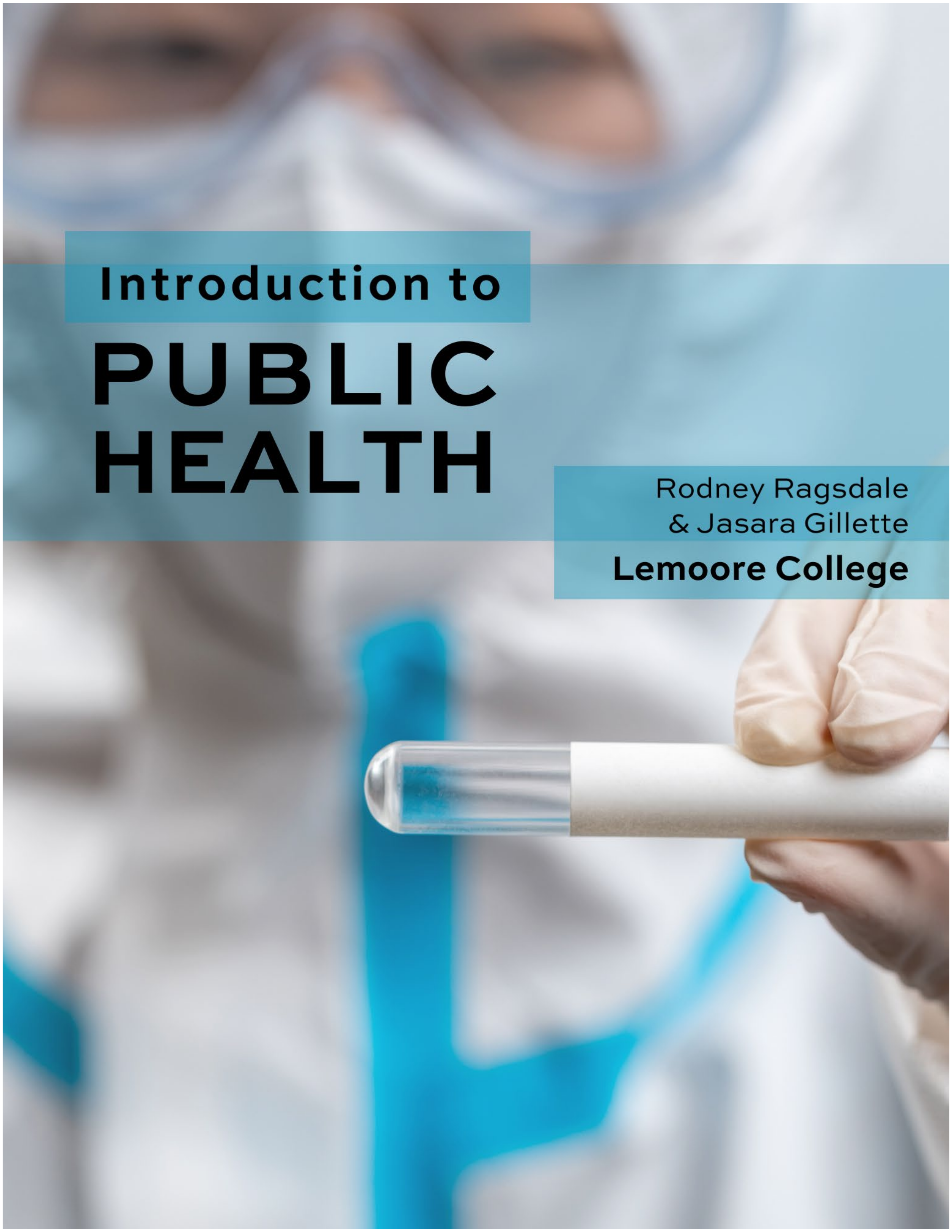

Introduction to
PUBLIC HEALTH

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This textbook has been adapted from "Introduction to Public Health" by Kristi Murphey, Linn-Benton Community College, which was used and adapted with permission.

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Section 1: Public Health, what is it?

Learning Outcome:

1. Identify the multifaceted determinants of disease in population health.
2. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.

Learning Goals:

1. List/identify how public health influences your daily life
2. Define public health as a population health
3. Examine the history and evolution of public health

Public health is not easy to define because the meaning has changed and is often situational; however, the foundational ideas are still the same. In 1920, Charles-Edward Winslow defined public health as:

> *The science and art of preventing disease, prolonging life, and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities, and individuals (Centers for Disease Control and Prevention, 2018)*

Nearly 100 years later, the current definition presented by the Centers for Disease Control and Prevention (CDC) is not much different:

> *Public health is the science of protecting and improving the health of people and their communities. This work is achieved by promoting healthy lifestyles, researching disease and injury prevention, and detecting, preventing, and responding to infectious diseases (Centers for Disease Control and Prevention, 2018).*

Notice the definition uses the terms “health of the people” and “communities”. This is because public health is about populations, not just individuals. In other words, public health is a big-picture science realizing that for an individual to have a chance at a healthy lifestyle, first the health of the entire population must be addressed. It is important to note that a population might be a neighborhood, a school, a town, a state, a country, or even a region of the world.

As citizens, we have certain expectations: our drinking water is clean, the air we breathe is unpolluted, the food we buy is non-toxic, our medications have been tested to prevent harm, our cars and roads allow for safe travel- the list can go on. For us, the people, to be protected and improvements made, as Winslow noted, there must also be organized efforts in place. Today we see these "organized efforts" as policies, laws, programs, and public health systems.

The Public Health System

The most common definition of a public health system is "all public, private, and voluntary entities that contribute to the delivery of essential public health services within a jurisdiction." The entities in the system include a wide variety of organizations and agencies such as state and local health departments, environmental agencies, and healthcare organizations (hospitals, clinics, etc.). There are many more, and they will be covered for now, look at the graphic below for a better idea of the public health system.

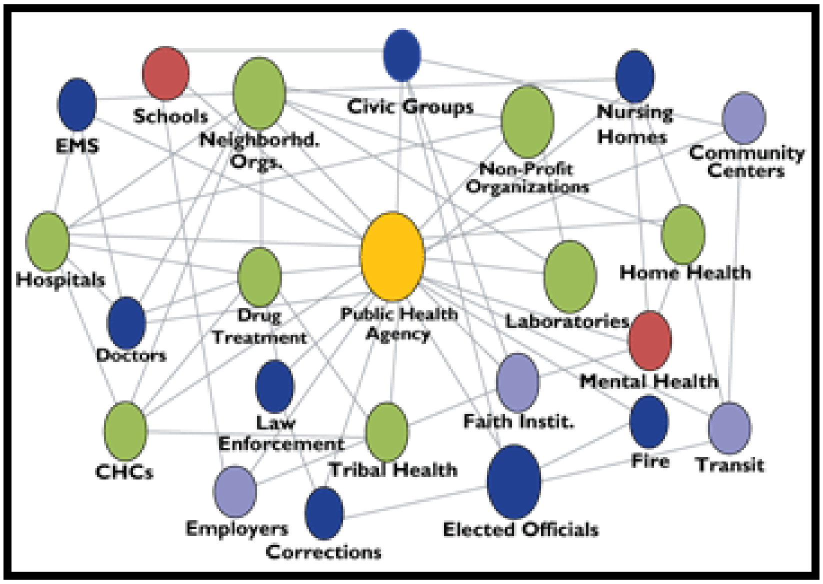


Figure 1: The Public Health System. Retrieved from the CDC at https://web.archive.org/web/20211023194949/https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html

Within the public health system, the Core Public Health Functions Steering Committee developed 10 essential services to align with the three core public health functions: assessment, policy development, and assurance. All communities should carry out these 10 services to ensure the well-being of their citizens. They are as follows:

1. Monitor health status to identify and solve community health problems
2. Diagnose and investigate health problems and health hazards in the community

3. Inform, educate, and empower people about health issues
4. Mobilize community partnerships and action to identify and solve health problems
5. Develop policies and plans that support individual and community health efforts
6. Enforce laws and regulations that protect health and ensure safety
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable
8. Assure a competent public and personal healthcare workforce
9. Evaluate the effectiveness, accessibility, and quality of personal and population-based health services
10. Research for new insights and innovative solutions to health problems

The Three Core Functions of Public Health

Figure 2: These 10 essential environmental public health services identify the actions necessary to the protection and improvement of environmental public health. They are adapted from the 10 essential public health services and the core functions of public health. This image shows how the 10 essential environmental public health services align with the three core functions of public health, which are assessment, policy development, and assurance. Retrieved from https://web.archive.org/web/20221020180937/https://www.cdc.gov/nceh/ehs/10-essential-services/resources.html

Looking Back: Public Health in our History

Before humankind realized that we do play an active role in our health and the health of our population, there was a common belief that illness was a result of moral turpitude. In other words, if you were a bad person or committed an unacceptable act, then a god or a spirit would take revenge by taking your health (a belief still held by some populations today). Later, humankind began to take notice that if something looked bad or smelled bad most likely made you sick and should be avoided. This was the start of sanitation. History shows that as far back as 500 BC, the Greeks and the Romans had extensive sanitation systems to provide clean water and to keep foul-smelling water and waste away from the people. Also, around this time, it was realized that if someone was sick, quarantining them kept others from getting sick. Medicine began to focus on curing the ill, science joined in to find the cause of illness, and eventually, measures were taken to prevent illness from occurring. In the 1840s, the United Kingdom established the Public Health Act (however, it was still mostly focused on sanitation). Then, in 1912, the United States established the Public Health Service (PHS) allowed Congress to pass legislation to allow the PHS to investigate infectious diseases, sanitation practices, water supplies, and sewage disposal. This began the United States' endeavor for prevention and interventions for population health.

Did You Know?

It is thought that the third book of the Hebrew Bible, Leviticus (circa 1500 BC), is the first written health code in the world. In the book, there are topics that include personal and community responsibilities including directions regarding bodily cleanliness, sexual health behaviors, and protection against contagious diseases.

Prevention and Intervention

The main goal of public health prevention is to develop interventions that are aimed at preventing specific health outcomes by removing or modifying risk factors. For instance, vaccinations are still the most impactful intervention in our history. Not only did their introduction increase life expectancies in the United States by 62% (from 47 to 77 years) but saved the United States billions of dollars annually in health care costs. Sanitation rules have also evolved to increase our health and lifespans. With the Federal Water Pollution Control Act of 1948 (later expanded to the Clean Water Act of 1972) and the Clean Air Act of 1970, we know we are, for the most part, safe in our environment. In 1966, the National Traffic and Motor Vehicle Safety Act was enacted so that the government could oversee not only the safety of motorized transportation but the roads we travel as well.

Legislation and these Acts are not the only way that we prevent and intervene. We also have such mechanisms as health education, nutrition labeling, behavior techniques, and therapeutic intervention. These preventive interventions may be introduced or used at one of these three stages of prevention: primary (before the event occurs), secondary (detecting a health condition before consequences occur), or tertiary (stopping or controlling the negative consequences of a health condition).

Population Health

Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. It is an approach that aims to improve the health of the entire human population. This concept encompasses three key components:

1. Health Outcomes: These are the measurable results related to health, such as disease prevalence, mortality rates, and overall well-being.
2. Determinants of Health: These factors influence health outcomes and include social, environmental, cultural, and physical aspects that impact populations throughout their lifetimes.
3. Interventions: Effective strategies and actions that link health determinants to desired health outcomes.

Population health emphasizes a shift from an individual-level focus to a broader perspective that considers the health of entire communities. By addressing Social Determinants of Health (SDOH) such as economic inequality, education, and access to resources, we can work toward reducing health disparities and promoting well-being for all (Andresen, 2024, p. 1.1).

Determinants of Health

Public health is rooted in the idea that many factors combine to affect the health of individuals, communities, and populations. We are not just physical beings who are either genetically set to be healthy or unhealthy. Our health and behaviors are a result of our environment and our life circumstances. In other words, along with our genetic makeup, our health and behaviors are determined by our geographic location, the environment, policies and laws, health care access, income and education level, our social support and ability to interact with others, and more. These are collectively called determinants.

The U.S. Department of Health and Human Services' Healthy People program has set forth several categories where determinants may fall: policy-making, social factors, health services, individual behavior, and biology and genetics. Individual and population health is often determined by the interrelationships among these categories. For instance, imagine the scenario where you have a person who is genetically predisposed to addiction, friends and families encouraged or did not stop binge drinking, and the local law enforcement was lenient on drunken behavior because either they did not have the personnel or jail space available or there were no alcohol support services… what might be your end picture? Here, we see the determinants of genetics, social factors, policy, and health services influencing this dangerous behavior. It is with the understanding of this interconnectedness that many public health efforts are targeted at multiple determinants for greater effectiveness.

Examples of Social Determinants of Health

1. **Safe Housing, Transportation, and Neighborhoods:** Access to secure housing, reliable transportation, and safe neighborhoods impacts overall well-being.
2. **Racism, Discrimination, and Violence:** These social factors can profoundly affect health outcomes and quality of life.
3. **Education, Job Opportunities, and Income:** Educational attainment, employment opportunities, and income levels play a crucial role in health.
4. **Access to Nutritious Foods and Physical Activity Opportunities**: Availability of healthy food options and opportunities for physical activity influence health.
5. **Polluted Air and Water:** Environmental factors directly impact health and can lead to health disparities. (Andresen, 2024, p. 1.2).

