using a "health literacy universal precautions" approach to health care, employing existing tools that support spoken and written communication, self-management, and supportive systems.

Patient Activation: Health literacy interventions are associated with patient activation, meaning helping patients to care for their own health. Studies have shown that when good health literacy plans that align with the capacities of individuals are in place, they increase patients' use of recommended health screenings and honest communication with doctors. (a-d)

Health literacy interventions to enhance medication adherence have demonstrated that individuals can do better when they know how to control their health care. Examples of patient activation through health literacy interventions include giving patients instructions for exact times to take medicine, providing medicine labels that are clear and easy to read, and using pictures to assist caregivers. (e-i) Such interventions have led to improved adherence for the management of chronic conditions, such as high blood pressure, diabetes, and HIV. (j-m)

Enhanced Patient Experience: Studies have shown that shared decision-making can enhance patients' level of satisfaction, treatment adherence, and health status. (n,o) Examples of interventions that have resulted in increases in patient satisfaction include the effective use of web-based tools, the pairing of such tools with phone-based education and support, and use of plain language. (p-s)

Health Literacy Universal Precautions: Since 2010, AHRQ has promoted the use of health literacy universal precautions (https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/index.html). A universal precautions approach to health literacy assumes that all patients may have difficulty comprehending health information and accessing health services. It seeks to simplify communications and confirm comprehension for all patients. Universal precautions minimize the risk of miscommunication, help patients navigate the office environment and health care system, and support patients' efforts to improve their own health. (t)

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Appendix B. Selected Examples of Health Literacy Measures

Numerous measures exist to assess different aspects of the health literacy concept. These measures include accessibility of health communications and capacities of individuals who send or receive health communications. Information may be communicated to people in a variety of ways. For example, it can be through health-related forms, or written and oral health messages (e.g., prescription instructions, nutrition labels, lifestyle recommendations). The health literacy skills of providers and the policies and practices of health facilities (e.g., scheduling, signage) are also measurable health literacy factors.

Health literacy measures may also assess factors such as the reading, math, and comprehension skills of patients; the quality of health information (level of readability, use of plain language, clarity of communication); difficulty of steps or tasks required for patients to seek information and make decisions; and effectiveness of provider communications. The Health Literacy Brief provides references for resources on published measures. The following are selected examples of health literacy assessments of individuals, populations, facilities, and organizations:

Individual Health Literacy Assessments

Health Services Research and Development Center of Excellence's Health Literacy Screening Questions in Clinical Care to identify patients with inadequate health literacy (VA Puget Sound Health Care System, Seattle).

Chew, L. D., Bradley, K. A., & Boyko, E. J. (2004). Brief questions to identify patients with inadequate health literacy. *Family Medicine*, *36*(8), 588-594.

How often do you have problems learning about your medical condition because of difficulty understanding written information?

1 - Always
2 - Often
3 - Sometimes
4 - Occasionally
5 - Never

How confident are you filling out medical forms by yourself?

1 - Extremely
2 - Quite a bit
3 - Somewhat
4 - A little bit
5 - Not at all

How often do you have someone (like a family member, friend, hospital/clinic worker, or caregiver) help you read hospital materials?

1 - Always
2 - Often
3 - Sometimes
4 - Occasionally
5 - Never

Population-Level Assessment Items

These health literacy questions were added to CDC's Behavioral Risk Factor Surveillance System 2016 to characterize population-level health literacy:

https://www.cdc.gov/brfss/questionnaires/pdf-ques/2016brfss_questionnaire_10_14_15.pdf

1. How difficult is it for you to get advice or information about health or medical topics if you needed it?
   1 - Very easy
   2 - Somewhat easy
   3 - Somewhat difficult
   4 - Very difficult
   5 - I don't look for health information

2. How difficult is it for you to understand information that doctors, nurses, and other health professionals tell you?
   1 - Very easy
   2 - Somewhat easy
   3 - Somewhat difficult
   4 - Very difficult

3. You can find written information about health on the Internet, in newspapers and magazines, and in brochures in the doctor's office and clinic. In general, how difficult is it for you to understand written health information?
   1 - Very easy
   2 - Somewhat easy
   3 - Somewhat difficult
   4 - Very difficult
   5 - I don't pay attention to written health information

Health Care Provider – Patient Interaction

These measures capture patients' experiences communicating with health care providers.

The Medical Care Expenditure Survey health literacy questions can be accessed from this link: https://www.ahrq.gov/cahps/surveys-guidance/item-sets/hp/suppl-healthlit-items-hp-survey50-adult.html

Health Literacy Environment Reviews

These contain questions and checklists about organizational policies, practices, and training that characterize the readiness and capacity of health organizations and systems to serve consumers and patients with any level of health literacy skills:

Rudd, R. E., & Anderson, J. E. (2006). The Health Literacy Environment of Hospitals and Health Centers. Partners for Action: Making Your Healthcare Facility Literacy-Friendly. *National Center for the Study of Adult Learning and Literacy (NCSALL)*.

Items for this environmental review are listed on pages 7-25:

https://cdn1.sph.harvard.edu/wp-content/uploads/sites/135/2012/09/healthliteracyenvironment.pdf

Thomacos, N., & Zazryn, T. (2013). Enliven organisational health literacy self-assessment resource. *Melbourne: Enliven & School of Primary Health Care, Monash University*.

This example incorporates the 10 attributes of health-literate health care organizations presented in the 2012 IOM paper: (28) https://www.hqsc.govt.nz/assets/Consumer-Engagement/Resources/Enliven-health-literacy-audit-resource-Mar-2015.pdf

Appendix C. Links to Health Literacy Policies and Initiatives

American Academy of Pediatrics (AAP)

AAP has convened a health literacy and pediatrics conference (with papers published in supplement to *Pediatrics*); held webinars; developed plain language resources; and created a continuing education course.

https://www.aap.org/en-us/professional-resources/Research/research-resources/Pages/Health-Literacy-and-Pediatrics.aspx

American Academy of Nursing (AAN)

AAN released a policy brief (March 2018) on health literacy. It supported the active involvement of nurses in enhancing health literacy for patient populations "to reduce health literacy disparities and to increase empowerment of patients."

https://higherlogicdownload.s3.amazonaws.com/AANNET/c8a8da9e-918c-4dae-b0c6-6d630c46007f/UploadedImages/docs/Press%20Releases/2018/2018_Health_Literacy-PR_0319.pdf

American Dental Association (ADA)

ADA has conducted a national survey of practitioners' health literacy knowledge and practices, and invested in developing resource materials and seminars for practitioners. It also supports a longstanding national advisory committee on health literacy.

https://www.ada.org/en/public-programs/health-literacy-in-dentistry

American Public Health Association (APHA)

APHA's 2010 policy statement on health literacy relates to other APHA policies that address health behaviors, social determinants, diseases, and providers. In addition, it calls for actions to be taken by Congress, state boards of education, federal agencies (i.e., Departments of Education, and Health and Human Services) and public health and health care communities.

https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/09/08/00/health-literacy-confronting-a-national-public-health-problem

PROMOTING HEALTH AND WELL-BEING: AN EVOLUTION

This brief addresses the concept of **health promotion**, which is highlighted in the foundational principles and overarching goals of the Committee's first report to the Secretary.

INTRODUCTION

Recognizing that social, physical, and economic factors contribute to a society's health and well-being, Healthy People has considered health promotion a cornerstone since the initiative's inception. In 1979, publication of the Surgeon General's Report on Health Promotion and Disease Prevention (1) launched Healthy People. Over the last 4 decades, the resulting initiative has offered national health promotion and disease prevention objectives that are monitored and revisited each decade. Understanding of the breadth and scope of health promotion has evolved over this period and provides an opportunity to highlight this critical component of Healthy People.

The foundational principles and overarching goals of the Healthy People 2030 framework provide the imperative for effective and broad-based health promotion actions that progress toward the 2030 vision: "A society in which all people can achieve their full potential for health and well-being across the lifespan." To achieve this vision, the overarching goals call for promoting health and well-being by taking actions to create healthy physical, social, and economic environments, and engaging multiple sectors to take action and design policies that improve the health and well-being of all.

This brief refers to health promotion as "promoting health and well-being," rather than "promoting health." Adding the concept of "well-being" emphasizes health promotion activities beyond the health system. As described in the brief on Health and Well-Being, "Well-being is both a determinant and an outcome of health." (1, 2) Although health promotion activities embrace a holistic and comprehensive approach to health and well-being, public policies that complement health promotion often lag behind health promotion models and interventions.

DEFINING HEALTH AND WELL-BEING PROMOTION FOR HEALTHY PEOPLE 2030

The World Health Organization's (WHO) definition of health promotion remains relevant for Healthy People 2030: "The process of enabling people to increase control over, and to improve, their health." The essential issue for Healthy People 2030 is prioritizing activities that are most likely to achieve its vision and address both health and well-being.

WHO's definition moves beyond a focus on individual behavior toward a wide range of social and environmental interventions. (2) WHO expands on this definition (3) by explaining the need for a health promotion approach:

> "The attainment of the highest possible standard of health depends on a comprehensive, holistic approach, which goes beyond the traditional curative care, involving communities, health providers and other stakeholders. This holistic approach should empower individuals and communities to take actions for their own health, foster leadership for public health, promote intersectoral action to build healthy public policies and create sustainable health systems in the society."

According to WHO, 3 key elements of health promotion are good governance for health, health literacy, and healthy cities. WHO's explanation of health promotion speaks to key foundational principles of Healthy People 2030, such as the principle that promoting and achieving health and well-being is a "shared responsibility." Health promotion also addresses the overarching Healthy People 2030 goal to "engage leadership, key constituents, and the public across multiple sectors to take action and design policies that improve the health and well-being of all." Finally, its focus on social and environmental interventions aligns with the Healthy People 2030 overarching goal to create "social, physical, and economic environments that promote attaining full potential for health and well-being for all."

Clarifying Related Terms

The terms "disease prevention," "health promotion," and "health education" are often used interchangeably. Although the first 2 terms focus on keeping people healthy, they are distinct in important ways. Actions for disease prevention seek to diminish risk factors for specific diseases or conditions, while those for health promotion seek to strengthen assets or possibilities that support health and well-being. As described in the 1979 Surgeon General Report: "Disease prevention begins with a threat to health—a disease or environmental hazard—and seeks to protect as many people as possible from the harmful consequences of that threat." In contrast, "Health promotion begins with people who are basically healthy and seeks the development of community and individual measures which can help them to develop lifestyles that can maintain and enhance the state of well-being." (4)

The third term, health education, focuses on delivering information and developing skills to modify personal behaviors. (5) For example, creating clean air environments is health promotion, whereas offering smoking cessation programs is disease prevention, and tobacco prevention education in schools is health education. Another example can be drawn from the field of injury prevention: improved highway design promotes safety, whereas mandatory car air bags prevent injury in the event of a crash, and driver education programs for traffic violators are health education.