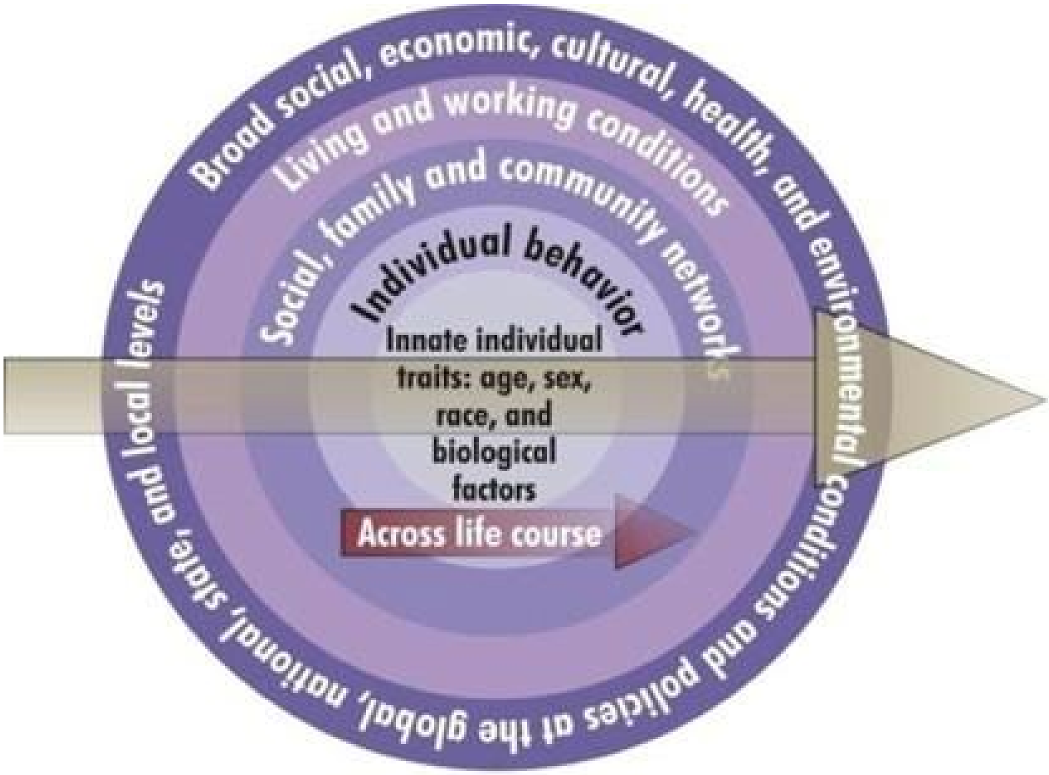


Figure 3: Source: Healthy People 2020: Social Determinants of Health. Retrieved from https://web.archive.org/web/20220106034741/https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

Section 1 Additional Resources:

For more on public health, define:

- American Public Health Association: What is Public Health
- Centers for Disease Control and Prevention: Key Terms in Public Health

The following websites offer great references to the history of public health if you are interested in furthering your knowledge:

- A Brief History of Public Health. Boston University School of Public Health
- History of Public Health. Science Direct
- Public Health in the United States. Boston University School of Public Health

For more on preventive measures:

- Prevention in America. CDC

Section 2: The Scope of Public Health

Learning Outcome:

1. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.

Learning Goals:

1. Understand the powers and responsibilities of government in public health
2. Review non-governmental agencies of public health
3. Compare and contrast the differing political views around public health and the differences between social justice and market justice in healthcare.

Healthy People 2030

Healthy People is a United States population health initiative developed by the Department of Health and Human Services (HHS) (OASH, n.d.). Each decade, data-driven national objectives are established to improve health and well-being over the next ten years. The current and fifth iteration of this population health initiative is Healthy People 2030 (CDC, 2020). Healthy People 2030 aim to create a healthier future for all by promoting collaboration, evidence-based strategies, and health equity.

Here are some key points about Healthy People 2030:

1. **Objective-Driven Approach**: It includes 359 core, 359 developmental, and 359 research objectives across various health topics. These objectives guide efforts to enhance public health outcomes and address health disparities.
2. **Social Determinants of Health (SDOH):** Healthy People 2030 emphasizes the impact of social determinants of health. These factors, such as access to education, economic stability, and neighborhood conditions, significantly influence people's well-being.
3. **Leading Health Indicators (LHIs)**: A subset of high-priority objectives called Leading Health Indicators drives action toward improving health. These LHIs focus on critical areas for intervention.

4. **Disparities Data Feature:** Healthy People 2030 provides a disparities data feature to track changes in disparities and identify areas for improvement at the national level1.
5. **Evidence-Based Resources:** The initiative offers hundreds of evidence-based resources to address public health priorities (Andresen, 2024, p. 1.4).

Federal Government

As you read in Section 1, the United States government began passing laws and establishing organizations over 200 years ago to protect the population health. It is the government's responsibility to ensure that communities organize and make efforts toward protecting the health of their people. Here in the United States, the government's responsibility for the health of its citizens is a result of the nature of democracy – meaning our health officials are either directly elected by the people or they are appointed by elected officials.

> *"The success or failure of any government, in the final analysis, must be measured by the well-being of its citizens. Nothing can be more important to a state than its public health; the state's paramount concern should be the health of its people."*
>
> *- Franklin Delano Roosevelt*

Legal Obligations

If you are familiar with the United States Constitution, then you know there is no mention of health or health care coverage. However, under the interpretation of the Tenth Amendment, the public's health is primarily the responsibility of the individual states. Because of the states' independence from each other, no two states have the same public health programs or support. However, one thing all states do have in common is the collection of health statistics about the population, school records, immunization rates, and environmental regulations around sanitation. (Section 3 of this booklet will address health data further).

This does not mean that the federal government is hands-free when it comes to public health authority. Because of the Interstate Commerce Clause of the United States Constitution, the federal government has the right to regulate commerce within the states and, currently in the United States, we treat healthcare as a commercial product (unlike other industrialized nations that have universal healthcare or social medicine). This means that the federal government offers incentives for states that support federal programs like Medicare and Medicaid (up to 45% of a state's funding) and allows programs such as the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA) to overrule states on varying levels of exposures. It is important to note that the federal government is not obligated to get involved with public health. For example, the federal government may choose to give funding to a state that follows the Medicaid guidelines for legal blood alcohol limit; however, they may not give funding or set standards for such things as violence or child abuse.

Please note the paragraph above is simply an introduction to the federal public health services. The U.S. Health and Human Services' United States Public Health Service Commissioned Corps webpage is where you will find a full listing of federally supported public health services.

Ethical Obligations

Since our United States Constitution does not mandate legal responsibility for the health of the American people, many argue that at the very least, an ethical government should be responsible for the health of its people. The following is a quote from the American Public Health Association (APHA) about their stance on government and its role in public health:

> *Society must create and maintain the conditions under which members of the community can be healthy. The responsibility for maintaining and improving the public's health lies with all sectors of society. (American Public Health Association, 1995).*

This means that the federal government, along with states and United States territories, must work collaboratively with complex and multidisciplinary networks of people and organizations – both public and private – to produce environments in which people have the opportunity to be as healthy as possible. This includes an alignment of policy of all public health agencies: national, state, and local.

State Government

As stated earlier, a state's basic legal authority in public health comes from the self-governing powers given to the state under the United States Constitution. This results in many differences in agency powers and funding from state to state. This also means that some states set policies that must be followed by local agencies (some of which must be followed for the local agencies to receive funding). However, most states are involved in activities such as immunization recording and reporting, infectious disease control and reporting, health education, and collection and reporting of health statistics. In addition, most states are where licensing and credentialing are maintained to assure that all healthcare providers, whether licensed or credentialed, are operating under set standards and competencies for quality of care.

Most states are also responsible for their citizens who are uninsured or underinsured (some states pass this on to the local public health authorities: generally this includes Medicaid and the Children's Health Insurance Program (CHIP). This means determining Medicaid eligibility standards as well as determining payment and reimbursement amounts for facilities/practices that take Medicaid patients/clients fall under the state's oversight.

Local Government

Local public health agencies are more focused on their populations and promoting and protecting the health of specific groups within the population. The federal government has given this power to the local governments because of their knowledge and focus on specific populations, ability to identify health determinants, undertake health inequalities, and shape their services to meet local needs.

The services and programs most provided by local public health agencies include administering adult and childhood immunizations, initiating and maintaining programs for preventing communicable diseases (including epidemiology and surveillance), community health assessments, designing, deploying, and evaluating community outreach and education, various environmental health services, food safety and credentialing, and restaurant inspections.

Nongovernmental Agencies

While our governments have most of the responsibility for public health, many non-governmental agencies play large roles in the education, research, and lobbying for your health and healthcare options. Most agencies focus on specific health conditions such as the American Heart Association, the Alzheimer's Association, and the American Cancer Society. Some of these agencies are funded by a combination of federal, state, or local governmental grants as well as fundraising but others, such as the Robert Wood Johnson Foundation or Kaiser Family Foundation philanthropic foundations rely solely on donations and endowments.

Political Views and Public Health

It is no surprise that our major political parties (Democrat and Republican) have different views on the role of government and health. The Democratic view on healthcare is that all Americans should have access to high-quality, affordable healthcare as part of the American way. This means governmental policies, laws, and financial support (through taxes) are enacted to ensure every citizen has basic healthcare and does not have to choose between paying for healthcare or paying for food and shelter. If you take a look at Democratic presidents throughout our history, you will see that they all fought in one way or another for at least basic healthcare for all Americans. President Johnson signed Medicare into law in 1965 and gave basic healthcare to older adults in America. In 1997, under President Clinton's Whitehouse, the Democrats passed the Children's Health Insurance Program (CHIP), which today covers over 9.6 million children (1/2/2021). In

2010, the Democrats passed The Patient Protection and Affordable Care Act (aka: The Affordable Care Act or “Obamacare”) – the first comprehensive health reform.

Contrary to the Democratic view, the Republican view is that health care should not be government-centered. Instead, healthcare should be a commodity in a free market like any other product (i.e. car buying). They believe that you, the patient should drive the need and demand for the healthcare system. Your demand would lead to competition and this competition in the market would drive prices down. Republicans believe that the more freedom in choosing health care and being able to self-manage health care costs (i.e. pre-tax health spending plans), the more the healthcare system as a whole will run more efficiently.

Social Justice and Market Justice in Healthcare

As you read above, the fundamental difference in the healthcare ideology of the two major parties centers on the level of government involvement allowed in healthcare. Two philosophies address the role of government in healthcare: **social justice** and **market justice**. The social justice view proposes that it is the government’s responsibility to ensure the equal distribution of healthcare access and quality across a society - no matter one’s ability to pay, social status, geographical location, etc. On contrast, the market justice perspective believes it is the individual’s responsibility to access healthcare, i.e. the quality of healthcare based on your personal effort, behaviors, and ability to pay.

Section 2 Additional Resources

- Health and Human Services Agencies
- Federal Registry of Public Health Services
- State and Local Public Health Resources
- CDC: State, Tribal, Local & Territorial Public Health Professionals Gateway

Section 3: Analytical Methods (and Data) in Public Health

Learning Outcome:

1. Identify the components of evidence-based public health and apply them in a variety of public health situations.

Learning Goals:

1. Understand the role of statistics in evidence-based public health evaluation and planning
2. Examine the field of epidemiology and the role of the discipline in public health
3. Find current vital statistics and evaluate their relevance in public health situations.

Evidence-Based Public Health

To accurately determine the health of our society – past, present, and future – as well as assess former and current public health interventions and plan future programs, we must rely upon **evidence-based** approaches. When you see the phrase "evidence-based public health practice", this means that the programs and policies were developed, implemented, and evaluated using the principles of scientific reasoning. This includes systematic uses of data from information systems, planning models (covered in HE 225), health and behavior theory, and empirical evidence or empirical data.

> *Evidence-based practice is a practice that has been rigorously evaluated in experimental evaluations – like randomized controlled trials – and shown to make a positive, statistically significant difference in important outcomes. (Oregon Research Institute, 2018)*

Data in Public Health

There are two research methods used to gather empirical data: qualitative research and quantitative research. Qualitative data are data that can be observed but not measured with standard tools and are used primarily to describe something. Qualitative variables can be placed into specific categories based on a characteristic (i.e., eye color, zip code, favorite flavor).

Quantitative data deals only with numbers that can be measured or ranked with a standard tool or measurement (i.e., height, weight, time, and cost).

Think of a time when you visited a healthcare facility. When you arrived, you most likely filled out a survey with your name, age, gender, race, type of insurance, and symptoms (qualitative data). Then, perhaps you were weighed, your height measured, and your blood pressure gauged (quantitative data). It may be that you had to have another type of diagnostic test such as blood work, a urinalysis, or even a diagnostic imaging procedure (x-ray, MRI, etc.). Have you ever been curious as to what happens with these data?

The community and population perspective of public health, especially when addressing health issues in resource-poor contexts or marginalized populations, frequently brings ethical challenges into focus. In public health, research typically occurs outside of the controlled environment that is characteristic of biomedical research. Instead, in public health, research often occurs in real-world settings in a particular social, political, and economic context. It may involve interventions with whole communities or populations impacted by catastrophic public health emergencies (Selgelid, 2016, p. 309).

Distinguishing between public health practice and public health research is challenging. Many of the tools and methods are similar. Both involve the systematic collection and analysis of data that may lead to generalizable knowledge. Research can take forms ranging from descriptive approaches (e.g., correlational studies and cross-sectional surveys) to analytic epidemiologic approaches (e.g., case-control studies and cohort studies, including clinical trials). These same approaches can characterize methods for collecting information as part of public health practice (Selgelid, 2016, p. 310).