HEALTH PROMOTION INTERVENTIONS

In 1986, WHO partnered with Canada to host an international conference that resulted in the Ottawa Charter for Health Promotion. (6) This charter defined health promotion as comprising 5 actions: building healthy public policy, legislation, fiscal measures, taxation, and organizational change.

Healthy People 2010 reinforced the need for actions or interventions by adopting the definition of health promotion as "any planned combination of educational, political, regulatory, and

organizational supports for actions and conditions of living conducive to the health of individuals, groups, or communities." (7)

Health promotion interventions occur at personal, site-specific community, and societal levels. They address a range of economic, social, cultural, environmental, and political factors, referred to as "determinants of health." These factors influence health and well-being outcomes in the settings where people grow, learn, work, and live. Health promotion interventions can support optimal health and well-being outcomes and have direct effects at the societal level (e.g., through the creation of policies, environmental changes, or systems changes that address human rights). Population-level health promotion addresses the determinants of health, which are fundamental to achieving health equity.

Promotion of health and well-being at the personal level focuses on preventive health care. Such interventions might include prescriptions for lifestyle change instead of traditional, cure-oriented medical care. Community-based health promotion interventions target settings where people spend their time, such as home, school, work, or places where they socialize.

- **Worksite-based interventions** can include offering employee assistance programs that address addiction and mental and behavioral health issues, providing physical fitness opportunities, making nutritious food and beverage options available, offering financial incentives for disease reduction, and delivering stress management classes.
- **School-based interventions** address multiple areas, including the school's physical and psychosocial environments; comprehensive, sequential health education; physical education taught by trained, qualified educators; the availability of nutritious foods; opportunities for physical activity; nursing and behavioral health counseling services; and employee wellness programs.
- **Community-based interventions** include the Coordinated School Health model championed by CDC (8), and the Whole School, Whole Community, Whole Child model (9) disseminated by the CDC with the ASCD), a leading education organization. Community interventions can be specific to a neighborhood or community service, or encompass the entire community (e.g., policies for disclosing nutritional content of food and beverage items sold in stores, restaurants, and vending machines; creating safe streets for pedestrian and bike safety; and conducting assessments that engage community members and result in plans to meet the community's health and well-being needs. (10)

Addressing the underlying influences on health and well-being requires tackling complex upstream factors at the community or societal levels. To help local health departments understand ways of promoting population health and well-being and address determinants of health, the National Association of County and City Health Officials (NACCHO) identified 9 domains of determinants that affect health, with data sources for each. These 9 domains suggest the breadth of population-level health promotion: 1) economic security and financial resources; 2) livelihood security and employment opportunities; 3) school readiness and educational attainment; 4) environmental quality; 5) availability and utilization of medical care; 6) adequate, affordable, and safe housing; 7) community safety and security; 8) civic involvement;

and 9) transportation. (11) Notably, these domains give primary emphasis to the well-being component of “health and well-being.”

From contemporary and historical perspectives, promoting health and well-being involves much more than guiding decisions that individuals make about their health. Implementing programs and models that promote health and well-being at the community and societal levels requires organizational and policy supports, as well as organizational capacity. Such efforts must deal effectively with deep social problems affecting the health status of the U.S. population; they must also work to reduce disparities. Health promotion cannot leave behind those who experience the greatest disparities, while improving outcomes for those who are already more advantaged.

HISTORICAL DEVELOPMENT OF HEALTH PROMOTION

The concept of promoting health and well-being at both personal and societal levels has a long history. Ancient Chinese and classical Greek texts discussed ways of living that could maintain good health. (12) The first widely embraced use of policy as strategy for promoting health emerged from the 1974 LaLonde report, A New Perspective in the Health of Canadians. (13) It challenged the conventional biomedical approach to health and proposed the “health field” concept, which included lifestyle, environment, human biology, and health care organizations, and also stimulated actions across the globe.

The United States followed up on this work in 1976 by passing Public Law 94-317, the Health Information and Health Promotion Act, which addressed health information and health promotion under 1 title (or section) and disease prevention in a separate title. The law also created the Office of Health Information and Health Promotion within the Office of the Assistant Secretary of Health. The 1978 International Conference on Primary Health Care resulted in the Alma-Ata Declaration, which further emphasized health promotion, acknowledging its critical role in sustaining economic and social development and contributing to better quality of life. The 1979 Surgeon General’s Report on Healthy People followed, challenging the United States to take specific actions.

Many health promotion models have since emerged, as noted by the Australian health promotion foundation VicHealth (Figure 1). As research increased understanding of health and its determinants, health promotion models shifted in focus from addressing individual behaviors to seeking changes in social and ecological factors (14), and raising awareness that social and environmental health promotion interventions are important.

Figure 1. VicHealth's Evolving Models of Health Promotion

Biomedical Model	Social Model	Ecological Model
Pre-1970s	1970s onwards	Late 1970s onwards
Focused on risk behaviors and healthy lifestyles	Addressed the broader determinants of health	Acknowledged the reciprocal relationship between health-related behaviors and the environments in which people live, work, and play
Emphasized health education and changing knowledge, attitudes, and skills	Involved intersectoral collaboration	Considered the environment as made up of different subsystems: micro, meso, and macro
Focused on individual responsibility	Acted to reduce social inequities and improve access to health care	Emphasized relationships and dependencies between subsystems
Focused on individual behavior change in isolation of their community/environments	Empowered individuals and communities	Used a shared framework for change at individual and environmental levels, was comprehensive and multifaceted

VicHealth's Evolving Models of Health Promotion. Adapted from VicHealth, n.d. Retrieved from https://www.vichealth.vic.gov.au/

In 2011, the Office of the U.S. Surgeon General issued the National Prevention Strategy, which identified 4 strategic directions: healthy and safe community environments, clinical and community preventive services, elimination of health disparities, and empowering people to make healthy choices. (15) These directions highlighted the importance of promoting health and well-being and improving the quality of life for all Americans.

Within the past decade, the Robert Wood Johnson Foundation (RWJF) offered an expanded notion of health promotion by seeking to create a "Culture of Health." The RWJF model called for improving population health, well-being, and equity by working within 4 action areas: making health a shared value; fostering cross-sector collaboration to improve well-being; creating healthier, more equitable communities; and strengthening the integration of health services and systems. Equity is a central concern for all these actions. (16)

Today, we understand that health promotion involves more than seeking to influence the decisions that individuals make about their own health and well-being. It requires organizational and policy supports as well as organizational capacity to implement such programs and models.

HEALTH PROMOTION IN THE HEALTHY PEOPLE INITIATIVE

The central theme of the first iteration of Healthy People objectives, which set targets for 1990, was that both individual actions and actions taken by the public and private sectors to support safe and healthy environments can lead to improvements in health. Most of the health promotion interventions in the 1990 initiative addressed individual behaviors or services, but several addressed needed laws, policies, and site-specific or community-wide programs.

Healthy People 2000 recognized the value of a population-focused approach; it stressed the need to reduce health care costs and improve quality of life through such efforts. It distinguished

between health promotion strategies (focused on individual actions) and health protection strategies (focused on systemic actions).

Healthy People 2010 included a targeted focus on sites for health promotion interventions and introduced the concept of determinants of health. The chapter on Education and Community-Based Programs detailed targeted health promotion interventions, including a strong focus on programs designed to reach individuals in non-traditional settings (e.g., those outside of health care, such as schools, worksites, and communities). The chapter highlighted multiple determinants of health, such as social and environmental factors and provided an overall definition of health promotion, as mentioned earlier. (7)

Although Healthy People 2020 did not provide a specific definition of health promotion, it acknowledged the importance of an approach to promoting health that addressed ecological factors and determinants of health. Healthy People 2020 expanded its focus to encompass health-enhancing social and physical environments.

BEYOND PRIMARY PREVENTION: PROMOTING HEALTH AND WELL-BEING IN HEALTHY PEOPLE 2030

Health promotion and disease prevention objectives have defined the Healthy People initiative throughout the decades. Some iterations have offered definitions of health promotion, while others have assumed that users understood this concept. Healthy People 2030 should move beyond the medical model of primary prevention. It should emphasize that evidence-based actions to promote health are fundamental to fostering equity and social justice, and should encourage such actions at all levels (individual, community, state, tribal, and national).

Since the 1979 launch of the Healthy People initiative, the United States has not made the progress needed to improve health and well-being and eliminate health disparities. To achieve better outcomes in this decade, Healthy People 2030 must change its emphasis and suggest different ways to prioritize time and money. Recognizing that many sectors contribute to promoting the population's health and well-being, Healthy People 2030 is responsible for expanding the reach of its health promotion efforts. Although individuals share some responsibility for their health and well-being, supportive environments make their choices easier. The emphasis must now shift to social and environmental opportunities for improving population health and well-being.

Though it was created over 3 decades ago, the Ottawa Charter for Health Promotion provides a guide for Healthy People 2030. It views health as a "resource for everyday life, not the objective of living," and defines prerequisites for health such as "peace, shelter, education, food, income, a stable eco-system, sustainable resources, social justice, and equity." The charter calls for advocating, enabling, and mediating actions at all levels that are adapted to meet local and regional needs, and that take into account unique social, cultural, and economic systems. (17)

Healthy People 2030 could partner with other organizations such as RWJF and build on its Culture of Health model, or other relevant national or international models. A holistic approach could empower individuals and communities to take actions for their own health and well-being, foster public health leadership, promote intersectoral action to build healthy public policies, and create sustainable societal systems that promote health and well-being.

It could recommend interventions at the personal, organizational, social, and political levels to enable changes in lifestyles, environments, and other realms that improve or protect health and well-being while striving to achieve health equity.

Effecting population-level change will require public health to work collaboratively across sectors to improve outcomes in health, education, economics, the environment, and social cohesion. In some cases, moving interventions further upstream could delay short-term measurable changes in morbidity and mortality; however, such public policy interventions have demonstrated long-term positive effects with broad population impact.

Healthy People 2030 should consider including objectives for determinants that have evidence of effects on future health and well-being. Examples include clean air ordinances, access to clean water, and reduced exposures to adverse childhood events (experienced by 45 percent of U.S. children). (18) Such an approach is consistent with Healthy People 2030's foundational principles. By making the promotion of health and well-being a priority, Healthy People 2030 objectives could "move beyond a focus on individual behavior toward a wide range of social and environmental interventions." (19)

MEASURING HEALTH AND WELL-BEING PROMOTION

Measuring the effectiveness of health promotion interventions should take place at multiple levels: individual, program, community, and policy. To capture advances in promoting health and well-being, the measures of progress used by Healthy People 2030 will need to go beyond those specific to public health and health care settings. Information from agricultural extension offices, planning departments at all levels, schools, businesses, parks and recreation agencies, transportation systems, the census, and the financial sector are potential sources of such data. In addition to NACCHO's list of data sources for its 9 domains of health determinants, (9) measures might include those found in RWJF's Culture of Health model. These include 41 national evidence-based measures that encompass both traditional health indicators and all aspects of well-being. Selected measures are provided in Figure 2. (20)

Figure 2: Selected Measures and Related Sources for Assessing the Culture of Health

Civic engagement	Built Environment	Quality of Partnerships	Investment in Collaboration
Volunteer engagement *U.S. Current Population Survey*	Housing Affordability *American Community Survey—US Census Bureau*	Local health department collaboration with community organizations *NACCHO Profile Survey*	U.S. Corporate Giving *Giving in Numbers Survey: Trends in Corporate Giving*
Voter participation *U.S. Atlas on General Election Turnout*	Access to Healthy Foods *USDA Food Access Research Atlas*	Improve Health for Youth at Schools *Census of school-based health centers from School-Based Health Alliance*	Federal Allocations for Health Investments *Food and nutrition data from OMB; Highway Bike Obligations from DoT; Land & Water Conservation Fund from Dept. of Interior Office of Budget*
	Youth Safety *National Institute of Drug Abuse Monitoring the Future Survey*	Workplace health promotion *Employee Health Management Best Practices Scorecard*	

Selected Measures and Related Sources for Assessing the Culture of Health. Adapted from Measuring What Matters: Introducing a New Action Framework, Robert Wood Johnson Foundation, 2015, November 11. Retrieved from https://www.rwjf.org/en/blog/2015/11/measuring_what_matte.html.

CONCLUSIONS

If the United States is to make significant improvements in population health, Healthy People 2030 must expand and enhance its focus on promoting health and well-being. The time is right for this shift. Changing our national investment to promote the health and well-being of an increasingly diverse U.S. population will require increased cross-sector collaboration. Healthy People 2030 has an opportunity to break through silos, providing the impetus to shift investment priorities and adopt innovative thinking. Such efforts are critical to achieving progress toward the Health People 2030 vision, and to driving progress toward making the U.S. the healthiest nation.

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LAW AND POLICY AS DETERMINANTS OF HEALTH AND WELL-BEING

This brief explores the concept of **law and policy** as determinants of health and well-being. Issues addressed include how the use of law and policy in Healthy People has evolved, related nomenclature, considerations for measurement, and incorporation of these concepts into Healthy People 2030. Although this brief focuses on public policy due to space limitations, policies that flow from the private or quasi-governmental sectors can also deeply influence health and well-being.

INTRODUCTION

Laws and policies play a critical role in improving poor health in populations and creating conditions that support good health and well-being. Yet, they also can contribute to or worsen poor population health. Indeed, law and legal policy effectively serve as the Nation's primary structural engineer, responsible for its foundation, its most important design features, and its resiliency. All of these elements contribute to social determinants of health: conditions in the environments in which people are born, live, work, and play, and also how people experience these conditions. Put plainly, laws and policies define individuals' and communities' environments. Laws and policies are related, but distinct.

- A **law** is an established procedure, standard, or system of rules that must be followed by members of a society. Laws take many forms, such as constitutions, statutes, regulations, and case law (i.e., court decisions). They are shaped by "subregulatory guidance"—written guidance that does not go through the formal rulemaking process. This guidance appears in various forms, such as agency memoranda, letters to program officials, and manuals.
- A **policy** is a decision or set of decisions oriented toward addressing a long-term purpose or problem. A policy is not in itself a law; however, the policy-making process can identify laws that would be needed to accomplish the policy's goals.

In a public health context, policies and laws are often interrelated but have different purposes. When a statute is written to put into effect a policy decision, it may or may not do so clearly. For example, it may be written in a way that has more than one possible interpretation or that is difficult to understand. When a regulation is written to do what is required by a statute, it also may be unclear. Both situations can result in the original policy not being carried out as intended. Policies set out goals and planned activities, whereas laws put in place the institutional and legal frameworks needed to achieve those goals and activities. Laws and policies shape everyday life circumstances, societal institutions, and systems. For this reason, they influence health and well-being in many ways. We briefly describe 5 such ways here:

1. Laws and policies **can be used to promote public health and well-being through direct responses to social conditions and structures that contribute to health-harming inequities**. Such circumstances can result from poverty, illness, market failure, or individual behavior that harms others. Examples of laws and policies that fall into this category include

Medicaid, Medicare, Title VI of the Civil Rights Act, EMTALA, CHIP, the Public Health Service Act, state-level public health codes, seatbelt laws, tobacco control laws, and many others too numerous to describe.

2. Laws and policies at the community, state, tribal, and federal levels **can be used to maintain social conditions that can have harmful physical, mental, and emotional effects on individuals and populations.** Examples include redlining, racial mortgage steering, and social segregation in housing.

3. **Selective application of the law based on biases and prejudices can affect distributions of health and well-being across populations.** For example, although African Americans and Caucasians in the United States use illicit drugs at approximately the same rate, African Americans are much more frequently arrested, charged, and jailed for drug-related offenses than are Caucasians.

4. Sound, collaborative policymaking can lead to excellent legal codes (such as a strong community housing code). However, **laws and legal rights are hollow without implementing regulations, adequate funding, and effective enforcement.** Thus, laws can negatively influence health and well-being through lack of regulatory attention, under-funding, or under-enforcement.

5. Finally, **policies, regulations, and statutes can affect health and well-being because of the ways in which they are interpreted by courts.** For example, when the U.S. Supreme Court determined that the Affordable Care Act's (ACA) Medicaid expansion could only be implemented on a voluntary basis, rather than a mandatory one, the ruling resulted in several million people across 19 states having no access to Medicaid's benefits. In the same decision, however, the court found that the ACA was a constitutional exercise of Congress's taxing authority.

FRAMEWORKS FOR LAW AND POLICY AS A DETERMINANT

There are multiple frameworks through which laws and policies can be considered as determinants of health and well-being. We offer 3 here:

1. **Health and well-being in all policies and laws.** A health and well-being in all policies (HIAP) approach to population health is likely to be familiar to many. This approach is based on the understanding that many pressing health challenges—such as inequities, chronic disease, and the need for insurance reform—are complex, multidimensional, and linked to one another. The notion of health and well-being in all policies and laws relies on a collaborative governmental (and sometimes nongovernmental) approach to improving health. It incorporates health considerations into an array of policy decisions. (1)

2. **Policy and law as tools to promote population health.** Larry Gostin, one of the world's foremost experts in public health law, has developed a framework premised on the use of policies and laws as tools to promote public health and safety. (2) The framework uses 5 models of public health regulation: 1) economic incentives and disincentives (based on the legislative branch's taxing and spending powers); 2) the informational environment (education, labeling, and commercial speech regulation); 3) direct regulation (penalties for

engaging in risk behavior); 4) indirect regulation (the tort system); and 5) deregulation (dismantling legal barriers to desired public health behaviors).

3. **Multisectoral collaboration.** Governments and other stakeholders should engage in multisectoral law and policy efforts to shape the economic, physical, and social environments in which people live, work, and play. Improving individual and population health and well-being requires partnerships and intersectoral initiatives (e.g., among policy stakeholders in sectors such as education, justice, and employment) to create healthier environments. (3) These efforts should also leverage the growing interest in "clinical–community relationships" to create multistakeholder, community-wide collaborations.

HISTORICAL CONTEXT: LAW AND POLICY IN HEALTHY PEOPLE

Although law and policy have been part of Healthy People since its inception, the purpose and focus of this role has varied. The original 1979 Surgeon General's report that launched Healthy People (4) did not mention law and policy as part of the overarching framework; however, laws, legislation, and regulations were addressed in several areas. The objectives addressed topics that included reducing risk factors such as injuries from not wearing seatbelts; following speed and helmet laws; labeling foods to provide more information to consumers; providing health and safety standards to protect citizens at the federal, state, and community levels; and even offering legal aid services to protect older adults. Law and policy were also discussed in the introductory narrative for this initial version of Healthy People, and specific targets relevant to law and policy were included. (5, 6)

Discussion of law and policy continued to a varying degree in objectives for Healthy People 2000, 2010, and 2020 (see summary in Figure 1). A scan of the Healthy People objectives through the decades was conducted, taking a fairly conservative approach in determining which of them specifically mention or require implementation of a law or policy.* The objectives differed across the decades in terms of the topics or focus areas that included them, and the content of the objectives themselves.

For example, in Healthy People 2010, the Public Health Infrastructure category evaluated 2 public health law models: The Turning Point Model State Public Health Act and Model State Emergency Powers Act. (7) For Healthy People 2020, a notable shift was a mention of policy in its mission statement as well as a stated goal to create "social and physical environments that promote good health for all." Achieving such a goal would require laws and policies that aim to create healthy environments.

The Healthy People 2020 mission includes a charge to "engage multiple sectors to take actions to strengthen policies and improve practices that are driven by the best available evidence and knowledge." (8) Many Healthy People 2020 objectives focus on laws and policies, although not in all areas that would benefit from using law as a lever. Out of 1,200 objectives in 42 topic areas, only 59 objectives in 10 topic areas include specific mention of policy interventions. Most

*Inclusion criteria: (1) objectives that explicitly mention a law (e.g., Safe Drinking Water Act), or (2) objectives that require implementation of a policy (versus promoting or encouraging implementation).

of these objectives (28 objectives) are from the Tobacco Use topic area. (9) Several objectives focus on implementing efforts to assist with policy or regulation development (see Figure 1).

Many Healthy People 2020 objectives that do not specifically focus on law and policy may require legal and policy approaches for successful implementation. For example, Oral Health objective 13, “Increase the proportion of the U.S. population served by community water systems with optimally fluoridated water,” focuses on the proportion of the population that is covered by the water system, as opposed to the legal intervention itself. Conversely, Tobacco Use objective 19, “Reduce the illegal sales rate to minors through enforcement of laws prohibiting the sale of tobacco products to minors,” would be included in the list of objectives that address law and policy, as the objective focuses on specific laws related to tobacco control.