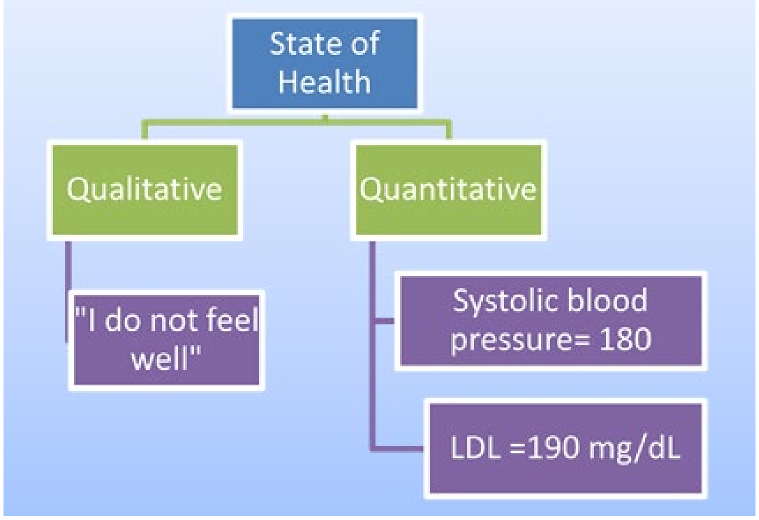


Figure 4: Qualitative versus Quantitative Measures

The information collected in the office and all resulting test information are all kept in your medical record. While the Health Insurance Portability and Accountability Act of 1996 assures the protection of your private health information, certain information is used to determine what "kind" (age, gender, etc.) of individuals utilize different types of healthcare practices. There are also data collected based on your diagnoses using a set of alphanumeric codes set forth by the World Health Organization (WHO) called the International Statistical Classification of Diseases and Related Health Problems, or ICDs for short. No matter the data type, public health professionals called epidemiologists may use the data to examine rates of infection, birth rates, death rates, or the magnitude of certain health outcomes (this is how we know we have 439.2 new cases of cancer per 100,000 people each year). With this information, the epidemiologist, along with public health professionals from different disciplines, can then plan for such things as funding needs, new building needs, the number of practitioners needed, education programs, or even help a political figure get elected.

Did You Know?

Currently, the U.S. healthcare system uses the ICD-10 codes that are made up of three to seven digits, each specifying one of over 68,000 diagnoses. For example, if you were diagnosed with a broken nose, your medical records would have the ICD-10-CM diagnosis code S02.2XXA listed. Using this number not only universally describes the injury (fracture of nasal bones, initial encounter for closed fracture) but also is a specific billable code for insurance reimbursement.

Epidemiology

Epidemiology is the study of health conditions (from birth to death and all in between) that occur in people. The study is not interested in a single person, like your physician might be, but instead considers a population's health. Epidemiology is most often defined as, "the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems" (Friis & Sellars, 2009). In other words, the epidemiologist uses data from qualitative and quantitative studies as part of investigations to determine the differences between populations' states of health, find the cause of health conditions, determine who is at risk, and then determine how to control or stop the spread of new health outcome cases.

Table 1: What Public Health Problems or Events Are Investigated?

Environmental exposures	• Wildfire smoke/haze • Lead and heavy metals • Air pollutants and other asthma triggers
Infectious diseases	• Foodborne illness • Influenza and pneumonia • HIV/AIDS
Injuries	• Increased homicides in a community • National surge in domestic violence • Motor vehicle accidents
Non-infectious diseases	• Localized or widespread rise in a particular type of cancer • Increase in a major birth defect • Obesity
Natural disasters	• Hurricanes Maria and Irma (2017) • Great Smoky Mountain Wildfires (2016)
Terrorism	• World Trade Center (2001) • Orlando Night Club Shooting (2016)

Adapted from Centers for Disease Control and Prevention (2016). "What is Epidemiology?" Retrieved From https://web.archive.org/web/20190822085055/https://www.cdc.gov/careerpaths/k12teacherroadmap/epidemiology.html

Measures of Epidemiology

In epidemiology, two big areas of interest in data collection are incident rates (IR) and prevalence (P). Incidence means the number of new cases that occur in a specific period. For example, a local restaurant receives a delivery of vegetables that are contaminated with bacteria. Within hours of consumption, most individuals will begin showing symptoms of nausea, vomiting, diarrhea, and/or stomach cramps. This means that within 48 hours, almost everyone who ate the vegetables at that restaurant and who acquired the bacteria would have been symptomatic. Knowing the specified time of food poisoning allows the epidemiologist to link all the persons with symptoms back to a particular location or food source. When, however, looking at the number of cases of cancer, it might be that the period between exposure and health outcome is long (five, ten, even twenty years) or unknown. In this instance, incidence often uses a specific time, such as the number of new cases in one year.

Where incidence is the new cases in a specific period, prevalence is the existing cases in a population at the time of interest. Prevalence allows us to look at what proportion of the entire population may have a specific health outcome (i.e. what proportion of the population had a stroke in 2018), or prevalence may be used to narrow a population down to specific characteristics (what proportion of women aged 35 and older who smoke and take hormonal contraceptives had a stroke in 2018). Doing this not only allows us to see the extent of a health outcome on the entire population but also the magnitude of those with known risk factors.

$$\boldsymbol{IR} = \frac{number\ of\ new\ cases\ in\ a\ specified\ period\ of\ time}{number\ of population\ at\ risk\ of\ the\ same\ health\ outcome\ in\ the\ speciied\ period\ of\ time}$$

$$\boldsymbol{P} = \frac{number\ of\ existing\ cases\ in\ a\ time\ frame}{all\ of\ the\ population\ (with\ and\ without\ the\ health\ outcome) in\ the\ same\ time\ frame}$$

Vital Statistics

Vital statistics are information that has been collected through an agency or organization under the authority of the government to record live births, deaths, fetal deaths, marriages, and divorces. The collection of vital statistics dates to 1869 and is the oldest public health example of inter-governmental data sharing.

Informed Consent

Informed consent is often treated as the primary means of protecting research participants. Although informed consent can be defined in different ways, it is foremost an active agreement made by someone with the capacity to understand, based on relevant information, and in the absence of pressure or coercion. The common ethical justification for seeking informed consent is an appeal to the notion of autonomy, which holds that individuals have values and preferences and thus should voluntarily decide whether to participate in research. However, gaining consent can result from a more direct appeal to beneficence or general welfare. Many research ethics guidelines and regulations require an interactive process between the investigator and research participant to best provide information and ensure comprehension.

Some potential research participants will always lack the capacity to look after their interests (e.g., children, people with dementia, the unconscious) and thus cannot provide consent. To protect people with diminished autonomy, informed consent is usually obtained from a parent, guardian, or legal representative. While it is clear that research participants with diminished capacity need extra protection, empirical evidence shows that even research participants with full cognitive capacity may not understand the information presented as part of the consent process (Dawson 2009). For this reason, informed consent cannot be the only mechanism for protecting research participants. For instance, a research ethics committee can protect participants by assessing risks and benefits. Requiring approval by a research ethics committee might be considered a paternalistic judgment, but not a wrong one (Garrard and Dawson 2005; Miller and Wertheimer 2007). Research ethics committees routinely consider waiving informed consent. This is true in public health research where the risk can be less than in biomedical research. Reliance on the judgments of research ethics committees presupposes that members have a high level of professional trustworthiness and have the skills for ethical deliberation and analysis.

Cultural or social influences can challenge the ideal model of informed consent when conducting public health research. Marshall (2007) provides an excellent overview of challenges with obtaining informed consent, especially in resource-poor settings. These challenges include cultural and social factors that affect comprehension, communication of risks, and decisional authority for consent to do research. Language barriers and low literacy, mistaken beliefs about the benefits of 9 Public Health Research 290 participation, especially when access to health care is limited, and the need to communicate complex scientific information may reduce comprehension of study procedures, benefits, and risks. Marshall (2007) emphasizes the importance of engaging community leaders and soliciting and considering the opinions of community residents when identifying project goals and procedures and establishing consent processes. She notes that in many communities, relying solely on individual consent may not be culturally appropriate. In these situations, adding family or community consent is fitting.

Some research cannot be conducted if the standards of autonomous informed consent are always applied. A good example is emergency research when unconscious victims of head trauma may be randomized to different promising treatments, but the relative effectiveness of each treatment option is unknown. Some countries allow such research via waivers of informed consent if relevant conditions are met (e.g., minimal risk and the research could not otherwise be carried out) (U.S. Department of Health and Human Services 2009). A public health research method for which it sometimes may be appropriate not to seek informed consent is the cluster randomized trial. By design, a cluster randomized trial compares interventions that target a group (i.e., a social entity such as a village or town, or a population). Various characteristics of these clusters are matched to ensure a robust comparison of interventions (including no intervention). In some cluster trials, obtaining individual informed consent can seem prohibitively expensive, damaging to an achieving study goal, or even impossible to attain (Sim and Dawson 2012; McRae et al. 2011b). Where consent is impossible to attain, is it right to require it at the expense of not doing the research? Attempts have been made to justify research without first attaining individual consent by appealing to an ethics committee for review, soliciting viewpoints from the community about whether the research is acceptable, or even seeking some form of community consent.

Dickert and Sugarman (2005) make a distinction between community consent and community consultation. Consent means seeking approval, whereas consultation means seeking ideas and opinions. They note, however, that this distinction gets blurred in practice and that community consultation should not be approached as a box to check off without scrutinizing the input. They identify four ethical goals for any community consultation: enhanced protection, enhanced benefits, legitimacy, and shared responsibility. Adherence to these goals may ensure that risks are identified and protections put into place; that the research benefits not only the researchers but also the participants and communities being studied; and that the legitimacy of the findings is increased. However, this does not constitute a direct parallel to the individual model of informed consent described previously. Community consent involves meeting with legitimate community representatives empowered to permit researchers to conduct studies involving community members (Weijer and Emanuel 2000; Dickert and Sugarman 2005). The involvement of community representatives in public health research is most clearly seen in community-based participatory research (CBPR). In CBPR, authorities are involved at all levels of research from the initiation of ideas and projects through data collection, analysis, and interpretation, to and use of research findings to prompt community change (Flicker et al. 2007). (Selgelid, 2016, p. 312).

Section 3: Additional Resources

Evidence-based public health

- Evidence-Based Clinical and Public Health: Generating and Applying the Evidence. Published by the Centers for Disease Control and Prevention
- Evidence-Based Practices & Programs. Published by the National Institutes of Health

Qualitative and Quantitative Data

- Qualitative vs. Quantitative by Saul McLeod from Simply Psychology

Epidemiology

- The British Medical Journal “What is Epidemiology”
- CDC Game: Solve the Outbreak
- Vax: A game about epidemic prevention

Vital Statistics

- National Center for Health Statistics, Vital Statistics Data Available Online

Section 4: Public Health and Diseases

Learning Outcome:

1. Identify the multifaceted determinants of disease in population health.

Learning Goals:

1. Examine the burden of both infectious and chronic diseases on healthcare and the economy.
2. Identify infectious agents and determine the modes of transmission, the chain of infection, and the risk and significance of emerging and re-emerging infectious diseases.
3. Understand the biomedical and behavioral basis of chronic disease.

The Burden of Diseases

Disease burden is the impact of a health condition (injury, illness, death, etc.) and is measured by the financial cost as well as mortality (death rates) and morbidity (illness rates). In 2019, the United States' total national health expenditures, health care inflation, health care spending (as a part of the US economy), and medical waste (i.e., unnecessary testing, excessive administrative cost) surpassed $3.6 trillion. The number for 2020 may be significantly higher once all the data from the COVID-19 pandemic has been evaluated. The prediction as we begin 2021 is that in 2020, 18 percent of the United States' gross domestic product was spent on healthcare (CMS.gov). This does not include the burden on families of finding health care providers or caretakers or the financial loss from time off work.

As for morbidly and mortality rates measurements such as quality-adjusted life years (QALYs), disability-adjusted life years (DALYs) are used to quantify, or count, the number of years of potential life lost due to disease (YPLLs). For example, it is estimated that smoking causes over 3.1 million YPLLs among men each year. For current numbers on YPPLs in the United States, please see the 2016 report from the CDC.

$$\boldsymbol{YPLL} = (\text{Predetermined end point age} - \text{Age of decedent who died prior to the end point age})$$

Example: A man born in 1960 has an estimated life expectancy of 81 years. Suppose he died in 2014 at the age of 54 from heart disease.

81 (life expectancy) – 54 (age of death) = 27 years of potential life lost.

Infectious Diseases

Infectious diseases are caused by microorganisms, such as bacteria, viruses, fungi, or parasites. These pathogenic diseases can be spread from one person to another either directly (direct human-to-human contact) or indirectly (touching contaminated objects, or contact with infected animals, birds, or insects). *(Note: for more chains of transmission, see the CDC's "Chain of Infection").* Excluding the current COVID-19 pandemic, the most common types of infectious diseases in the United States are influenza (the flu), AIDS/HIV, sexually transmitted diseases, and viral hepatitis. In fact, influenza has remained a leading cause of death in the United States since death rates have been recorded.

The role of public health and infectious diseases is to focus on the prevention, control, and even elimination of disease-causing organisms. For instance, vaccinations – one of our earliest known widespread public health interventions remain the largest method of protection and reduction of the spread of disease. Since 1900, the use of vaccines has led to life expectancies more than doubling, preventing more than 2.5 million deaths a year and significantly decreasing childhood mortality.

The CDC has outlined priorities of public health to prevent infectious diseases (Centers for Disease Control and Prevention, 2015) that include:

1. The need to strengthen public health fundamentals, including infectious disease surveillance, laboratory detection, and epidemiologic investigation,
2. use tools and interventions to identify and implement high-impact public health interventions to reduce infectious diseases, and,
3. develop and advance policies to prevent, detect, and control infectious diseases.

To make these priorities a reality, and have the United States healthcare system ready and able to prevent and control infectious diseases as well as respond to new and/or emerging threats (i.e. drug resistance bacterial infections or bioterrorism), requires a multidisciplinary approach that is systematic, sustainable, and coordinated. For example, responding to a cholera outbreak after a flood takes healthcare professionals to test/treat and send samples to a lab. The lab should quickly be able to confirm the bacteria and pass the information on to the national, state, and local public health offices. From there, the public health offices contact the media to disseminate information and alert first responders. First responders will be in charge of distributing information on how to purify water and/or distributing bottled water. The Department of Transportation may need to clear roads or find alternate routes of travel to get bottled water into the affected areas. Additionally, the local and state environmental agencies will begin posting warning signs on open water sources and the public sanitation works will shut off water and/or begin the purification protocol.

Chronic Diseases

According to the definition from the CDC, a chronic disease lasts a year or more and will require ongoing medical attention and/or limits the activities of daily living resulting in a decreased quality of living (Centers for Disease Control and Prevention, 2018). Half of all Americans live with at least one chronic disease such as heart disease, cancer, diabetes, obesity, stroke, and even tooth decay. One-fourth of all Americans live with two or more such diseases. Unfortunately, chronic diseases are the leading causes of death and disability in America, and, as noted above, they are also a leading cause of high healthcare costs. In the beginning, you were introduced to quality-adjusted life years and disability-adjusted life years: worldwide, the United States ranked 29th for females and 27th for males using these indicators.

We know that most chronic diseases are caused by risky behaviors. For instance, poor nutrition plays a role in diabetes, obesity, heart disease, tooth decay, and cancers. As you have learned, lack of physical activity, tobacco use, and excessive alcohol use are also controllable risk factors. The role of public health is to stop risky behaviors through avenues such as education, policy setting, and state and local laws (for example: in 2012, New York City banned “supersized” sodas).

There are, however, some chronic diseases that are not a result of lifestyle choices or behaviors. There are chronic diseases with unknown origins such as certain cancers, fibromyalgia, or chronic headache syndrome. Other chronic diseases are a result of genetic disorders such as Alzheimer's disease, cystic fibrosis, sickle cell disease, or Type I diabetes. Public health is still actively involved in educating the public, setting policies and procedures around research to prevent and treat these diseases, and working to make sure insurance covers the needs of those affected.

Mandatory Treatment and Vaccination

A primary aim of informed consent is to avoid medical paternalism, such as coercing a patient to do something for his or her benefit. The transition in clinical practice from medical paternalism to informed consent was largely based on the ideas that (1) a well-informed patient is better placed than the doctor to determine which actions are in the patient's best interests (Goldman 1980) and (2) that a patient's autonomy should, in any case, be respected.

In public health, however, treatment and vaccination may, in addition to the health of the individual, be important to population health. As such, individual patients are not the only stakeholders whose interests must be considered. In the context of tuberculosis (TB), coercive treatment is common in so far as, in many jurisdictions, patients with active TB are required to undergo (often directly observed) treatment under threat of confinement if they refuse. While TB treatment usually benefits those subjected to this kind of coercion, the primary motive for such policies is the protection of public health rather than paternalism. Because patients with untreated active TB remain contagious, their treatment is essential to prevent infection of others. Because mandatory treatment (aimed at the protection of others) conflicts with individual liberty, there is a conflict between legitimate values i.e., individual liberty versus public health. There are also conflicting rights i.e., the right of coerced individuals to autonomy versus the rights of others to health (or their rights not to be harmed by being infected). Each of these values and rights is legitimate; and, arguably, none should be given absolute priority over the others. It is noteworthy that TB is relatively exceptional i.e., there are not many other cases of infectious diseases for which treatment is routinely required.

Similar issues arise in the context of vaccination. While vaccination usually benefits the vaccinated, it also benefits others via contribution to herd immunity (Verweij and Dawson 2004). Mandatory vaccination is also more common than mandatory treatment. In some jurisdictions, for example, vaccination of children is required for school attendance. In the scenario, the conflicting rights associated with mandatory medical intervention again come into play. The suggestion that unvaccinated children should not be permitted to attend school, for example, is initially rejected by health authorities because this would conflict with their right to education. Unvaccinated children's right to education, thus, conflicts with the rights of other children not to be infected.

A complicating factor regarding mandatory vaccination is that when one unvaccinated child ends up becoming infected with a disease (such as measles) and then goes on to infect others, it could be argued that those others who become infected do not have their rights violated because they could have avoided infection. Concerning the public health ethics framework, the question here is what, exactly, the proportionality requirement should be thought to consist of. For further discussion of getting vaccinated themselves. It would usually be parents, rather than children, however, who make decisions about childhood vaccination. This raises the question of who (e.g., parents or the government) should have the authority to make decisions about children's health and well-being and vaccination in particular. Assuming that parents should usually retain decision-making authority about childhood vaccination, the relevance of cultural differences to public health ethics is highlighted by the fact that some parents may refuse vaccination of their children for what are ultimately cultural reasons (e.g., religious beliefs). This leads to questions (also raised by other cases presented in this chapter) about whether, and to what extent, cultural beliefs and practices should influence public health policy and practice. (Selgelid, 2016, p. 119).

Section 4: Additional Resources

Burden of Disease

- National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), Health and Economic Costs of Chronic Diseases
- The Global Burden of Disease, 2017

Infectious Disease

- The History of Vaccines
- CDC Office of Infectious Diseases

Chronic Diseases

- National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
- Behavioral Risk Factor Surveillance System
- Chronic Disease Interactive Data Applications

Section 5: Mental Health, Substance Abuse, and Violence

Learning Outcome:

1. Identify the multifaceted determinants of disease in population health.
2. Identify and discuss the roles of public health in addressing health disparities and the needs of vulnerable populations.

Learning Goals:

1. Interpret the prevalence of various mental health disorders in the United States including depression, anxiety/trauma, psychosis and psychotic disorders, substance use disorders, self-injury, and violence.
2. Examine the role of public health in mental health promotion in the United States

Mental Health:

Mental health appears to be a uniquely personal phenomenon: mental health, mental well-being, and mental illness seem to be intensely private experiences outside the realm of sociological analysis. After all, who but psychologists and psychiatrists are truly equipped to understand mental health and illness? We aim not only to understand the role of sociology in the study of mental health but also to gain a deeper understanding of the effects of social life on our mental well-being.

Mental health affects how we feel and how we think. It includes not only our thinking selves, but also our emotional, psychological, and social well-being. Mental health is crucial from childhood, through adolescence and into adulthood. Good mental health means we can relate to others, handle stress, and make healthy choices in life. Just as we learned of physical illness, there is also mental illness. Mental illnesses are conditions that affect a person's thinking, feelings, moods, and/or behaviors. As with physical illnesses, these conditions can be a one-time event, happen on occasion, or be chronic. Over 50 percent of Americans will be diagnosed with some type of mental illness over their lifetime with one in five being diagnosed in any given year and one in twenty-five currently living with a serious mental illness. It is not specific to adults: twenty percent of all children in the United States have had a debilitating mental illness.

Impact of Mental Illness

Nearly one in five US adults live with a mental illness (57.8 million in 2021) (National Institute of Mental Health 2023). Mental illnesses include many different conditions that vary in degree of severity, ranging from mild to moderate to severe. Serious mental illness (i.e. major depression, bipolar disorder, or schizophrenia) costs the public an average of $201 billion per year. In the United States, mood disorders are the third most common cause of hospitalization among children and adults 18 to 44 years of age. Additionally, individuals living with mental illness often face an increased risk of both chronic and infectious diseases such as heart disease and HIV. These individuals also die an average of 25 years earlier than others – often from a treatable medical condition. For reasons of stigma or lack of health care access (over 7.5 million Americans- that is 17%- with mental health issues do not have health insurance), it is estimated that 56.5% of adults with mental illness do not receive any treatment in a given year. Among those who do seek treatment, it is estimated that over 20% report unmet needs. Among youth with major depression, it is estimated that over 63% do not receive any mental health treatment.

Preventing Mental Illness and Promoting Mental Health

Mental illness has always had a stigma associated with it, and many speculate it is because we cannot "see" specific symptoms or injury as we can with a cold or a broken bone. There was a time when many associated mental illness with violence causing fear and the resulting stigma that still exists today (in the earliest writings of mental illness, it was assumed people were possessed by evil spirits). The first comprehensive public health report on mental health, *Mental Health: A Report of the Surgeon General*, was not released until 1999. This was significant because not only was it the first such report, but it also acknowledged that mental health was vital to health and that mental disorders are real health conditions. This report called for "a broad public health approach that included clinical diagnosis and treatment of MI, as well as surveillance, research, and promotion of mental health" (Centers for Disease Control and Prevention, 2018). Since then, there has been growing awareness of and progress made in mental health, including the formation of a U.S. Department of Health and Human Services division called SAMHSA (Substance Abuse and Mental Health Services Administration). In addition, the CDC integrated mental health promotion and mental illness prevention with its chronic disease prevention efforts. In February 2020, cuts were made to many of the Department of Health and Human Services (HHS) and its various sub-agencies, including SAMHSA. For the 2021 year, under President Trump's FY2021, the SAMHSA budget would be cut by $142 million (as of 1/2/21, this is the most current information, this may change under new leadership). However, mental health programs are expected to get a 17.7 percent increase to $19.3 million in funding in 2021.

The dominant models of mental illness are biological, medical, and psychological. We've come a long way since then. Scientists are still struggling to pinpoint exactly what causes mental illness. Most people, however, agree that mental illness can be influenced by a variety of things, including biological factors, personal history and upbringing, and lifestyle. To help provide a framework for understanding these potential causes, experts have developed several different models.

- **Biological model**: The biological model of mental illness approaches mental health in much the same way a doctor would approach a sick or injured patient.
- **Medical model**: The medical model of mental illness has proven to be true in many cases. Science like this forms the basis of psychopharmacology, which is the treatment of mental illness with medication that adjusts the level of neurotransmitters present in the brain.
- **Psychological model:** As you might expect, in the psychological model of mental illness, psychologists look at psychological factors to explain and treat mental illness.
- **Sociological Approaches to Mental Illness:** The determinants of health help us to explain why mental illness is also a social problem.

Substance Abuse

People misuse and abuse substances such as alcohol, illegal drugs, prescription drugs, and tobacco for various reasons. However, one thing they all have in common is the impact it make on our society and public health. The most recent data on substance abuse reveals a cost in the United States of over $740 billion annually in healthcare expenses, criminal activities, and lost work productivity.

Table 2: Substance Abuse Cost

	Health Care	Overall	Year Estimate Based On
Tobacco	$168 billion	$300 billion	2010
Alcohol	$27 billion	$249 billion	2010
Illicit Drugs	$11 billion	$193 billion	2007
Prescription Opioids	$26 billion	$78.5 billion	2013

Source: National Institute on Drug Abuse. https://www.drugabuse.gov/related-topics/trends-statistics#supplemental-references-for-economic-costs

Substance abuse affects not only the user but also families, communities, and segments of the population. The effects are collective and often contribute to significant mental, physical, and social health problems.

In 2016, the Surgeon General's Report on Alcohol, Drugs, and Health was released, addressing the problems of substance misuse and abuse in the United States. The report recognizes that to reduce the prevalence of these issues and inform officials and policy-makers about effective methods to address substance abuse, public health must take a comprehensive approach. The report specifically calls for a systematic approach (U.S. Department of Health & Human Services, 2016, pp. 1-4):

1. Defining the problem through the systematic collection of data on the scope, characteristics, and consequences of substance misuse;
2. Identifying the risk and protective factors that increase or decrease the risk for substance misuse and its consequences, and the factors that could be modified through interventions;
3. Working across the public and private sector to develop and test interventions that address social, environmental, or economic determinants of substance misuse and related health consequences;
4. Supporting broad implementation of effective prevention and treatment interventions and recovery supports in a wide range of settings; and
5. Monitoring the impact of these interventions on substance misuse and related problems as well as on risk and protective factors.

In 2018, a second publication, Facing Addiction in America: The Surgeon General's Spotlight on Opioids, was released as a response to the growing opioid epidemic and increasing mortality rate from opioid misuse/abuse (115 deaths per day in 2016). The FY 2021 budget request for state-level opioid grants is $1.59 billion. This funding to the states is intended to increase access to medication-assisted treatment, reduce unmet treatment needs, and reduce opioid-related mortality rates through the provision of prevention, treatment, and recovery activities.

> *Substance abuse refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs. Psychoactive substance use can lead to dependence syndrome - a cluster of behavioral, cognitive, and physiological phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.* – World Health Organization (WHO).

A problem in deciding how to think about and deal with substance abuse is the distinction between legal drugs and illegal drugs. It makes sense to assume that illegal drugs should be the ones that are the most dangerous and cause the most physical and social harm, but research shows this is not the case.

Violence

It was not until about 40 years ago that violence was viewed as a public health issue. While viewed as a threat to health before that time, it was not a rise in violence that brought attention to the matter but the decreased morbidity rates with the prevention and treatment of many infectious diseases (i.e. tuberculosis, pertussis, typhus). Subsequently, as these rates decreased, homicide and suicide began to climb in the ranks of causes of death (Note: Since 1965 homicide and suicide have consistently been among the top 15 leading causes of death). The rise of child abuse and intimate partner violence gained recognition in the 1960s and 1970s as social problems and demonstrated the need to use more than the criminal justice system to solve these problems. In 1979 the Surgeon General released the first *Healthy People* with 15 priority areas aimed at bettering the health of the American people. One of these priority areas was to take control of stress and violent behavior by calling for communities to stop ignoring the consequences of violent behavior on the mental, physical, and social health of its people.

In 1983 the CDC established the Violence Epidemiology Branch to focus on stopping child abuse and neglect, violence among youth, sexual violence, intimate partner violence, elder abuse, and suicidal behavior. The combined research, prevention efforts, and services associated with violence have given indications of the roots of violent behavior and how the forms of violence are interconnected. Using a public health approach (a type of scientific method) the CDC is working to stop violence before it can begin by monitoring violence-related behaviors as well as injuries and deaths that result from violence. Additionally, the CDC continues research on factors that put people at risk as well as protect them from violence, works with state and local agencies with prevention programs and policies, and monitors existing strategies that are effective or have been found effective in preventing violence.