Figure 1. Objectives and Topic Areas Incorporating Law and Policy Across Decades

Decade	Objectives Incorporating Law and Policy	Topic Areas with Law and Policy Objectives	Topic Areas
Healthy People 1990	4 of 226	3 of 15	Toxic Agent and Radiation Control, Smoking and Health, Nutrition
Healthy People 2000	27 of 319*	10 of 22	Tobacco, Substance Abuse: Alcohol and Other Drugs, Violent and Abusive Behavior, Unintentional Injuries, Occupational Safety and Health, Environmental Health, Food and Drug Safety, Cancer, Diabetes and Chronic Disabling Conditions, Immunization and Infectious Diseases
Healthy People 2010	23 of ~1,000^ ^	6 of 28	Environmental Health, Injury and Violence Prevention, Physical Activity and Fitness, Public Health Infrastructure, Substance Abuse, Tobacco Use
Healthy People 2020	59 of >1,200^	10 of 42	Adolescent Health; Early and Middle Childhood; Environmental Health; Injury and Violence Prevention; Maternal, Infant, and Child Health; Nutrition and Weight Status; Physical Activity; Preparedness; Substance Abuse; Tobacco Use

*In HP2000, some objectives were included under more than 1 topic area. Duplicate objectives were given more than 1 objective number (e.g., 3.11 and 10.18) to indicate that they fell under each of those topic areas. For this exercise, these objectives are counted twice to reflect that they are in both topic areas.

^In HP2010 and HP2020, some objectives are grouped under a main objective "header." The subobjectives are the measurable objectives. The number of relevant objectives reflects all measurable objectives related to law and policy.

LAW AND POLICY IN HEALTHY PEOPLE 2030

Law and policy are essential determinants of health and well-being; they may enhance or worsen health, heath equity, health disparities, and health literacy. Healthy People provides the opportunity to examine the effects of law and policy at the national, state, tribal, and community levels. Therefore, clear and measurable objectives yielding high-quality data that can be used to

monitor objectives are required. Data should be widely accessible to all stakeholders to support assessment of the impact of law and policy on health and well-being.

As powerful determinants of health and well-being, law and policy provide important tools to improve health and well-being, achieve health equity, reduce health disparities, and attain health literacy. Law and policy should be important objects of interest in Healthy People 2030.

The U.S. Department of Health and Human Services (HHS) may want to consider the role and importance of law and policy when selecting objectives and the Leading Health Indicators (LHIs). Laws and policies can affect resource allocation for data infrastructure and mandate health-promoting interventions (e.g., vaccination requirements, housing quality standards, early childhood education, and safe cars and roadway design standards); they can also provide incentives for stakeholders to participate in improving the Nation's health.

Another issue to be considered includes the possible merits of introductory narrative sections for each Healthy People 2030 topic area. Such sections could explore relevant issues for achieving objectives through law and policy (e.g., essential factors to be taken into account in formulating policy to meet the objectives within each topic area).

It is valuable to consider processes by which law and policy are made, as well as processes by which the outcomes of laws and policies can be assessed. All people have the opportunity to be involved in informing and developing laws and policies. Engaging in law and policy formulation at the community, state, tribal, or national levels is one way that all citizens and stakeholders can work to improve health and well-being in the United States. Active participation in this process is an important way to take part in meeting Healthy People 2030 objectives.

Introducing new laws and policies provides the chance to rigorously assess outcomes, including whether they produced the intended outcomes, as opposed to unintended consequences. Examples that illustrate the importance of evaluating the effects of policies include allowing children to be exempted from vaccination, or repealing motorcycle helmet laws. Rigorous assessment of outcomes related to such laws and policies helps to make explicit the linkage between law, policy, health, and well-being.

Indeed, the Healthy People 2030 framework, including the foundational principles and the plan of action, refers to the importance of laws and policies. Specifically, one of the overarching goals is to "engage leadership, key constituents, and the public across multiple sectors to take action and design policies that improve the health and well-being of all."

The Healthy People 2020 Law and Health Policy Project is another resource that can guide HHS's efforts and the development and implementation of Healthy People 2030 in this area. The project explores ways that law and policy can be used as tools to help achieve the 2020 national health objectives. As a collaboration among the Robert Wood Johnson Foundation, Centers for Disease Control and Prevention, CDC Foundation, and the Office of Disease Prevention and Health Promotion (the project lead), the project is intended to develop products that communicate the importance of evidence-based legal and policy interventions in reaching specific Healthy People science-based targets. (10, 11)

MEASUREMENT AND EVALUATION

All past iterations of Healthy People have included objectives that tracked progress on specific legal and policy interventions. Some law- and policy-relevant data and surveillance information are available. For these objectives, we can evaluate the impact of legal interventions on specific health targets. However, law and policy interventions are not included or measured uniformly across topic areas.

Because law is an important lever to improve health and well-being, it is crucial to measure the impact of legal and policy interventions on the health status of populations, the effectiveness of health promotion interventions, and the behaviors of various sectors that influence population health. Therefore, the subdiscipline of "legal epidemiology" has emerged. Legal epidemiology is the "scientific study and deployment of law as a factor in the cause, distribution, and prevention of disease and injury in a population." (12) Its 3 main areas of focus are 1) legal prevention and control (i.e., the study and application of laws and legal practices as interventions to prevent disease and injury and as enablers of effective public health administration); 2) legal etiology (i.e., the study of laws and legal practices as causes of disease and injury; and 3) policy surveillance (i.e., the ongoing, systematic collection, analysis, and dissemination of information about laws and other policies of importance to health and well-being).

The impact of legal and policy interventions should be studied in the same manner as other public health interventions. This may be challenging, however, because laws and policies can take years to demonstrate impact, making it difficult to generate scientific evidence on whether the law or policy is making progress toward achieving a specific objective. However, coupling high-quality surveillance data with variations in laws and policies across the community, state, tribal, or national levels (e.g., laws pertaining to the storage of legal firearms) offer excellent opportunities to examine how these variations produce different outcomes within the targeted populations. Healthy People could help show the impacts of law and policy, stimulate new methodologies, and identify new data sources.

HHS should consider the possibility of enlisting researchers to develop new ways or evaluate existing ways of assessing whether laws and policies improve or hamper progress toward specific Healthy People 2030 objectives. Such approaches might include using existing data sources and other resources to identify aspects of legal and policy interventions that should be studied. For example, the Community Guide and the County Health Rankings and Roadmaps "What Works for Health?" initiative provide strong, evidence-based recommendations in various public health areas. Organizations such as the Network for Public Health Law, CDC's Public Health Law Program, ChangeLab Solutions, the Public Health Law Center, the Center for Public Health Law Research, and the National Conference of State Legislatures also collect, synthesize, and report on the quantity and effectiveness of certain types of health-related laws and policies. Using these types of resources, and the potential measurement and evaluation projects that could flow from them, HHS may wish to consider a law and policy research agenda that cuts across Healthy People objectives and topic areas.

CONCLUSIONS

Laws and policies are important levers to improve health and well-being and to reach national targets and goals. Indeed, health-harming structural and social determinants of health are neither natural nor immutable; they are human-made—in many cases through the creation, revision, repeal, or lack of law and legal policy—and can be dismantled through human efforts. As a result, Healthy People 2030 should strive to promote the use of laws and policies as tools by which the Nation can affirmatively attack health disparities and health inequities and improve national health and well-being.

Respectfully submitted by the Healthy People 2030 Law and Policy Brief Subcommittee:

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COMPLEX SYSTEMS SCIENCE AND MODELING

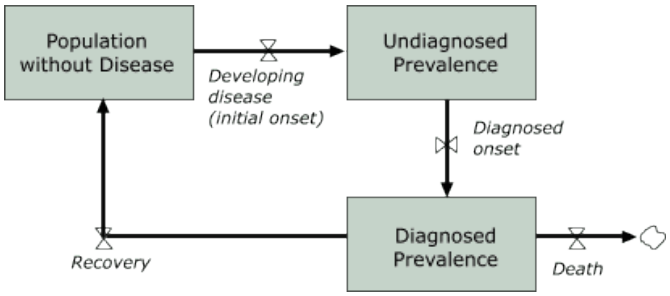
This brief addresses the concept of **complex systems science and modeling**.

INTRODUCTION

Systems may be simple, complicated, or complex. Both simple and complicated mechanical systems are designed to remove the element of surprise so that systems become predictable across many different types of circumstances. For example, consider the case of an automobile—a "complicated" system. An individual may not fully understand how all of its components work—either individually or together. There are literally thousands of parts that function according to precise, simple, predictable, and cause-and-effect rules. Yet, the entire automobile could be taken apart and put back together again without the automobile losing any of its function or performance. (1)

Now consider many automobiles driving down the highway. Taken together, these automobiles and their drivers constitute a "complex" system. The drivers interact and adjust their behaviors based on multiple factors including weather, habits, perceptions, and emotions. No single driver is in control, there is no single destination, and some drivers obey the rules of the road whereas others may not. In contrast to the single automobile, the behavior of such a complex system is difficult to predict; it may not produce the same results if the system is taken apart and then reassembled. (2)

Figure 1. Adapted from Milstein, et al. *Prev Chronic Dis* 2007



Public health and population health are more like traffic than a single automobile—that is, they are complex. Considering the Healthy People context, what is the best way to set achievable health and well-being targets for the year 2030? Many factors influence a particular objective. Assumptions for creating targets must take these influences into account. If they do not, it is less likely that the targets can be achieved.

Consider the example of diabetes prevalence reduction. Healthy People 2010 objectives called for a 38 percent reduction in the prevalence of diagnosed diabetes mellitus (both type 1 and 2 diabetes). The process for setting this objective was based on 1997 data; however, it did not focus on the achievability of this objective or its compatibility with other national public health objectives. A complex systems model was created to explore plausible trajectories for diabetes

prevalence in the context of rising levels of obesity in the population. (3) The results showed that this specific objective was unattainable, given the historical processes that affect diabetes incidence, diagnosis, and mortality.

The model that was deployed considered rates at which people develop, are diagnosed with, and die from diabetes; it also assessed the impact of various preventive interventions. The model analysis showed that, because the annual number of new diabetes cases far exceeds deaths, it would take at least a 50 percent reduction in newly diagnosed cases of diabetes to stop the increase in diagnosed diabetes prevalence. Thus, the Healthy People 2010 targeted reduction could not be achieved under any plausible conditions.

The analysis also revealed that other Healthy People objectives to improve recognition of undiagnosed cases of diabetes and to reduce diabetes-attributable mortality worked against the objective to reduce diagnosed diabetes prevalence. Hence, it may have been more appropriate to frame the objective in terms of diabetes incidence (new cases), rather than prevalence (existing cases). The generic model structure that was used in this analysis for diagnosed prevalence is shown in Figure 1. (3) Findings of this analysis provide a compelling argument for introducing complex systems science into the set of tools and methodologies that are used as part of Healthy People to avoid a similar gap between goals and dynamics.

COMPLEX SYSTEMS SCIENCE EXPLAINED

A system is a group of components and factors that are interconnected. These parts influence one another in a variety of ways, some obvious and others more difficult to perceive or understand. (4) Every person's body is a complex system that includes elements such as organs, physiologic pathways, and cells. Each human body is, in turn, surrounded and affected by many other types of complex systems (e.g., social, environmental, cultural, and economic). Disturbing one part of a system can affect many other parts in ways that are both direct and indirect, and can lead to ripple effects throughout the system. Therefore, unless a system is well-understood, it can be challenging to identify the root cause of an observed phenomenon or to predict the effects of a change.

Without helpful tools, we can struggle to understand and address systems. It is easier to identify and describe relationships among elements of a system when their exchanges are direct, immediate, or occur in one direction (i.e., cause and effect). It is much more challenging to understand the effects of interactions when they involve moderating factors, back-and-forth exchanges, or delays, and when they are accompanied by secondary, tertiary, and higher-order effects. A system becomes more difficult to completely understand as its complexity increases.

Systems methods are used to make decisions in many fields. Meteorology is one such example. Before weather maps and simulation models came into use, making decisions about activities affected by the weather (e.g., farming or disaster preparedness) involved a fair amount of guesswork. Today, weather modeling has reduced dependency on guesswork and has become widely used for daily decision-making. Systems methods have transformed decision-making in fields such as air traffic control, vehicular transportation, manufacturing, and finance.

These methods also have the potential to transform the fields of health promotion and disease prevention. (5, 6) Identifying systems methods for use in health promotion and disease

prevention requires more than adapting methods from other fields, because public health and medicine have many unique aspects and complexities. Therefore, we need to develop systems methods that are tailored to these fields.

TERMINOLOGY

Rather than attempting to define the terms “complexity” and “complex systems,” we point out several characteristics of complex systems that can help to identify, describe, and understand the nature of complexity in systems.

Complexity is a characteristic of a system; complex behavior emerges because of many interactions among the components of a system. (1) These interactions are not contained within the separate components. An important characteristic of a complex system is that, once the system is taken apart, its emerging properties are destroyed. For example, one cannot understand cognition (which represents something new and unpredictable that evolves as a result of interactions) by studying a single neuron. This is one reason why it is difficult to fully understand—and even to precisely define—complex systems. Some notable characteristics associated with complex systems are provided in Appendix A.

THE APPLICATION OF COMPLEX SYSTEMS SCIENCE

Various approaches, methods, and tools have been developed to help researchers and decision-makers better understand and address complex systems. Major categories include qualitative and quantitative approaches such as systems mapping and modeling, respectively. Systems mapping helps researchers and decision-makers to better “see” a system by developing a diagram, illustration, or another type of visualization of relevant system components and the connections among them. A wide variety of systems maps exist. Such visualizations often use a shape to represent each component, and a line, arrow, or similar connecting graphic to represent a relationship between 2 or more components.

The map may include accompanying descriptive text, different colors, numbers, or other communications techniques. Using a systems map provides a big picture view of what the system looks like. This may enable a person to see components and connections not otherwise recognized. In addition to showing how components of a system may affect each other, a systems map can show how they relate to each other in time, space, and other dimensions. Examples of types of systems maps include social network diagrams, influence diagrams, causal loop diagrams, and various geospatial representations. An example of a causal loop diagram for valuation of community-based prevention policies (7) is presented in Appendix B.

Systems mapping can show the "framework" of a system (i.e., components and their connections), but systems modeling goes several steps further by representing how the system operates quantitatively across time and space. Systems mapping often precedes systems modeling, setting up a rough blueprint for a systems model. A systems model uses a set of mathematical equations or computational algorithms to represent the components, relationships, and processes of a system.

Building a systems model adds more detail to a systems map and makes it “come alive." A systems model can serve as a virtual laboratory to show how a system may run. It can estimate

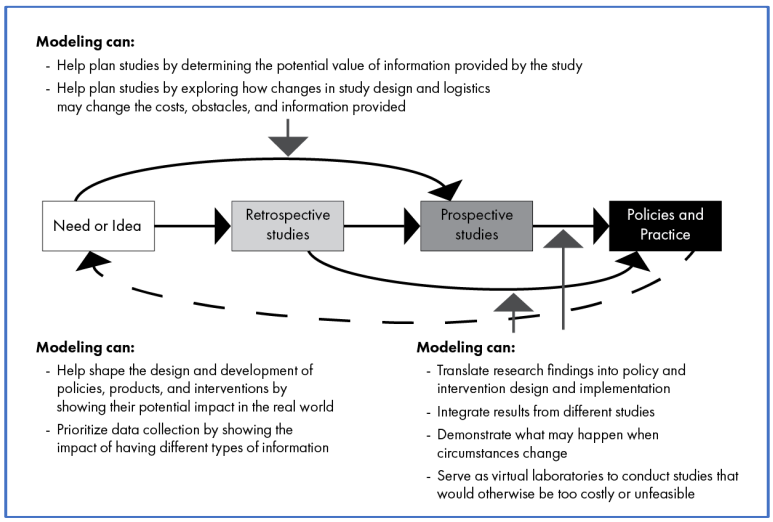
the system's impact and identify its strengths, vulnerabilities, and potential points for intervention. In this manner, the model can test and evaluate different policies and interventions.

Modeling approaches and methods include various types of relationships and actions. Examples range from systems dynamics models (representing "stocks" and "flows" within a system over time) to agent-based models (representing individual agents that interact and influence each other in time and space). Each type of methodology has its relative strengths and weaknesses. Matching the appropriate method to the question and system of interest is important. Depending on the situation, it can be helpful to use and compare multiple methods to address a question. Models can differ in how and to what degree they represent uncertainty and variability in data used for the model. (4, 8)

Sensitivity analyses are important for exploring the effects of systematically varying the values of different model inputs. They can help determine the major drivers of the model, the robustness of results (related to variability and uncertainty), and the value of collecting more data or information. Sensitivity analyses can also be used to prioritize future data collection. For example, if varying the value of a parameter has little effect on key model outputs, the parameter may not be a major driver and collecting more data on it may not be worthwhile.

The process of building systems maps or models can be just as important as the end product. Systems maps can elucidate what is currently known and not known about the system, what mechanisms are involved, what additional data and studies may be needed, what the next steps should be, and how best to prioritize them. Map and model development may occur at the same time. Representatives of key stakeholders may wish to work as a group to co-create maps and models. The process of model building can be iterative. For example, an initial, basic model can help identify the needed next steps, data collection, and studies, which can generate more information to further develop and refine the model.

Figure 2. Adapted from Lee, et al., 2016, *Nutr Rev*, *75*(Suppl1), 94-106.



TRANSLATION AND ADOPTION

Systems methods can be used to translate evidence and to bridge and enhance existing analytical methods. Figure 2 depicts various uses of modeling. It shows how modeling can help researchers advance from ideas to practical implementations. (9) The practical utility of any complex systems analysis—or its typical manifestation in a model—is built on interconnected pillars of understanding, relevance, and trust.

In general, stakeholders will not use a “black box” (i.e., a self-contained process in which inputs, outputs, and relationships between them are known, but whose internal mechanisms are not understood by the user). Instead, stakeholders need an operational understanding of the complex relationships and core assumptions that underlie a model. That is, they should understand how it works and how the components are informed by data.

Such knowledge enables them to adequately interpret and translate findings into practice. An example of such an effort is described in Figure 3. (10)

Figure 3. Modeling to Plan for H1N1 Influenza Epidemic

Modeling influenced decision-making during the 2009 H1N1 influenza pandemic. During the pandemic, modelers from the MIDAS Network worked closely with the U.S. Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), and the Centers for Disease Control and Prevention (CDC), as well as state and local health officials. The work involved using computational models to explore different scenarios to assist decision-making. One example of modeling-based support to decision-making involved the debate over whether to close schools and for how long. Computational models showed that closing schools could actually exacerbate the pandemic if schools did not remain closed throughout the entire course of the pandemic, because closing schools would keep many children unexposed to the flu virus and thus susceptible to infection. If schools re-opened when the virus was still circulating, these susceptible children could be infected and this could add more fuel to the pandemic and extend its duration and impact. Moreover, computational models also showed how prohibitively expensive closing schools would be. A second example related to who should receive the vaccine and in what order. The vaccine had become available in limited quantities in October 2009, necessitating initial rationing. Public health officials had to select the initial target populations and the order in which people would receive the vaccine, and understand how strictly the prioritization schema should be followed. The modeling work included evaluating different vaccine prioritization strategies and the effects of varying compliance with each of these strategies. Ultimately, modeling results favored early allocation to priority groups (as defined by the CDC's Advisory Committee on Immunization Practices) over other options and also demonstrated the value of reaching low-income populations early. Other examples included determining whether vaccine distribution should continue after the second peak of the pandemic and how to use intravenous peramivir (a new antiviral that was about to reach the market during the pandemic. (10)

Using systems models effectively, especially for policy or interventions, involves a number of key best practices, as laid out in the recent IOM report. (11) These include:

- **Stakeholder engagement** in systems analyses. It is ideal to involve stakeholders in the analytic process early to ensure that their meaningful questions are addressed with an appropriate design. “Translators” can facilitate effective dialogue by acting as a liaison among modelers, subject matter experts, and policymakers. (12)
- **Transparency**, another important component of model building. Clear and complete descriptions of design, methods, and supporting evidence help ensure that the systems analysis is understood and can be replicated. Replicability is especially important when practical limitations (such as intellectual property) limit full access to models or analyses.
- **Validation** of research findings in several stages. Such steps can help build confidence in the findings. This is particularly important when translating findings of systems analysis for policymakers. (13) The process begins with face validity; it should be possible to comprehend and interpret results, even if they are counterintuitive. Sensitivity analyses can support such clarity by confirming that stakeholders understand the findings, and that findings align with stakeholders’ expectations. The construction of models should be done carefully and systematically verified to ensure they behave as designed (internal validity).

Model results should be compared to actual observed data, such as data from a clinical trial or epidemiological survey (external validity). Results should be compared among similar models as well (cross-validity). In addition, backcasting may be conducted to make models more relevant to practical recommendations. Backcasting is a planning method that starts with defining a desirable future and then works backwards to identify systems, policies, and programs that will connect that specified future to the present. Sensitivity analyses help characterize uncertainty in the precision of any outcomes and the relative significance of specific model assumptions. (14, 15)

Such exercises may reveal critical gaps in evidence or even quantify the value that additional information can provide. (16) However, predictive accuracy is often not the primary goal of modeling complex systems; explaining natural phenomena, challenging prevailing wisdom, demonstrating trade-offs, and provoking new research or policy questions are worthy objectives in their own right. (17) Examinations made across diverse populations, outcomes, and policy environments lend credibility to predictions that have been made in other contexts.