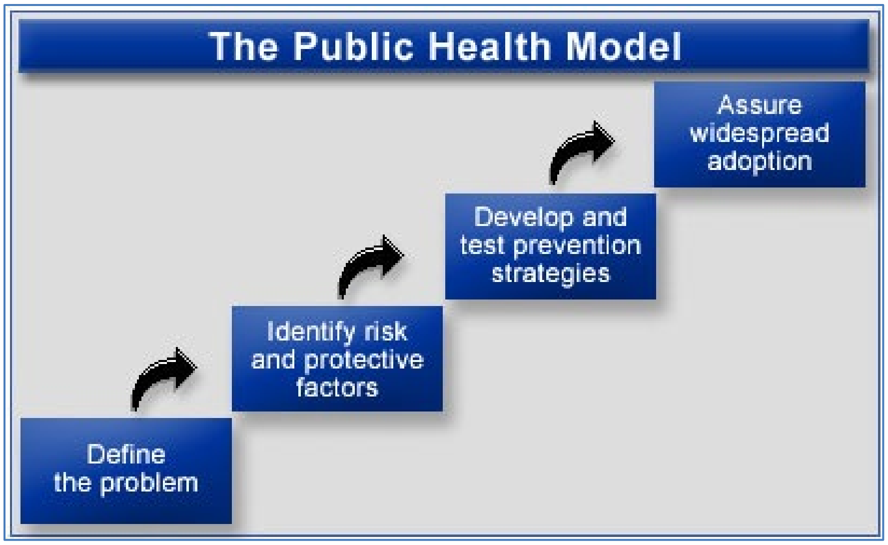


Figure 5: The Public Health Approach to Violence Prevention.

Source: CDC Violence Prevention, March 25, 2015
https://web.archive.org/web/20180626021126/https://www.cdc.gov/violenceprevention/overview/publichealthapproach.html

Table 3: Timeline of Violence as a Public Health Problem

Year	Event
1979	The United States Surgeon General's Report, *Healthy People*, identifies violence as one of the 15 priority areas for the nation. The report states that violence can be prevented and should not be ignored in the effort to improve the nation's health.
1980	A landmark Department of Health and Human Services Report – *Promoting Health/Preventing Disease: Objectives for the Nation* – establishes the first violence prevention objectives for the nation.
1981	CDC epidemiologists begin one of the first collaborative efforts with law enforcement to investigate a series of child murders in Georgia.
1983	CDC establishes the Violence Epidemiology Branch to focus public health efforts on violence prevention.
1985	The Surgeon General's Workshop on Violence and Public Health focuses the attention of the public health world on violence and encourages all health professionals to become involved.

1985	CDC investigates a pattern of suicides in Texas, the first demonstrated use of field epidemiological techniques to identify suicide clusters.
1985	The Report of the Secretary's Task Force on Black and Minority Health is released. The Report underscores the importance of addressing interpersonal violence as a public health problem and identifies homicide as a major contributor to health disparities among African-Americans.
1986	CDC establishes the Division of Injury Epidemiology and Control.
1986	CDC establishes extramural research programs to study injuries and violence.
1989	Report of the Secretary's Task Force on Youth Suicide is released.
1990	"Violent and Abusive Behavior" is included as 1 of 22 public health priority areas in Healthy People 2000. It calls for "cooperation and integration across public health, health care, mental health, criminal justice, social service, education, and other relevant sectors."
1990	The Youth Risk Behavior Surveillance System is established by CDC to monitor priority health risk behaviors among adolescents, including violence-related behaviors that contribute markedly to the leading causes of death and disability in the United States.
1992	CDC receives its first congressional appropriations for youth violence prevention.
1993	A special issue of *Health Affairs* addresses violence as a public health issue – the first special issue to examine violence as a public health problem.
1993	CDC establishes the Division of Violence Prevention, one of three within the newly created National Center for Injury Prevention and Control. The Division leads CDC's efforts to prevent injuries and deaths caused by violence.
1993	CDC publishes *The Prevention of Youth Violence: A Framework for Community Action* to mobilize communities to effectively address the epidemic of youth violence sweeping the nation.
1994	CDC and the National Institute of Justice collaborate on the National Violence against Women Survey. The survey, implemented in 1995-1996, provides the first national data on the incidence and prevalence of intimate partner violence, sexual violence, and stalking.
1994	Congress passes the Violence Against Women Act which authorizes coordinated community responses to prevent intimate partner violence and state block grants for

	rape prevention and education. CDC receives appropriations in 1996 to support both efforts.
1996	The World Health Assembly passes a resolution and declares that "violence is a leading worldwide public health problem."
1996	The National Research Council recommends establishing a Federal Task Force on Violence Against Women with CDC as the lead agency.
1999	The U.S. Surgeon General releases the *Call to Action to Prevent Suicide* report.
2000	The World Health Organization (WHO) creates the Department of Injuries and Violence Prevention.
2000	CDC receives a congressional appropriation to establish 10 National Academic Centers of Excellence for Youth Violence Prevention.
2001	The U.S. Surgeon General releases a comprehensive report synthesizing the state of knowledge on youth violence and its prevention.
2001	The National Strategy for Suicide Prevention is released by the Department of Health and Human Services.
2001	CDC receives first congressional appropriation for child maltreatment prevention.
2002	CDC and WHO produce the first *World Report on Violence and Health* – the first comprehensive report on violence as a global public health problem.
2002	CDC establishes Domestic Violence Prevention Enhancements and Leadership Through Alliances (DELTA), a program to focus on primary prevention of intimate partner violence (IPV).
2002	CDC receives appropriation to establish the National Violent Death Reporting System – the first state-based surveillance system to link data from multiple sources with the goal of enhancing violence prevention efforts. By 2004, the system is in 17 states.
2004	CDC begins placing a greater emphasis on the social ecological model to guide violence prevention efforts.
2006	CDC launches Choose Respect, the first national communication initiative designed to prevent unhealthy relationship behaviors and dating abuse.
2007	CDC publishes a study that estimated the medical and productivity-related costs of violence in the United States exceed $70 billion each year.

2007	CDC conducts a national survey on violence against children in Swaziland and publishes the findings in *The Lancet*. Findings become a catalyst for change that leads to a global public-private partnership to end violence against children with a focus on sexual violence against girls (Together for Girls).
2009	CDC launches the VetoViolence website – a free, online, interactive, and engaging site with violence prevention tools, trainings, and resources based on the best available evidence and research. One year later, the VetoViolence Facebook page is launched and becomes the fifth largest CDC Facebook page with nearly 17,000 fans.
2009	CDC launches *Dating Matters* – a comprehensive teen dating violence prevention initiative for 11-14 year olds living in high-risk urban communities.
2011	CDC releases a report on intimate partner violence, sexual violence and stalking in the United States. The report is based on data from a new surveillance system, the National Intimate Partner and Sexual Violence Survey (NISVS). NISVS was launched by CDC in 2010 with the support of the National Institute of Justice and the Department of Defense.
2010	CDC's Domestic Violence Prevention Enhancements and Leadership Through Alliances (DELTA) program is reauthorized under the Family Violence and Prevention Services Act. The reauthorizing language formally uses the DELTA name for the first time.
2012	The U.S. Surgeon General and the National Action Alliance release the *2012 National Strategy for Suicide Prevention* to guide prevention efforts over the next decade.
2013	CDC releases *Essentials for Childhood* – its strategic framework for creating safe, stable, and nurturing relationships and environments for all children. Five states are funded to implement the framework; 24 other states see the short- and long-term benefits of *Essentials* and begin implementing the framework without CDC funding.
2014	"Preventing Suicide: A Global Imperative" is released by the World Health Organization. The report is the first of its kind to draw attention to the global problem of suicide.
2014	CDC receives an appropriation to expand the National Violent Death Reporting System from 18 to 32 states. In 2016, with an additional appropriation, the system is expanded to 40 states, DC, and Puerto Rico.
2014	CDC releases *Connecting the Dots: An Overview of the Links Among Multiple Forms of Violence* to share research on the connections between different forms of violence

	and how these connections affect communities. In 2016, CDC releases its *Strategic Vision for Connecting the Dots* in its program, practice, policy, research and communication efforts.
2016	CDC releases a suite of technical packages to help states and communities take advantage of the best available evidence to prevent child abuse and neglect, sexual violence, and youth violence. Technical packages to prevent suicide and intimate partner violence are released the following year.
2016	CDC, in collaboration with multiple UN and international agencies, releases *INSPIRE: Seven Strategies for Ending Violence Against Children* to advance the adoption of effective strategies to prevent violence against children in countries around the world.
2017	CDC releases a comprehensive report to help states better understand the extent of intimate partner, sexual violence and stalking victimization in their state to guide prevention efforts.
2017	CDC scientists estimate the economic burden of rape in the United States. The results show a staggering lifetime cost to society of $122,461 per victim for a total lifetime cost to society of nearly $3.1 trillion (in 2014 dollars).

Source: Taken directly from Timeline of Violence as a Public Health Problem, CDC.
https://www.cdc.gov/violenceprevention/overview/timeline.html

Section 5: Additional Resources

Mental Health

- National Institutes of Mental Health
- Mentalhelath.gov: What is Mental Health?
- Minority Health and Mental Health Disparities Program
- Suicide Prevention Hotline
- American Foundation for Suicide Prevention

Substance Abuse

- Executive Summary of The Surgeon General's Report on Alcohol, Drugs, and Health
- SAMHSA's National Helpline – 1-800-662-HELP (4357)
- Substance Abuse and Mental Health Services Administration (SAMHSA)
- Substance Abuse- Healthy People 2020

Violence

- CDC: Violence Prevention
- Violent crime in the U.S. - statistics & facts
- The Public Health Approach to Violence Prevention

Section 6: Environmental Health

Learning Outcome:

1. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.
2. Identify and discuss the roles of public health in addressing health disparities and the needs of vulnerable populations.

Learning Goals:

1. Describe the public health related steps in the regulatory processes in terms of risk assessment.
2. Identify current legislation and regulation regarding environmental issues.
3. Explain the concept of environmental injustice and the role of public health in abolishing injustices.

Environmental Health

Environmental health is the field of science that researches environmental influences on our health and works to protect us from injury and illness originating both our natural environment (i.e. air, water and soil) as well as man-made or "built" environments (i.e. buildings, roads, homes and waste management). The field of environmental health also examines unnatural or "altered" environments such as the chemical, biological, physical and social features of the surroundings where we live, work, and play (i.e. no place to safely walk, pesticides, and invasive species) and how we interact with these surroundings. With this research, public health then works to assess and control the environmental factors that can potentially affect the health of the community.

To understand how the environmental components interact and affect our health, public health or environmental professionals use public health (or human health) assessments and ecological risk assessments. A public health or human health assessment is used to examine the human health effects of an agent (i.e. lead, cigarette smoke). The human health assessment also evaluates the toxicity and the exposure to the agent. An ecological risk assessment determines the likelihood of an exposure and the resulting impact or stress to the ecosystem from an exposure. (See Table 4 for the Environmental Protection Agency definitions and interactive links). From the information obtained from the health assessment and the ecological assessment, the risk researcher then evaluates the frequency (how often) and magnitude (how much) exposure occurs as a consequence of contact with the known hazard. This information is then integrated with known hazard information on toxicity that is based on exposure levels, predictions of the probability of illness or injury with exposure, and the magnitude of the illness or injury (i.e. a skin rash, a chronic illness, death). From this, safety precautions are issued, policy and procedures designed, and laws passed.

Table 4: Risk Assessments: EPA

Public Health/Human Health Risk Assessment	
Step 1: Hazard Identification	Identify if the agent is hazardous to humans and the environment
Step 2: Dose-Response Assessment	How much an exposure leads to how much health outcome?
Step 3: Exposure Assessment	What do we know about how much, how long, and how often one is exposed.
Step 4: Risk Characterization	What extra risk or health problems are associated with exposure?
Ecological Risk Assessment	
Phase 1: Problem Formulation	What is at risk and needs to be protected
Phase 2: Analysis	What is exposed, to what degree, and when/if there will be harmful effects (if so, what are they?)
Phase 3: Risk Characterization	Use the results to estimate the risks and develop interventions.

Environmental Legislation

Environmental legislation is a collection of both laws and regulations intended to protect the environment and communities from harmful effects. The Environmental Protection Agency (EPA) has the authority to write regulations for the environment and environmental safety because of laws that have been enacted by Congress. Because of these regulations and the power of Congress, the EPA can hold organizations, businesses, and individuals legally accountable for environmental violations. Two widely recognized examples of regulations set forth by law and policed by the EPA are The Clean Air Act (CAA) and The Clean Water Act (CWA).

Today, given what is known about climate change, we can reasonably say that economic activity virtually anywhere can be environmentally damaging from oil drilling in the Artic to land clearing in tropical rain forests, and that such damage affects the health and well-being of people everywhere, not just of those in the local or regional areas where the environmental damage takes place. If environmental public health cannot be divorced from economics, neither can it be understood apart from conditions of governance at international, national, and local levels.

Environmental Injustice and Health Disparities

Environmental injustice is the disproportionate effect of environmental hazards among populations, usually minority or underrepresented. The purpose of environmental justice is to offer equal protection from environmental hazards to all communities, socioeconomic status, races, and others who have been underrepresented in the environmental protection process in the past. One such injustice is environmental racism. Recent findings show that there are strong minority and racial disparities in the location of hazardous waste-producing and high-pollution sites. The majority of the populations around these sites (within a one to three-mile radius) are people of color.

Racial inequality is not a new concept in the United States; however, many questions surround how environmental inequality begins in these communities. Some examples of discrimination can be seen in Louisiana and Texas. In Louisiana, many large and polluting industries have been built on land that was once slave plantations, where many descendants and sharecroppers still live and work. In Houston, Texas, the city leaders decided that since there was no zoning in the predominantly black neighborhoods, it would be okay to use the area for municipal landfills. Another tragic example occurred in Chicago in what was known as “Operation Silver Shovel,” where city officials were paid to allow a mob associate to dump illegally in neighborhood areas that were predominantly Latino and black.

Exposure to hazardous waste, including materials from landfills, particulates from industrial smokestacks, known hazardous chemical dumping, and chemical runoff into groundwater and streams, has been linked to several health issues. Cardiovascular disease, pulmonary disease, and cancer are three leading health outcomes associated with exposure to hazardous waste. According to the CDC, all are diseases that strike minorities at disproportionate rates.