THE CONTEXT OF HEALTHY PEOPLE

Determinants of health and well-being, the social relationships in which people engage, human biology, health care delivery, public health, and the interdependent relationships among these levels represent complex systems. The manner in which these systems operate may prolong or alleviate suffering and affect health equity, health disparities, or health literacy. Healthy People provides the opportunity to apply complex systems methods to set and facilitate the goals of improving the health and well-being of all people, and to examine the impacts of achieving these objectives at the national, state, tribal, and community levels. Figure 4 describes the complex systems problem of obesity.

Figure 4. Obesity as a Systems Problem

One example of a health-related systems problem is obesity. (15, 16) A system of many different factors affects a person's diet, physical activity, and metabolism. Such influences might include the person's family, peers, food environment, physical activity environment, culture, and sleep patterns, as well as financial status (and thus what he or she can afford to do). Hunger, satiety, cravings, and metabolism are also complex phenomena that involve systems of different factors. Ten different people living in different situations with different bodies can eat exactly the same diet and experience very different outcomes. There are time delays between changes in diet and physical activity and changes in body mass index. Many weight-related diseases and conditions such as diabetes, cardiovascular disease, and cancer take years to evolve and manifest. Thus, research is unlikely to identify a single cause of the ongoing global obesity epidemic, and attempted single-cause solutions have not worked well so far. Recommendations to prevent and control obesity should account for multiple systems.

THE APPLICATION OF COMPLEX SYSTEMS SCIENCE TO HEALTHY PEOPLE 2030

History of Complex Systems Science in Healthy People

It is reasonable to expect that national health objectives can be achieved within the specified timeframe, since they are often used for planning and evaluation of impact at the level of public health practice. This makes the process of setting targets for objectives an important yet difficult consideration. Healthy People introduced complex systems science into the target-setting process, albeit in a limited fashion, for the Healthy People 2020 iteration (a total of 10 objectives used modeling as a target-setting methodology, accounting for 1.1 percent of all objectives). However, no specific guidance or criteria were applied to the modeling methodology to set these targets. The methodologies that were developed did not take into account the impact of specific interventions or policies on risk factors and outcomes.

Some objectives related to cancer screening were considered from a modeling perspective. The National Cancer Institute (NCI) has continued work on modeling cancer outcomes and developed a program called CISNET, in which NCI is modeling the relationship between risk factors and health services on incidence and mortality outcomes for colorectal, esophageal, lung, and prostate cancer.

Linkage of Complex Systems Science to the Healthy People 2030 Framework

What can complex systems science do for Healthy People 2030? Since local subsystems within organizations, populations, communities, and states are nested within the national overarching system, all of these systems work in concert to produce health and well-being—both at their own levels and collectively. Together, they produce an average level of health and well-being aligned with Healthy People goals and objectives. Some subsystems may produce more health and well-being, while others may produce less-than-average levels—thereby making disparities visible. As a methodology, complex systems science may support subsystem-level appropriate approaches to reaching reasonable objectives for specific populations, groups, states, or communities. This is clearly important, as success for Healthy People 2030 will largely depend on the successful implementation of subsystem-level efforts.

It is appropriate to consider the context of the proposed plan of action embedded in the Healthy People 2030 framework (see Figure 5). (18) Based on these proposed actions and considering the complexity of health and well-being problems and their contexts, complex methods are needed. Typically, available methodologies drive the questions that can be asked. Yet, research questions should drive method development. Applying complex systems science methodologies may complement the more traditional methods employed by Healthy People up to this point.

What happens when a population-level intervention to improve health and well-being has a differential impact on various subpopulations? One area of opportunity is to anticipate unintended consequences that may increase risk in defined populations. This would support the framework directly by addressing goals related to health disparities and health equity.

Figure 5. Healthy People 2030 Plan of Action

"What we propose to do"

- Set national goals and measurable objectives to guide evidence-based policies, programs, and other actions to improve health and well-being.
- Provide data that can drive targeted actions to address regions and populations with poor health or at high risk for poor health in the future.
- Foster impact through public and private efforts to improve health and well-being for people of all ages and the communities in which they live.
- Provide tools for the public, programs, policymakers, and others to evaluate progress toward improving health and well-being.
- Share and support the implementation of evidence-based programs and policies that are scalable and sustainable.
- Report biennially on progress throughout the decade from 2020 to 2030.
- Stimulate research and innovation toward meeting Healthy People 2030 goals, and highlight critical research, data, and evaluation needs.
- Facilitate development and availability of affordable means of health promotion, disease prevention, and treatment.

Empirical observations indicate that individuals from vulnerable populations are the least able to positively respond to population-approach interventions, and correspondingly, those who have the most resources available to them are the most likely to derive maximum benefit from untargeted, population-level approaches to improvement. (19)

This is an example of a differential response of 1 system embedded within another system. Complexity associated with microsystem behavior is independent of the larger system within which it is embedded. This is a "systems within systems" phenomenon that may produce unanticipated and unintended consequences. Another example of using complex systems science to avoid unintended consequences is presented in Figure 6.

Figure 6. Drugs from Canada: Avoiding Unintended Consequences with Complex Systems Thinking

Over the past couple of decades, vigorous public policy debate has taken place over whether reimporting drugs from lower-priced foreign markets offers a viable solution to the contribution of prescription medications to rising medical expenditures in the United States. Much of this debate has centered on the safety of such practices and potential adverse effects on pharmaceutical innovation. However, complex systems thinking tells us that this policy may quickly become unsustainable at scale. This insight comes from a game-theoretic bargaining model of drug pricing and trade between Canada (where drug prices are generally lower) and the United States. The model was described by Paul Pecorino (20) at a time when Internet-based commerce was increasing the ease of purchasing medications from pharmacies abroad. Although the mathematics of the model's dynamics can get a bit dense, the result is counterintuitive yet compelling. By allowing Canadian pharmacies to sell to U.S. consumers, Canadian drug purchasers lose their bargaining power, leading to Canadian prices rising to U.S. levels. Despite initial potential gains, the model predicts that eventually U.S. consumers would be no better off, Canadian consumers would be much worse off, and drug companies would likely be the only net gainers, with moderately higher profits. But did this bold prediction pan out? Interestingly enough, the New York Times (21) reported less than 2 years later that Canadian pharmacy wholesalers were becoming increasingly wary of selling to online pharmacies due to threats from drug manufacturers that supplies could be interrupted and prices would increase. A similar complex systems approach may help avoid unintended consequences in responding to recent experiences with steep increases in life-saving drugs, like EpiPen. (22)

Using Complex Systems Science to Support Healthy People 2030

When applying complex systems science to Healthy People 2030, many potential applications and initiatives may be considered. Both qualitative and quantitative methods of complex systems science may be used to support Healthy People 2030 activities. Based on the descriptions and examples provided in this issue brief, we outline several potential actions to support the development of Healthy People 2030:

- Systems mapping that may support identification of factors of importance
- Systems mapping that may support identification of areas of focus within systems most suitable for intervention (e.g., at the level of policy versus program, or within a workplace as opposed to a school setting)
- Visualizing major interrelated factors that impact the overarching goals of Healthy People 2030
- Selecting the most appropriate target-setting methodologies (see Figure 7)
- Modeling the impact of achieving various degrees of progress toward the objective targets
- Mapping stakeholders and the relationships among them
- Identifying unattainable targets
- Raising questions regarding the value of certain processes or pathways that support resource allocation

- Ensuring a trained workforce prepared to contribute to and support progress toward achievement of Healthy People 2030 objectives
- Engaging departmental involvement (e.g., NCI, NCHS) as well as non-governmental or academic partners to support analytical efforts and translation into practical applications

Applications of complex systems science as a tool to support Healthy People 2030 should come with a cautionary note. Attention needs to be paid to the data used for these analyses to ensure the highest quality of data possible. This is especially true when using big data, artificial intelligence, and simulation efforts, as well as non-validated data sources (incorrect data that are input into a model can cause inaccurate modeling). Validation efforts are important to prevent erroneous assumptions that would otherwise be used for decision-making.

Figure 7. The Example of Target-Setting Methodologies

It is the purpose of target-setting methodologies within the Healthy People initiative to specify feasible gains in health and well-being, encourage action, and guide appropriate allocation of human and financial resources by public and private stakeholders. Setting measurable targets requires judgment along with a knowledge base couched in science. As discussed in the example related to diabetes prevalence, complex systems science can support this effort by modeling scenarios and making explicit plausible futures. Modeling has been identified as a priority method for target setting for Healthy People 2030. We make several recommendations for effective modeling:

- Modeling should account for current population profile and trends. This may include age trends or secular shifts in risk profiles (e.g., obesity, tobacco use).
- Modeling should account for current treatment, prevention, and other intervention prevalence patterns.
- Mapping should be used to characterize and account for relevant complex systems in play.
- Targets may be derived from the difference between what can be achieved with new actions versus what can be achieved under current actions.
- Targets may be derived through modeling of realistic levels of uptake of evidence-based policies, interventions, or strategies.

CONCLUSIONS

Healthy People 2030 would benefit from the application of complex systems science. One potential application is systems mapping as part of the process to engage multiple stakeholders; such an effort would provide important insights into the issues that matter to stakeholders. In addition, as a facet of target-setting methodologies, complex systems science may support identification and quantification of appropriate targets for many objectives.

Healthy People 2030 envisions “a society in which all people can achieve their full potential for health and well-being across the lifespan.” (1) Achieving this vision will require methods, tools, and approaches that appreciate the complexity of interacting physical, social, and economic environments. Complex systems science may be able to, at least in part, address this need.

"We can't control systems or figure them out. But we can dance with them!"
—Donella Meadows, 2009 (23)

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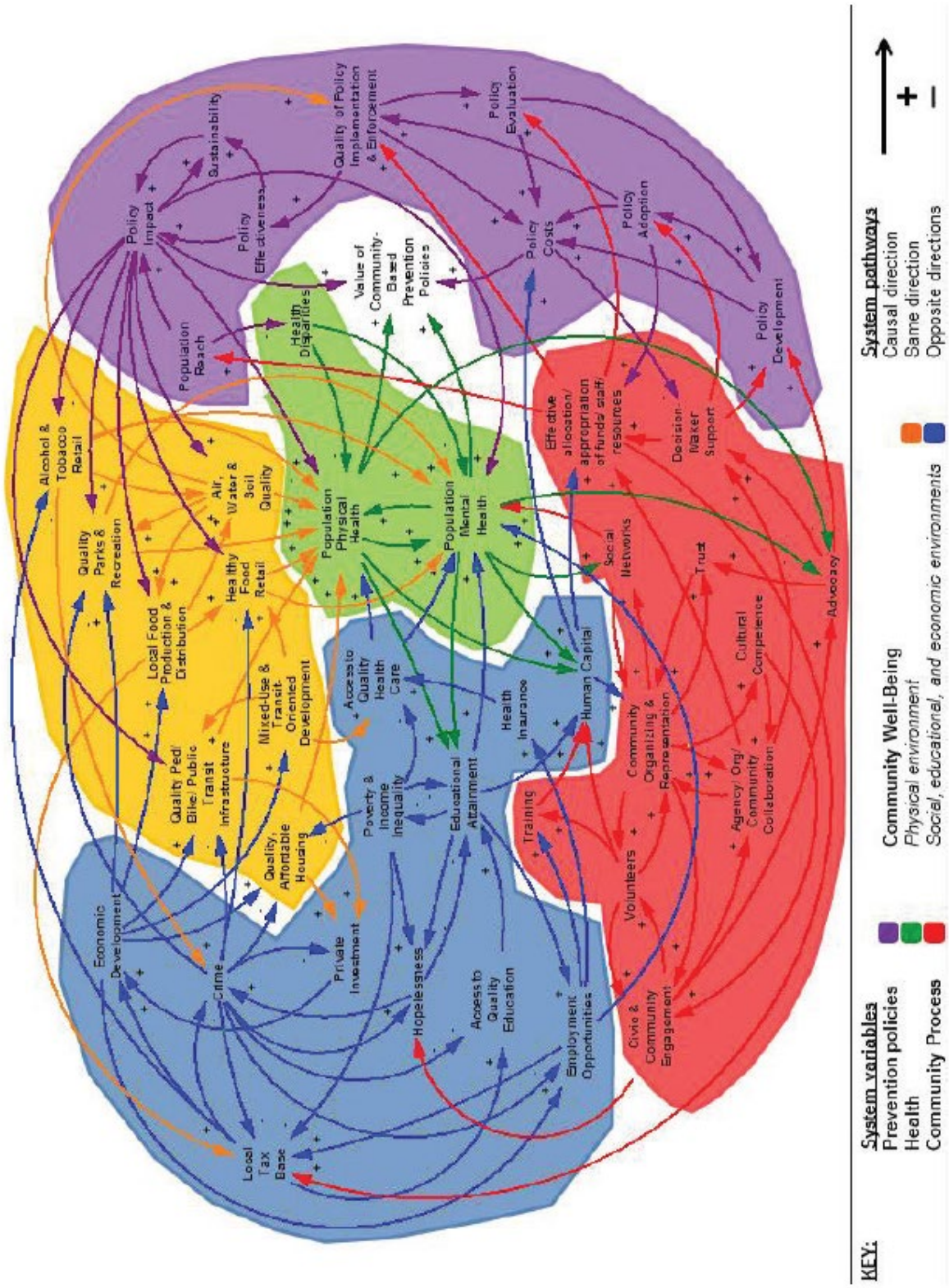
Appendix A. Notable Characteristics of Complex Systems

Characteristics of complex systems that may be useful to a discussion of their nature include:

- **Open and dynamic**. Complex systems are open systems, operating under conditions that are not static, stable, or in balance, but rather continually in flux. (2)
- **Adaptable.** Independent components interact with each other. They change behaviors in reaction to the behaviors of other components and adapt to a changing environment. For example, a city is a complex system in which individuals and organizations interact on multiple levels (e.g., social, political) and constantly change and adapt. (3)
- **Emergent.** Novel patterns that are not predicted by the intrinsic properties of the system's individual components arise at a system level. For example, weather is an emergent property of interactions between air, moisture, and land. (3)
- **Self-organized**. A system that is formed and operates through many mutually adapting components is called self-organizing because no entity designs it or directly controls it. A self-organizing system will independently adapt to changing conditions, including those that are imposed upon it by policymakers. For example, markets operate through the independent decisions of buyers and sellers; prices evolve through their interactions. Although markets may be influenced, they cannot be directly controlled. (3, 23)
- **Heterogeneous.** At each level of a complex adaptive system, substantial diversity among actors (in goals, rules, and constraints) can shape dynamics in important ways. (24)

Appendix B. Causal Loop Diagram: Valuating Community-Based Prevention Policies



Appendix B. Causal Loop Diagram: Valuating Community-based Prevention Policies. Adapted from An Integrated Framework for Assessing the Value of Community-based Prevention, Institute of Medicine, 2012.

SUMMARY MEASURES OF HEALTH AND WELL-BEING

This brief addresses the concept of **summary measures of health and well-being**. It explains the role and value of summary measures. It also discusses how summary measures can be used to generate insights that inform strategic action and to compare the level of health and well-being in the United States to that in other, similarly situated countries.

INTRODUCTION

The 5 overarching goals of Healthy People 2030 (1) are designed to prompt actions that will enable the American people to attain lives of health, purpose, and well-being, and to achieve equity in health and well-being (see box below). These goals encompass creating social and physical environments that promote health across all life stages, and engaging stakeholders, including the public, to take action across multiple sectors.

How can Healthy People 2030 concisely answer the question of whether the Nation is making measurable progress in improving health and well-being (i.e., meeting the goals of the Healthy People initiative)? What metrics represent the overarching purpose of Healthy People 2030? How can Americans' level of health and well-being be compared with that of populations of other countries? Summary measures of health and well-being answer such questions.

As discussed in this brief, the Committee concludes that summary measures should be based on a limited number of indicators that show whether health and well-being are increasing or decreasing. These measures should be recognized by public health experts as reflecting overall health and well-being of people in the United States. It will not be sufficient to pick any 1 of the hundreds of objectives in the Healthy People program to serve as summary measures, because those objectives and their associated measures are too specific, and combinations of objectives pose difficulties in reporting.

HEALTHY PEOPLE 2030 OVERARCHING GOALS
Attain healthy, thriving lives and well-being, free of preventable disease, disability, injury, and premature death.
Eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all.
Create social, physical, and economic environments that promote attaining full potential for health and well-being for all.
Promote healthy development, healthy behaviors, and well-being across all life stages.
Engage leadership, key constituents, and the public across multiple sectors to take action and design policies that improve the health and well-being of all.

HISTORY OF SUMMARY MEASURES

The idea of using summary measures to describe the health of a population is not new. When the Global Burden of Disease (GBD) study (2) was introduced, it increased interest in summary measures. An influential report from the Institute of Medicine (IOM) (3) explained how to conceptualize and structure summary measures. It suggested that, because summary measures have the potential to inform policy setting and strategy, the analytical and ethical assumptions associated with these measures should be further explored.

The HHS Secretary publishes an annual report, prepared by the National Center for Health Statistics (NCHS), that includes on a single page a range of measures, from mortality by cause to morbidity. Together, these measures present a summary view of the health of the U.S. population. The full report, titled Health, United States, 2016 (4), provides a comprehensive overview of the health status of the Nation.

NCHS has also been interested in summary measures (5). The center's focus has been on combining measures of mortality and morbidity. This resulted in a measure that was used in both Healthy People 2000 and 2010: years of healthy life. The measure is based on expected years of life spent in a condition of health or well-being. Freedom from disability is one example of such a state. Madans and Weeks (2016) of NCHS proposed a two-tier framework for summary measures. (6) Tier 1 includes several measures of healthy life expectancy. Tier 2 comprises several summary population measures that focus on overall life expectancy, overall self-reported health status, and several measures of disability and functioning.

Two sources have gained wide use for assessing health status—one by state and the other by county. The first source, America's Health Rankings, uses measures to describe health within each state. Interest in comparing population health status by county has led to wide use of the second source, County Health Rankings and Roadmaps. This second resource uses a set of 35 measures, organized into 6 groups: health outcomes, health factors, health behaviors, clinical care, social and economic factors, and physical environment.

HealthPartners, an integrated health care organization, has developed an approach to summary measures of health and well-being that includes 3 components: current health, sustainability of health, and subjective well-being. (7, 17)

The measure of current health is disability-adjusted life years (DALYs). This is calculated from health care claims and death records, including an alignment of GBD coefficients with diagnostic codes coming from the electronic medical record.

Sustainability of health is measured by members' reporting of 6 lifestyle behaviors that are associated with health, plus a clinical preventive services index that measures adherence to evidence-based preventive care guidelines.

Life satisfaction, as a single indicator of subjective well-being, is a summary measure. It represents 6 domains that affect subjective well-being: emotional functioning, physical functioning, career satisfaction, adequacy of financial resources, social/interpersonal relationships, and community support. (8)

In the summary measure examples provided in this section, the focus is on creating the capability to measure and track over time the health and well-being of a defined population.

SUMMARY MEASURES FOR HEALTHY PEOPLE 2030

As in previous decades, the development process for Healthy People 2030 includes an exploration of summary measures. Summary measures offer an intuitively appealing, simple way to report on overall progress, and to enable comparison of health and well-being in the United States with that in other countries. Summary measures are related to the Leading Health Indicators (LHIs). However, they differ from LHIs in that they are less detailed, not necessarily core objectives, and designed to offer an overview of U.S. health and well-being. Summary measures should be closely linked to the overarching mission and vision of the Healthy People 2030 initiative, whose framework provides the anchor that grounds the summary measures discussion. (1)

As part of developing Healthy People 2020, the National Academy of Medicine (NAM) established a set of foundation health measures. (9) It would make sense to build upon this earlier, related work. NAM's proposed foundation health measures, which are not explicitly reflected in the LHIs for Healthy People 2020, address 4 domains:

- General health status
- Health-related quality of life and well-being
- Determinants of health
- Disparities

Except for the overarching goal related to multisectoral efforts and policy approach, these domains align remarkably well with the stated Healthy People 2030 goals (see box on page 1).

The Healthy People 2030 framework reflects interest in comparing the health and well-being of the U.S. population to that of the populations of other nations. One way to mirror this interest through summary measures would be to consider national-level resource allocations for medical care and social programs (10, 11). The United States spends far more on medical care than any other country. Yet, over the past century, its steady gains in life expectancy and various health indicators have lagged similar gains experienced in other nations.

A ratio of spending on social programs to medical care in the United States versus other nations, and relative rankings of health and well-being outcomes may provide support for a strong argument for economic investment that balances national investments against health and well-being benefits that are gained (i.e., achieving good value in health investment).

We propose that summary measures for Healthy People 2030 should reflect the assessment of "whether or not people in the United States have better determinants of health, live longer, live better and have more equity at a cost that is considered good value when compared to other countries."