Since 1992, the EPA has been working to incorporate environmental justice in all areas that it oversees. To watch the most at-risk locations, the EPA designed the Environmental Justice Strategic Enforcement Assessment Tool (EJSEAT) through the EPA Office of Enforcement and

Compliance Assurance (OECA) intending to "consistently identify areas with potentially disproportionately high and adverse environmental and public health burdens" (Environmental Protection Agency, 2011, p. 1). There is funding available through the EPA to help build local and regional collaboration to aid in identifying the areas most affected and to empower the communities affected to make decisions regarding policies that would help protect their health and safety.

Climate Change

Climate change is a significant threat to the health of the American people, and every American is vulnerable to the health impacts associated with climate change. With climate change, the frequency, severity, duration, and location of weather and climate phenomena, like rising temperatures, heavy rains, droughts, and some other kinds of severe weather, are changing. This means that areas already experiencing health-threatening weather and climate phenomena are likely to experience worsening impacts; it also means that some locations will experience new climate-related health threats. Climate changes that impact human health include wildfires, heat waves, drought, cold waves and winter storms, sea level changes, hurricanes, floods, extreme precipitation, and rising temperatures.

While warmer temperatures in some areas increase the capacity to grow food, they can harm crops and farmers in other regions and disrupt the food supply chain. The northern regions in Siberia (Russia) and Canada are now warm enough to grow crops that would not have survived before (like soy and wheat), but South Asia, South America, and Africa will experience significant losses to dietary staples (wheat, corn, etc.). Warmer weather also encourages the growth of pests, fungi, and other plant diseases, causing more crop losses (Frumkin, 2016). Warmer ocean temperatures threaten fish and shellfish, which are important sources of protein for many Indigenous communities (USGCRP, 2023b). And although CO_2 can be removed from the air by certain trees and plants, it can also change the nutrient content in some food sources like rice and soybeans. Meanwhile, weeds, allergy-producing plants (like ragweed), and poisonous plants (like poison ivy) thrive in the heat and higher CO_2 (Frumkin, 2016). Food insecurity is already high in many of the same places experiencing negative agricultural effects of climate change (Calderone).

Section 6: Additional Resources

Environmental Health

- National Environmental Health Association
- CDC: National Center for Environmental Health

Risk Assessment

- EPA Risk Assessment

Environmental Laws and Regulations

- EPA: Laws and Regulations

Section 7: Healthcare Institutions and Professions in Public Health

Learning Outcomes:

1. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.
2. Identify one or more occupations within the public health realm and describe the education/ credentialing process to enter that field.

Learning Goals:

1. Describe the roles that education and credentialing play in healthcare professions.
2. Identify a range of inpatient and outpatient healthcare facilities that exist in the United States

Healthcare Professionals

Cave paintings have shown that the first recognized "healers" were around as early as 25,000 BC. We also know that over 5,000 years ago, the Egyptians began practicing the first recorded surgeries. There was no practice of standards; however, around 275 AD, Hippocrates put forth the Hippocratic Oath whereby physicians (even though there were no standards of practice or education) had to swear by the healing gods that they would not intentionally cause harm to a patient. It was not until the Flexner Report of 1910 that education and practice standards were instituted in medical schools. Today, the list of healthcare professionals is long and includes much more than physicians. To join one of these professions usually means meeting admission prerequisites to a program, specific coursework, competency exams, graduation or completion guidelines met, and official permission granted to practice in the field.

There are two broad fields of health professionals: clinical health professionals and allied health practitioners. (See Table 5 for examples). No matter the field, education and training are central to the development of health professionals. Meeting an education requirement means attaining a degree or a certificate from an accredited institution. Training is often offered by the healthcare facility (outside the educational institution) and may be specific to a location or job within that facility. For instance, some hospitals will train their certified nursing assistants (CNAs) to fit the needs of their population (i.e. pediatric, geriatric, or orthopedic). Another example of in-house training is in gyms where a new employee completes their specific personal training or group training program regardless of if that person holds another certificate or degree in the field of personal training.

Table 5: Health Care Profession Examples

Clinical Health Professionals	Allied Health Professional
Physician, nurse, dentist, optometrist, psychologist, pharmacist, chiropractor	Physical therapist, occupational therapist, medical social worker, sonographer, lab assistant.

To create and maintain a healthcare profession, it is essential to both define and enforce educational requirements. The two approaches that are used are called accreditation and credentialing. Accreditation means there is a quality assurance process to determine if education programs are meeting set standards for educational basics for a particular health profession. Accreditation evaluations are conducted by an external body such as the Liaison Committee on Medical Education (for medical schools), the Accrediting Bureau of Health Education Schools (for schools offering health education degrees), and the Accreditation Commission for Education in Nursing (all levels of nursing degrees and certificates).

Where accreditation ensures the educational institution is meeting set criteria, credentialing confirms that individuals in the healthcare field meet the qualifications necessary to practice. In addition, the credentialing process checks the background, educational achievements, and legitimacy of the professional. From credentialing often comes **certification**. Certification is usually a professional process to determine that the person wanting to become a healthcare professional not only completed the education process but is also able to pass a formal examination. Sometimes, the certification is an end-process such as with a certified nursing assistant, medical and billing specialist, or dental assistant. Other times, certification is used to define specialties and subspecialties within a profession. Examples are seen in the nursing field, such as an AIDS Certified Registered Nurse, a Certified Pediatric Nurse, or an Advanced Oncology Certified Nurse.

Finally, there is licensing in healthcare professions. Licensing is a function of the state's government and the requirements for licensure include some combination of education, training, and certification examination so the healthcare professional demonstrates competency in the field of practice. Maintaining a license generally requires completing continuing education courses, ongoing training, and, for some, periodic re-examination. Because licensing falls under the state government, guidelines may vary from state to state and additional education or certifications may be necessary to practice with a license in a different state.

Healthcare Facilities in the United States

A healthcare facility is, in short, any location where healthcare is provided. However, the type of care given, the location, the professionals employed, and the reimbursement mechanisms make the field diverse and often complicated to understand. (Note: this will be covered in greater detail in HE 210). For the purpose of this class, we will look at these facilities in two broad categories: inpatient care and outpatient care.

Inpatient care means that medical care is received after a person has been admitted to a facility at least overnight: most hospital care is considered inpatient care for this reason. Persons admitted to an inpatient facility remain under the constant supervision of healthcare professionals following a healthcare plan or protocol. In contrast, outpatient care occurs in a facility where the patient is free to go after the care is given or procedure is performed (also called “ambulatory” facilities since one can “walk out” after treatment).

Hospitals are still the leading type of inpatient care in the United States. In 2018, there were 6,146 registered hospitals in the United States with a total of 36,353,946 admissions and total operating expenditures of $1,112,207,387,000. (Note: These data are pre-COVID-19 pandemic). According to the history of hospitals, hospitals originated as single buildings that were sparsely located (people usually treated illness and injury at home as well as giving birth at home). Today, hospitals are more than a single building: most have grown into networks that include other inpatient facilities such as skilled nursing centers, rehabilitation facilities, and custodial care facilities. Other inpatient care facilities that have seen an increase in use are the facilities designed for the United States' aging population. These include nursing homes, memory care facilities, assisted living facilities, and hospice centers.

In the United States, each year, over 84 percent of all adults visit an outpatient or ambulatory care facility: that equates to about 125.7 million physician visits alone. Over 41 percent of United States healthcare spending goes toward outpatient care. Part of this increase (85 percent higher usage between 1996 and 2013) has to do with access to care (See Section 2, the Affordable Care Act gave 50 million more Americans access to insurance in 2010) as well as the increased rates of chronic disease and subsequent declining health of our population. Nonetheless, this increased utilization of outpatient care has led to an increase in facilities such as urgent care clinics, quick-care clinics, rehabilitation centers, and mental health facilities.

As stated earlier, there are many other factors associated with both inpatient and outpatient facilities (i.e., measuring and defining quality of care, coordination of care between/among facilities, and reimbursement mechanisms).

Nursing and Residential Care Facilities

Nursing care facilities provide inpatient nursing, rehabilitation, and health-related personal care to those who need continuous nursing care but do not require hospital services. Nursing aides provide the vast majority of direct care. Other facilities, such as convalescent homes, help patients who need less assistance. Residential care facilities provide around-the-clock social and personal care to children, the elderly, and others who have limited ability to care for themselves. Workers care for residents of assisted-living facilities, alcohol and drug rehabilitation centers, group homes, and halfway houses. Nursing and medical care, however, are not the main functions of establishments providing residential care, as they are in nursing care facilities.

Offices of Physicians

About 36 percent of all healthcare establishments fall into this industry segment. Physicians and surgeons practice privately or in groups of practitioners who have the same or different specialties. Many physicians and surgeons prefer to join group practices because they afford backup coverage, reduce overhead expenses, and facilitate consultation with peers. Physicians and surgeons are increasingly working as salaried employees of group medical practices, clinics, or integrated health systems.

Offices of Dentists

About 20 percent of healthcare establishments are dentist’s offices. Most employ only a few workers, who provide preventative, cosmetic, or emergency care. Some offices specialize in a single field of dentistry, such as orthodontics or periodontics.

Home Healthcare Services

Skilled nursing or medical care is sometimes provided in the home, under a physician’s supervision. Home healthcare services are provided mainly to the elderly. The development of in-home medical technologies, substantial cost savings, and patients’ preference for care in the home have helped change this once-small segment of the industry into one of the fastest-growing healthcare services.

Offices of Other Health Practitioners

This segment of the industry includes the offices of chiropractors, optometrists, podiatrists, occupational and physical therapists, psychologists, audiologists, speech-language pathologists, dietitians, and other health practitioners. Demand for the services of this segment is related to the ability of patients to pay, either directly or through health insurance. Hospitals and nursing facilities may contract out for these services. This segment also includes the offices of practitioners of alternative medicine, such as acupuncturists, homeopaths, hypnotherapists, and naturopaths.

Ambulatory Healthcare Services

This segment includes outpatient care centers and medical and diagnostic laboratories. These establishments are diverse, including kidney dialysis centers, outpatient mental health and substance abuse centers, blood and organ banks, and medical labs that analyze blood, do diagnostic imaging, and perform other clinical tests.

Recent Developments

In the rapidly changing healthcare industry, technological advances have made many new procedures and methods of diagnosis and treatment possible. Clinical developments, such as infection control, less invasive surgical techniques, advances in reproductive technology, and gene therapy for cancer treatment, continue to increase longevity and improve the quality of life of many Americans. Advances in medical technology have also improved the survival rates of trauma victims and the severely ill, who need extensive care from therapists and social workers as well as other support personnel.

In addition, advances in information technology have a perceived improvement on patient care and worker efficiency. Devices such as hand-held computers are used to record a patient's medical history. Information on vital signs and orders for tests are transferred electronically to a main database; this process eliminates the need for paper and reduces recordkeeping errors. Adoption of electronic health records is, however, relatively low presently.

Cost containment is also shaping the healthcare industry, as shown by the growing emphasis on providing services on an outpatient, ambulatory basis; limiting unnecessary or low-priority services; and stressing preventive care, which reduces the potential cost of undiagnosed, untreated medical conditions. Enrollment in managed care programs predominantly preferred provider organizations, health maintenance organizations, and hybrid plans such as point-of-service programs continues to grow. These prepaid plans provide comprehensive coverage to members and control health insurance costs by emphasizing preventive care. Cost-effectiveness is also improved with the increased use of integrated delivery systems, which combine two or more segments of the industry to increase efficiency through the streamlining of functions, primarily financial and managerial. These changes will continue to reshape not only the nature of the healthcare workforce but also how healthcare is provided.

Various healthcare reforms are presently under consideration. These reforms may affect the number of people covered by some form of health insurance, the number of people being treated by healthcare providers, and the number and type of healthcare procedures that will be performed.

Section 7: Additional Resources

Healthcare Professionals

- Understanding Licensing, Credentialing, Certification, and Privileging
- Healthcare Occupations: Bureau of Labor Statistics
- A Guide to Public Health Careers

Healthcare Facilities

- The Difference Between Inpatient and Outpatient Care
- HHS.gov: Health Care Providers & Facilities
- CDC: Healthcare in America
- Fast Facts on U.S. Hospitals 2025

Section 8: Healthcare Reform and Insurance

Learning Outcomes:

1. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.
2. Identify and discuss the roles of public health in addressing health disparities and the needs of vulnerable populations.

Learning Goals:

1. Define healthcare reform and discuss factors that influence its success.
2. Synthesize access, quality, and cost information to personal examples
3. Identify the types of insurance and medical coverage available in the United States

Healthcare Reform

Healthcare systems are complex and ever-changing. To make sure that healthcare systems are continually and effectively meeting the needs of the population, healthcare reform is necessary. There is often disagreement about how healthcare should look and operate in the United States. This means there is no clear definition of healthcare reform (the term "reform" infers continual, purposeful, and fundamental changes).

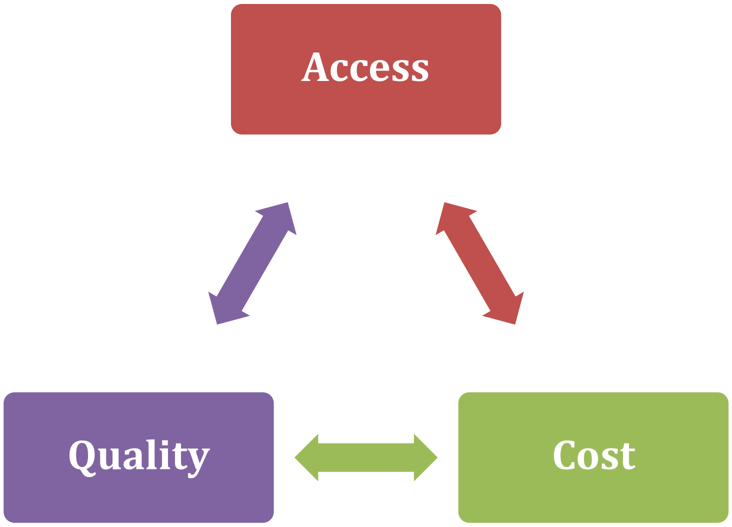
> *Health care reform is a general rubric used for discussing major health policy creation or changes. These policy changes include governmental and private policies that affect health care delivery. Health care reform generally attempts to broaden the population that receives health care coverage, expand the array of healthcare providers, improve access to health care specialists, improve the quality of healthcare, and, finally, decrease the cost of health care. (Manchikanti, Helm, Benyamin, & Hirsch, 2017, p. 107)*

Dissatisfaction with the healthcare system and the desire to reform it is nothing new. Since the end of World War II, to some degree, every presidential administration has either proposed or supported changes to the U.S. healthcare system. One of the things that all supporters of reform have in common is the desire for better access to high-quality healthcare at a reduction of healthcare cost.