CRITERIA TO BE CONSIDERED FOR SUMMARY MEASURES

To ensure that summary measures for Healthy People 2030 fulfill their intended purpose, the following proposed criteria should be applied. Summary measures should be:

- **Limited**—a few, not many measures
- **Material**—measures reflect important health and well-being considerations
- **Scientifically Acceptable**—measures are scientifically tested
- **Understandable**—people know what the measures mean
- **Relevant**—measures are meaningful or informative to a wide variety of audiences
- **Actionable**—we can do something to improve upon what the measures report

It is appropriate to consider a limited set of measures, and to ensure that each measure reflects the importance of health and well-being. The criteria should make sure that measures are relevant to the health and well-being of the public, and that they are easily understandable to a wide variety of audiences and stakeholders. It is also important to ensure that a measure's properties are scientifically acceptable. The National Quality Forum (13) has stressed that if a measure is not scientifically acceptable, there is risk that its results will not be correctly interpreted. Finally, to achieve improvement over time, summary measures should be actionable.

APPROACHES TO AND A FRAMEWORK FOR HEALTHY PEOPLE 2030 SUMMARY MEASURES

It is the Committee's view that summary measures for Healthy People 2030 should reflect the assessment of whether Americans have better determinates of health, live longer, live better, and have more equity at a cost that is considered good value compared to populations in other countries. Based on this view of summary measures, the Committee has considered several approaches to creating these measures:

1. A single measure would provide limited information but would facilitate comparison with other countries.

2. Another, more complex approach would include 2 tiers of measures (similar to that of Madans and Weeks). One tier would be a single overall measure of health, and a second tier of measures would report on the health of various U.S. population groups, as follows:

   The first-tier measure would be a single overriding objective of longer, healthier lives for all, in the context of behaviors and healthy development and engagement of stakeholders.

   A second tier would comprise measures that show clearly how health outcomes vary among various population groups (defined by race, ethnicity, age, income, and perhaps others). This would make it possible to identify health and well-being disparities. Such measures could include:

   - Life expectancy
   - Life satisfaction

- Health status by the incidence and mortality of various diseases
- Profile of risk factors
- Investment in prevention
- A measure of resource allocation such as the ratio of spending on social programs to medical care investments

3. A third approach to formulating summary measures would base measures on the overarching goals for Healthy People 2030 (see box on page 1) as well as NAM's Vital Signs targets. (14) Table 1 outlines 1 such framework that also suggests possible measures for each of the 5 domains of the Healthy People 2030 overarching goals.

Table 1. Summary Measures Framework and Alignment

	Priority Domain	Healthy People 2030 Overarching Goals	Objectives	Vital Signs Targets (14)	Considerations for Healthy People 2030 Summary Measures of Health and Well-Being
1	Living long	Attain healthy, thriving lives and well-being, free of preventable disease, disability, injury, and premature death	TBD	▪ Care access ▪ Preventive services ▪ Patient safety ▪ Evidence-based care ▪ Care match with patient goals	Life expectancy Years of Healthy Life (YHL)
2	Living healthy and well	Attain healthy, thriving lives and well-being, free of preventable disease, disability, injury, and premature death	TBD	▪ Life expectancy ▪ Well-being ▪ Obesity ▪ Addictive behavior ▪ Unintentional pregnancy ▪ Healthy communities	Life satisfaction; Years of Healthy Life (YHL)
3	Living with health equity	Eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all	TBD	NA	Opportunity measures, such as: Number of living wage policies in place (e.g., living wage policies lift families out of poverty, reduce health disparities); high school graduation rates; percent children in poverty; high level of health literacy; and others
4	Engaged people	Engage leadership, key constituents, and the public across multiple sectors to take action and design policies that improve the health and well-being of all	TBD	Individual engagement Community engagement	Community engagement Stakeholder engagement, social cohesion
5	Achieving health and well-being at good value	Create social, physical, and economic environments that promote attaining full potential for health and well-being for all Comparison of U.S. health and well-being status to other countries	TBD	Individual spending burden Population spending burden	Ratio of spending on social programs to medical care investments

* = summary measures. NA = Not Available

HEALTH EQUITY CONSIDERATIONS FOR SUMMARY MEASURES

A challenge in selecting a small set of summary measures or a single summary measure is adequately capturing the concept of health equity. Measures should be sensitive to assessing health equity and disparities and their change over time. Weighting certain factors across populations may mask or highlight health equity, implicitly placing relative value of 1 factor or group over another. (15)

To ensure that equity is a guiding principle, in 2013 the IOM (12) noted that Asada and colleagues (16) proposed a potentially useful analytic approach to measuring disparities. It uses functional limitation data (i.e., activities of daily living) from the 2009 American Community Survey to develop disparity profiles by states. This shows whether disparities are associated primarily with race and ethnicity, socioeconomic factors, or both. A more direct, if not fully justifiable, approach to removing race measurement issues in measuring equity can disaggregate each of the overall measures listed in the section above by race, ethnicity, location, socioeconomic status, or other measures used to define populations. This provides a basis for assessing equity in health and well-being.

There are important examples of differences in health status among racial and ethnic groups. One is infant mortality, which reflects both a measure of mortality and more general health status. For example, in 2015 infants born to Asian- or Pacific Islander-American mothers had the lowest infant mortality rate (4.2 per 1,000 live births). The infant mortality rate for non-Hispanic black infants is more than 2.5 times the rate for Asian or Pacific Islander infants, at 11.2 infant deaths per 1,000 live births.

ALIGNMENT WITH OTHER NATIONAL MEASURES OF HEALTH AND WELL-BEING

Our deliberations on summary measures of health and well-being have considered how such measures align with other important national efforts around health. One is the Vital Signs report (13) (see Appendix A). Aligning major national health, well-being, and health care improvement initiatives and engaging multisectoral participation in such efforts would increase the likelihood of progress on health in the coming decade.

Table 1 also presents an effort to align priority domains of Healthy People 2030 with our stated goals for summary measures (i.e., to “have better determinants of health, live longer, live better, and have more equity at a cost that is considered good value when compared to other countries”), as well as NAM’s Vital Signs targets. Table 1 may be viewed as a conceptual framework for creating summary measures of health and well-being for Healthy People 2030.

CONCLUSIONS

Summary measures of health and well-being should serve as adequate and incisive tools for monitoring and identifying trends within Healthy People 2030. To enable this, such measures must capture several issues and support health system management at several levels:

- The overarching goals for Healthy People 2030
- The mortality, morbidity, and well-being of the U.S. population
- Disparities in health and well-being and progress toward health equity
- The Healthy People 2030 LHIs, Health United States, and other compendia including the County Health Rankings (to create linkages to or compatibility with these resources)
- Americans' health and well-being (to enable comparison with that of other countries)
- The foundation of information that our health leadership can use to guide implementation of health policy—perhaps the most important measure

To accomplish this, it will be necessary to find a balance between selecting a small set of measures that captures overall trends and using a larger set of measures that is more extensive but may not be as useful for capturing changes needed to improve health and well-being.

Respectfully submitted by the Healthy People 2030 Summary Measures Brief Subcommittee:

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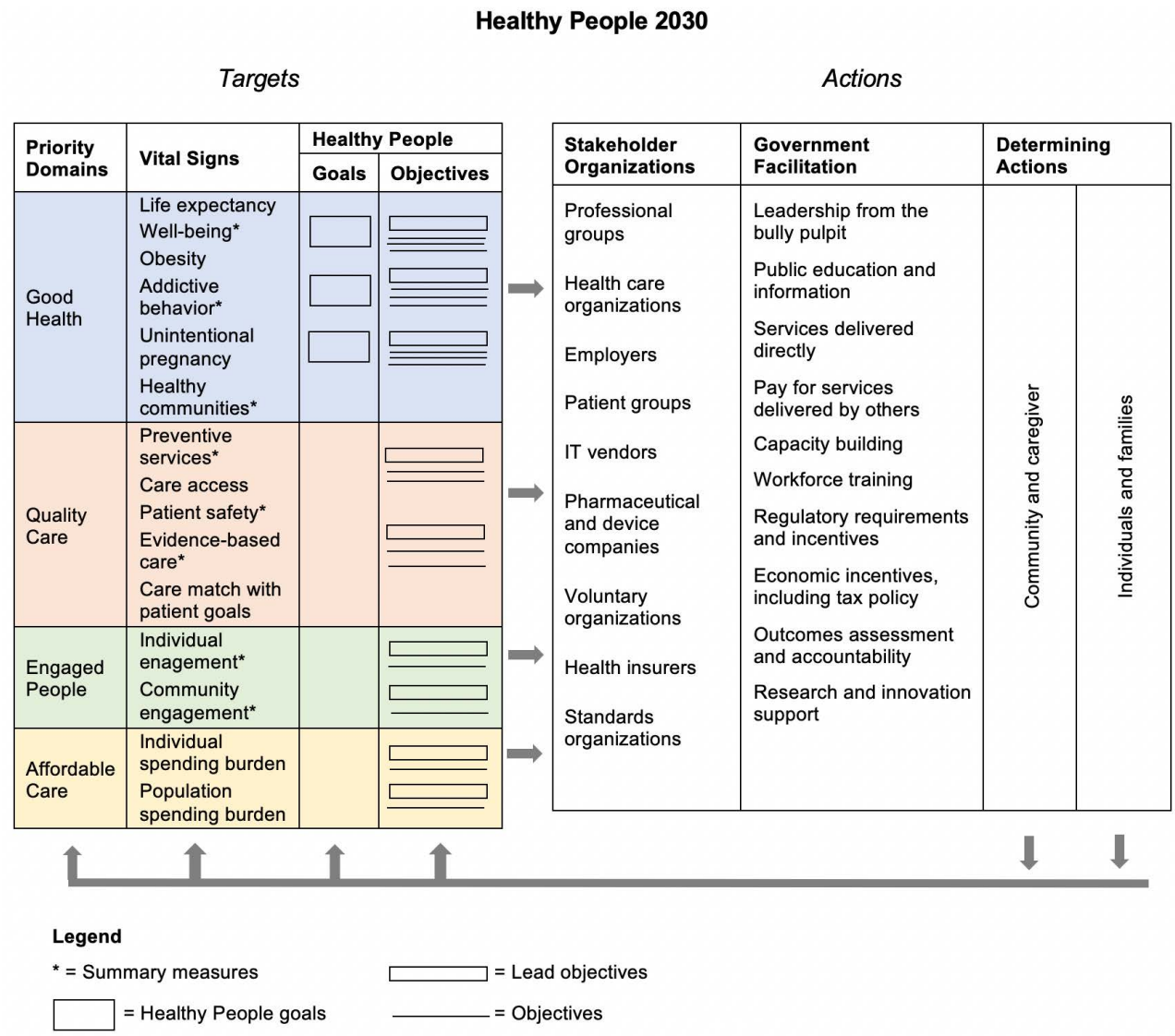
Appendix A. Summary Measures: Aligning Healthy People 2030 and Vital Signs Report

Graphic created by Dr. Michael McGinnis is based on a personal communication between him, Dr. Edward Sondik, and Dr. Nico Pronk on the alignment between Healthy People 2030 and NAM's Vital Signs report.