Access, Quality, and Cost

As of January 3, 2020, it is estimated that the United States is spending approximately 18 percent of its gross domestic product on healthcare – that equates to about $3.6 trillion nationally or $11,172 per person- making healthcare the largest single sector of our economy. Unfortunately, the amount of money spent on healthcare does not accurately reflect our nation's health. America's health indicators rank last among 10 other industrialized nations, proving we are not healthier and do not live longer despite medical advances. Statistics show that adults in the United States receive just half of the recommended healthcare services. This is due, in part, to the lack of access. Not having access to healthcare does not necessarily mean there is no healthcare facility or service available; access issues can arise from financial limitations, organizational issues, and even social or cultural barriers.

Reducing the cost of medical care always seems to be a logical step; the lower the cost, the more people can afford healthcare, leading to a healthier and more productive population. However, it is never that simple as the cost of healthcare is a combination of many factors, such as professional salaries, technology, and insurance. Unfortunately, there is often a trade-off between cost and quality: higher cost means higher quality, and lower cost means lower quality. (Healthcare quality is a measure of how good healthcare is being delivered to patients). Healthcare reform has led to many initiatives aimed at decreasing costs while increasing the quality of healthcare delivery.



It is enlightening to compare per-capita healthcare spending with other countries of similar wealth. The Organization for Economic Cooperation and Development (OECD) recorded that the average spending for similar nations was equal to approximately $5000 U.S. dollars (USD) per capita in 2022. For example, Switzerland and Germany spent an average of $8000USD per capita, and Australia, New Zealand, and Canada spent between $6000-$7000USD. Several other European and South American countries have considerably lower expenditures (OECD, 2023). When expressed as a percentage of the gross domestic product (GDP) for each country, the U.S. healthcare expenditure still outpaces other wealthy countries

Health Insurance/Medical Coverage in the United States

In the United States, over 46 percent of the total amount spent on healthcare is paid for by the government (federal, state, and local), and another 35 percent is paid for by private health insurance sponsored by employers. In short, government-sponsored and employee-sponsored healthcare plans make up the bulk of health insurance coverage in the United States. Health insurance is intended to cover medical expenses for illnesses, injuries, and other health conditions.

Did You Know?

- In 2018, the National Center for Health Statistics estimated that 27.5 million Americans (8.5%) under the age of 65 were uninsured.
- In 2018, 5.5% of children under the age of 18 were uninsured.

Health insurance sponsored by the government includes Medicare, Medicaid, Children's Health Insurance Program (CHIP), TriCare, and the Indian Health Service (IHS). All government-sponsored insurance has some eligibility criteria (i.e., age, income, military service) and limitations when seeking providers. (See Table 6 for a summary of the requirements/eligibility of government-sponsored health insurance).

Approximately 50 percent of all Americans have the opportunity to purchase insurance through their employers. There are two leading types of employer-sponsored insurance: fee-for-service plans and health maintenance organizations (HMOs). Fee-for-service plans are usually known as a preferred provider plan (PPO). This means that the insurance selected by the employer only works with a specified set of healthcare providers who have agreed to a contract offering such things as lower cost and easier access. A person who has a preferred provider plan does have the option to go outside the provider pool but must pay either more in deductibles or out-of-pocket expenses.

HMOs came about in 1973 (encouraged by the federal government) as an alternative to earlier employer-supported insurance plans. HMOs, like the preferred provider plan, work with healthcare networks so they can offer lower premiums, deductibles, and out-of-pocket expenses.

The difference between PPOs and HMOs is that all health care is coordinated through a selected Primary Care Physician (PCP), and there is no coverage for out-of-network visits.

Table 6: Government Sponsored Healthcare

Medicare	Federal health insurance for people who are age 65 and older, specified younger people with certain disabilities, persons with End-Stage Renal Disease
Medicaid	Federal and state-funded health insurance for low-income adults, elderly adults with disabilities, pregnant women, and children
CHIP	State health insurance for children in families that earn too much money to qualify for Medicaid (note: in some states, pregnant women are also covered)
TriCare	Provided by the United States Department of Defense Military Health System and offers comprehensive health services to active service members, veterans, and their families.
Indian Health Services	Sponsored through the U.S. Department of Health and Human Service, it provides comprehensive health services to American Indians and Alaskan Natives.

Health insurance originally began as catastrophic insurance - that is, if you were ill or injured enough to land in a hospital, it would help to pay for your stay so that you didn't experience financial ruin. One of the earliest of these plans was Blue Cross, which helped fund a person's stay at hospitals that were largely religious or charitable organizations. At first, Blue Cross was a non-profit entity, created along those same lines of charity. In the early part of the 20th century, technology was just beginning to advance medicine, and so often, hospitals were solely places for those on death's door. After WWII, due to labor shortages and wage freezes, employer-sponsored health insurance emerged as a way to increase compensation for workers - and employers didn't have to pay taxes on it either. Thus, health insurance started to become an employment benefit more than a privately purchased commodity (Rosenthal, 2017).

In recent decades, the profit motive has started to affect health insurance substantially. For-profit health insurance companies like Aetna and Cigna came on the scene in the 1950s and began to enroll primarily young, healthy people - who are more profitable: they tend to pay premiums for longer, and they don't get sick as much. Over the decades, this has caused non-profit health insurers to have to become more like for-profit companies. All health insurance companies have focused on ways to control or cut costs and reduce risks, and many of them have been accused of prioritizing CEO pay and investor dividends over patient health outcomes (Rosenthal, 2017). Before the Affordable Care Act (ACA) of 2010 (aka “Obamacare), health insurers could deny coverage for patients with “pre-existing conditions”, thus leaving those chronically ill on their own financially. The ACA also included an emphasis on preventative healthcare, which many health insurance plans have turned their focus to to decrease costs down the road.

Kaiser Permanente (KP), a non-profit organization, was originally developed for workers building dams, aqueducts, and eventually military ships. They prioritized prevention, and worker’s health and safety. Over the decades they have evolved to include three parts: the Kaiser Permanente Foundation Health Plan, Kaiser Foundation Hospitals, and the Permanente Medical Group (practitioners) - and have grown to become the largest healthcare provider in the U.S. (Permanente, 2023, Kissell, 2024). The KP model provides just some examples of how the healthcare system can decrease costs: their large size, use of primary care physicians as “gatekeepers” to refer to specialists, integration of systems and emphasis on preventative care all help to reduce healthcare expenditures. All of these measures have both benefits and drawbacks.

Section 8 Resources

Healthcare Reform

- A Brief History on the Road to Healthcare Reform: From Truman to Obama
- Evolution of US Health Care Reform
- National Health Insurance—A Brief History of Reform Efforts in the U.S.

Quality, Cost, Access

- The Iron Triangle: The Triple Aim - Institute for Healthcare Improvement
- Understanding Quality Measurement
- The AHRQ

Insurance

- The History of Insurance in the United States

Section 9: Public Health and Aging/Public Health and Minority Health

Learning Outcomes:

1. Identify the multifaceted determinants of disease in population health.
2. Identify and discuss the roles of public health in addressing health disparities and the needs of vulnerable populations.

Learning Goals:

1. Examine the trends of aging
2. Identify the role of public health in aging populations in the United States
3. Identify the role of public health in addressing health disparities among minority populations.

Public Health and Aging

Introduction

By 2030, our population demographics will undergo a significant change: older adults will outnumber children for the first time in history. At this time, all Baby Boomers will be at least 65 years old, meaning 1 in 5 of all people in the United States will be of retirement age (Administration for Community Living, 2023). The group called the “oldest old”—those age 85 and older—are the fastest growing segment. By 2050, the aging population will almost double, from 46 million to 88 million.

Public Health Contributions to Longevity

Public health played a role in this growth with surveillance and monitoring systems, health promotion, disease prevention programs, and other public health tools intended to reduce morbidity and premature mortality and, in turn, increase longevity and population size. Advancements such as widespread vaccination, tobacco control programs, improved sanitation, safer workplaces, and greater access to preventive care have helped people live longer and healthier lives.

Persistent Disparities Among Older Adults

Unfortunately, not all older adults benefit from public health efforts. There are still many disparities in the health and well-being of this population—especially among those of lower socioeconomic status, racial and ethnic minorities, rural residents, and individuals with limited access to healthcare or education. This is why all public health efforts must be developed, implemented, and evaluated using the social determinants of health as a guide (CDC, 2022).

Understanding Social Determinants of Health (SDOH)

Social determinants of health (SDOH) are the conditions in which people are born, grow, live, work, and age. For older adults, these determinants shape their ability to remain healthy, independent, and socially connected. The World Health Organization and the U.S. Centers for Disease Control and Prevention (CDC) both emphasize the importance of addressing these determinants to promote health equity in aging.

Key Social Determinants Affecting Older Adults

Here are key social determinants that disproportionately affect older adults:

1. Economic Stability
   Many older adults live on fixed incomes, such as Social Security or pensions, which often do not keep pace with inflation or rising healthcare costs. According to the National Council on Aging (2023), more than 17 million Americans aged 65+ are economically insecure, with incomes below 200% of the federal poverty level. Financial insecurity impacts access to medications, nutritious food, housing, and transportation.
2. Neighborhood and Physical Environment
   Safe, accessible, and age-friendly environments support healthy aging, yet many older adults live in communities not designed for their mobility or safety needs. Over 25% of older adults live in rural areas, where healthcare services, public transportation, and walkable infrastructure are limited. Housing insecurity and lack of home modifications contribute to falls and injuries, the leading cause of injury-related death in this age group (CDC, 2022a).
3. Social and Community Context
   Social isolation and loneliness are serious health risks for older adults. A study published in The Journals of Gerontology (Donovan et al., 2019) found that social isolation is associated with a 50% increased risk of dementia and a 29% increased risk of heart disease. Older adults who experience ageism, racism, or other forms of discrimination may have higher stress levels and worse health outcomes.

4. Health and Healthcare Access
   Many older adults face barriers to healthcare, including transportation, provider shortages, and lack of geriatric expertise. According to the CDC, only 45% of adults aged 65+ are up to date on core preventive services like cancer screenings and vaccines (CDC, 2022b). Language barriers and health literacy challenges disproportionately affect minority and immigrant older adults.
5. Education and Health Literacy
   Lower levels of education are associated with worse health outcomes and greater difficulty navigating complex health systems. Health literacy becomes even more important in later life when managing chronic diseases, understanding medication regimens, and making decisions about long-term care.

Challenges of Aging Populations

As we age, we are at high risk for complicated health problems, multiple chronic illnesses, and disability. With the increased population growth and the health disparities within the population, public health professionals need to use the social determinants of health to develop effective and innovative ways to meet the many needs of this population. In addition, more health professionals who are trained in aging will need to be added to the field.

Public Health Strategies for Healthy Aging

Public health can support healthy aging through a wide variety of strategies, including:

- Promoting age-friendly communities that include safe sidewalks, accessible transportation, housing that supports aging in place, and opportunities for social connection.
- Chronic disease prevention and management through community-based education, access to healthy food and exercise programs, and support for medication adherence.
- Fall and injury prevention programs, including balance training, home modification, and education on environmental safety.
- Mental health and cognitive health support, including early screening for dementia, access to mental health care, and reducing stigma around cognitive decline.
- Vaccination efforts, ensuring older adults receive recommended vaccines to prevent flu, pneumonia, shingles, and COVID-19.
- Support for caregivers, including training programs, respite services, and mental health support for those caring for older adults at home.
- Workforce development, with an emphasis on increasing the number of public health professionals trained in gerontology and culturally competent care.

Role of Data and Evaluation

To support these strategies, public health must continue to invest in data collection, surveillance, and evaluation tools to monitor the health status of older adults, assess risks, and track the success of programs.

Consequences of Inaction

If the public health system fails to address the challenges associated with aging, the consequences could be far-reaching:

- Healthcare systems will become overwhelmed.
- Public health will miss critical opportunities for prevention.
- The cost of care will increase dramatically.
- Health disparities will widen.
- Mental health concerns may become widespread and under-addressed.
- Caregiver burnout will rise.

Call to Action

These outcomes are not inevitable. With thoughtful, inclusive, and proactive public health planning, we can support older adults in living longer, healthier, and more fulfilling lives.

Public Health and Minorities

Introduction

America has been a land of diverse populations since its founding: Diverse groups came from many different places to build the America we know today. History shows us there were issues with these differences and race relations from our beginning—and unfortunately, many of these issues remain today.

Surveillance data from 2015 found that the mortality rates for African Americans were generally higher than whites for several leading causes of death, including heart disease, stroke, cancer, asthma, diabetes, HIV/AIDS, and influenza (CDC, 2022a). These disparities reflect more than just individual behaviors or genetics—they are often the result of deeply rooted systemic inequities and social determinants of health (NIMHD, 2023).

Further, only 54.4 percent of non-Hispanic Black Americans (compared to 75.8 percent of non-Hispanic whites) used private health insurance. Instead, over 43 percent relied on Medicaid (compared to 32 percent of non-Hispanic whites), and 11 percent were uninsured (versus 6 percent of non-Hispanic whites) (KFF, 2021).

Why are minorities less likely to use private health insurance?

Several key factors contribute to this gap:

- Employment Inequities: Many private insurance plans are employer-sponsored, but racial and ethnic minorities are overrepresented in part-time, low-wage, or informal jobs that often do not offer health benefits (KFF, 2021).
- Income Disparities: Lower household income among many minority populations means private insurance is often unaffordable, even with subsidies under the Affordable Care Act (KFF, 2021).
- Language and Literacy Barriers: Complex insurance forms and lack of information in multiple languages can create additional hurdles for immigrants and communities with limited English proficiency (CDC, 2022a).
- Mistrust and Discrimination: Historical mistreatment in the healthcare system has fostered lasting distrust among minority populations, particularly Black Americans. One of the most well-known examples is the Tuskegee Syphilis Study (CDC, 2021a).

A Legacy of Mistrust – The Tuskegee Syphilis Study

What Happened?

From 1932 to 1972, the U.S. Public Health Service conducted the Tuskegee Study of Untreated Syphilis in the Negro Male in Tuskegee, Alabama. Nearly 400 African American men with syphilis were recruited under the false promise of free health care. They were never told they had syphilis and were denied effective treatment—even after penicillin became the standard cure in the 1940s (CDC, 2021a).

Why It Matters:

The study was conducted without informed consent and caused preventable pain, disability, and death. It stands as one of the most infamous violations of medical ethics in U.S. history.

Impact Today:

The Tuskegee Study has had a lasting effect on the trust that many Black Americans place in the healthcare system. It contributes to lower rates of participation in clinical trials, hesitancy about vaccines, and avoidance of preventive care. This mistrust must be acknowledged and addressed in public health outreach, research, and care delivery (CDC, 2021a).

Did You Know?

The latest census data show that approximately 66 percent of Americans report being white (non-Hispanic), leaving the remaining 34 percent as racial or ethnic minorities. It is estimated that by 2050, minorities will become the majority, accounting for over 54 percent of the U.S. population (CDC, 2022a).

The History of Public Health and Minority Health

In 1985, a landmark publication called the Report of the Secretary's Task Force on Black and Minority Health was released, documenting the health disparities among both racial and ethnic minorities in the United States. Surveillance of health indicators—such as life expectancy, disease registries, and infant mortality—determined that minorities experienced a disproportionate burden of preventable disease, death, and disability (NIMHD, 2023).

In addition to creating national awareness of these disparities, the report led to the development of the Office of Minority Health (1986) and the Office of Minority Health Resource Center (1987).

In 2000, the National Center on Minority Health and Health Disparities was established, and in 2010, it was re-designated as an Institute under the Patient Protection and Affordable Care Act. The National Institute on Minority Health and Health Disparities (NIMHD) continues to lead research and policy efforts to close the gaps in health outcomes (NIMHD, 2023).

Section 9 Resources

Aging

- National Institute on Aging
- Fact Sheet: Aging in the United States
- Preparing for Better Health and Health Care for an Aging Population

Minority Health

- Office of Minority Health
- CDC: Minority Health and Equity
- FDA: Minority Health
- HHS Office of Minority Health and Establishment of Federal Offices of Minority Health

Section 10: Emergency Preparedness

Learning Outcomes:

1. Identify the fundamental roles of public health and how those roles are exhibited in public health organizations, funding, workforce, and regulations.
2. Identify and discuss the roles of public health in addressing health disparities and the needs of vulnerable populations.

Learning Goals:

1. Describe the basic types of disasters
2. Understand the roles of public health agencies in emergency management
3. Find local, state, and national resources for emergency preparedness

The events of 2001 – the 9/11 terrorist attacks and the October anthrax attacks - showed the United States that 1) we were vulnerable, 2) we did not have adequate response systems, and 3) we need to be prepared before a disaster strikes.

Types of Disasters

Disasters are either natural or man-made and are capable of causing large-scale illness, injury, death, and property damage that may be too extensive for an existing health system to handle. Natural disasters, like forest fires, hurricanes, or tsunamis, are called “predictable disasters” because they usually occur in known vulnerable areas that have existing emergency plans to deal with them (although the adequacy is often not known until after the disaster). These plans include evacuation protocols, management of water and wastewater utilities, and emergency response protocols. There are also unpredictable natural disasters like earthquakes and floods. For these types of events, instead of evacuation plans, there may be a need for shelter-in-place plans on the individual level (for instance, here in California, we often hear our news stations ask, “Do you have your earthquake kits ready?”).

Man-made disasters (sometimes called technological disasters) are almost always unpredictable. However, sometimes it is possible to identify the potential for a man-made disaster and minimize the impact, if not, totally avoid the disaster. Man-made disasters include events such as hazardous material releases, transportation accidents, nuclear explosions, radiation releases, or the collapse of a structure like a building or a bridge. Terrorist events, war, deliberate attacks, and bioterrorism also fall into this category.

Public Health Response

Whether natural or man-made, disasters harm not only their direct victims but survivors, who are often placed at significant risk from the condition left by the disaster. Some of the routine issues that public health handles after a disaster include measuring water and air quality, finding clean food and water sources, monitoring and reducing exposure to toxic chemicals or radiation, finding sufficient medical care and medical supplies, and providing temporary shelter to those who have been displaced. It is important for the public health authorities to not only plan and prepare for disasters but also work with other first responders and agencies to ensure coordination of services. After the 9/11 attacks, the federal government funded programs throughout the United States to increase preparedness and response to disasters. However, when Hurricane Katrina hit in August of 2005, it was apparent that those initial efforts were not enough. After evaluation, both event responses were missing adequate coordination and communication. Public health authorities have stepped up their role in the planning and response to disasters by working with healthcare organizations, first responders, and disaster response agencies (i.e. American Red Cross) to coordinate not only the delivery of healthcare services but also ensure important supplies distributed to those in need (this is usually called a community action plan). In the American Public Health Association publication *Public Health Management of Disasters: The Pocket Guide*, the author lists seven strategies necessary to address the community's needs:

1. Ensure the continuity of health care services (acute emergency care, primary care, and preventive care);
2. Monitor the environmental infrastructure (water, sanitation, and vector control);
3. Assess the needs of special populations (i.e., elderly, disabled, homebound, and non-English-speaking);
4. Initiate injury prevention and surveillance programs;
5. Ensure that essential facilities will be able to function post-impact (hospitals, health departments, physicians' offices, storage sites for health care supplies, dispatch centers, paging services, and ambulance stations);
6. Issue health advisories as needed;
7. Allocate resources to match the needs of the disaster (Landesman, 2006, p. 8).

The CDC's Public Health Emergency Preparedness program (PHEP) - established in 2002 as a response to the events of 2001 has been working with states to help communities "prepare for, withstand, and recover from emergencies" (Centers for Disease Control and Prevention, 2018) through funding for state, local, and territorial public health departments. Their efforts within the

PHEP jurisdictions have been successful, with almost a 100 percent increase in all capabilities. Table 7 below shows the marked improvements.

Table 7: Improvements in Public Health Emergency Preparedness Since 9/11

PHEP Jurisdictions Who:	Then	Now
Can mobilize staff during an emergency	20%	98%
Have an Incident Command System with pre-assigned roles in place	5%	100%
Have identified point-of-dispensing (POD) sites	0%	100%
Have sufficient storage and distribution capacity for critical medicines and supplies	0%	98%

The PHEP program guides to ensure that states and jurisdictions have the most current and accurate information needed to protect their communities, technical assistance for response mechanisms, and evaluation to determine the state's capabilities in preparedness and response. The six crucial areas of the PHEP program include community resilience, incident management, information management, countermeasures and mitigation, surge management, and bio surveillance. (See Table 8 for explanations of the six areas),

Public health plays an important role in both preparing for and responding to disasters, both natural and man-made. The priorities for planning must include the evacuation of the survivors and procuring medical care to the injured. These two tasks not only require planning but also practice through either drills or simulations. After the initial evacuation and medical needs are addressed, the response plan should include methods to ensure that the air, water, and food sources are not contaminated. In addition, if the disaster event has left any unsafe structures (buildings, bridges, roadways) or hazards (downed power lines or debris), plans should be in place to eliminate or mitigate these dangers. Many agencies and organizations are needed to carry out the response plans, and the federal government has provided funding to all communities to ensure that there is communication and cooperation for success.

Table 8: Six Areas of the PHEP Program

Community Resilience	How capable is the community of preparing and recovering from a disaster?
Incident Management	Coordination and communication of all agencies that have been pre-identified as necessary to the disaster response.

Information Management	Making sure accurate and timely information is available before, during, and after disasters.
Countermeasures and Mitigation	A countermeasure is an action that can prevent or mitigate the effects of an event, such as getting clean water and safe food to areas that have had their sources contaminated
Surge Management	Getting adequate medical care in events where the medical needs are far greater than average
Bio Surveillance	The gathering, interpreting, and communicating of crucial information might relate to disease activity (i.e., bioterrorism) or other threats of injury or illness.

Adapted from CDC’s Public Health Emergency Preparedness Program: Every Response is Local (Centers for Disease Control and Prevention, 2018)

Section 10 Resources

Disaster Preparedness

- Red Cross: Disaster Preparedness Plan
- Ready.gov: Plan Ahead for Disasters
- EPA: General Information for Disaster Preparedness and Response

References

Administration for Community Living. (2023). *2023 profile of older Americans.* https://acl.gov/sites/default/files/Profile%20of%20OA/ACL_ProfileOlderAmericans2023_508.pdf

American Public Health Association. (1995, January 1). *Policy number: 9521(PP).* https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/30/10/48/the-role-of-public-health-in-ensuring-healthy-communities

Andresen, K. (2024). *Optimizing population health: Strategies for advanced level nurses.* Pressbooks. https://pressbooks.uwf.edu/populationhealthnursing/

Baker, J. (n.d.). *Contemporary health issues.* Foothill College. http://hlth21fall2012.wikispaces.com/

Barrett, D. H., Ortmann, L. W., Dawson, A., & Saenz, C. (2016). *Public health ethics: Global cases, practice, and context.* University of Minnesota. https://open.umn.edu/opentextbooks/textbooks/public-health-ethics-global-cases-practice-and-context

Calderone, E. (2024). *The health effects of climate change.* LibreTexts. https://med.libretexts.org/@go/page/103809

Centers for Disease Control and Prevention. (2015). *A CDC framework for preventing infectious diseases.* https://www.cdc.gov/OID/

Centers for Disease Control and Prevention. (2018). *What is public health?* CDC Foundation. https://www.cdcfoundation.org/what-public-health

Centers for Disease Control and Prevention. (2018, July 11). *CDC's public health emergency preparedness program: Every response is local.* https://www.cdc.gov/phpr/whatwedo/phep.htm

Centers for Disease Control and Prevention. (2018, August 6). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP).* https://www.cdc.gov/chronicdisease/about/index.htm

Centers for Disease Control and Prevention. (2022). *Falls among older adults.* https://www.cdc.gov/falls/about/index.html

Centers for Disease Control and Prevention. (2022). *Older adult falls data and statistics.* https://www.cdc.gov/falls/data-research/index.html

Centers for Disease Control and Prevention. (2021a). *Tuskegee timeline: The U.S. untreated syphilis study at Tuskegee timeline.* https://www.cdc.gov/tuskegee/timeline.htm

Centers for Disease Control and Prevention. (2022a). *Health disparities.* https://www.cdc.gov/healthyyouth/disparities/index.htm

Centers for Disease Control and Prevention. (2022b). *Infant mortality.* https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm

Centers for Disease Control and Prevention. (2022c). *Maternal mortality rates.* https://www.cdc.gov/nchs/maternal-mortality/index.htm

Cormier, S. A., Lomnicki, S., Backes, W., & Dellinger, B. (2003). Origin and health impacts of emissions of toxic by-products and fine particles from combustion and thermal treatment of hazardous wastes and materials. *Environmental Health Perspectives, 114*(6), 810–817. https://doi.org/10.1289/ehp.6707

Dearwent, S. M., Mumtaz, M. M., Godfrey, G., Sinks, T., & Falk, H. (2006). Health effects of hazardous waste. *Annals of the New York Academy of Sciences, 1076*(1), 439–448. https://doi.org/10.1196/annals.1371.063

Donovan, N. J., et al. (2019). Association of social isolation with cognitive decline in older adults. *The Journals of Gerontology: Series B.* https://doi.org/10.1093/geronb/gbz152

Friis, T., & Sellars, T. A. (2009). *Epidemiology for public health practice.* Jones & Bartlett Learning.

Kaiser Family Foundation. (2021). *Key facts on health and health care by race and ethnicity.* https://www.kff.org/racial-equity-and-health-policy/fact-sheet/key-facts-on-health-and-health-care-by-race-and-ethnicity/

Landesman, L. Y. (2006). *Public health management of disasters: Pocket guide.* American Public Health Association.

Manchikanti, L., Helm, S., Benyamin, R., & Hirsch, J. (2017). Evolution of U.S. health care reform. *Pain Physician, 20*(3), 107–110. https://doi.org/10.36076/ppj.2017.20.107

National Council on Aging. (2023). *Get the facts on economic security for seniors.* https://www.ncoa.org/article/get-the-facts-on-economic-security-for-seniors

National Institute on Minority Health and Health Disparities. (2023). *Homepage.* https://www.nimhd.nih.gov/

Oregon Research Institute. (2018). *What does it mean to be evidence-based?* http://www.ori.org/resources/what_does_it_mean_to_be_evidencebased

U.S. Department of Health & Human Services. (2016). *Surgeon general's report on alcohol, drugs, and health.* Office of the Surgeon General. https://addiction.surgeongeneral.gov/sites/default/files/surgeon-generals-report.pdf

U.S. Department of Health and Human Services. (2018, September). *Facing addiction in America: The Surgeon General's spotlight on opioids.* Office of the Surgeon General. https://addiction.surgeongeneral.gov/sites/default/files/Spotlight-on-Opioids_09192018.pdf

U.S. Department of Health and Human Services, Office of Minority Health. (2012, March 7). *Heart disease data/statistics.* http://minorityhealth.hhs.gov/templates/browse.aspx?lvl=3&lvlid=127