

CHAPTER ONE

A GENERAL FRAMEWORK TO STUDY VULNERABLE POPULATIONS

LEARNING OBJECTIVES

- To provide the rationale for studying vulnerable populations
- To review frameworks used to study vulnerable populations
- To introduce a new framework to study vulnerable populations
- To describe how the new framework to study vulnerable populations might be used in research and practice.

VARIOUS terms have been used to describe America's vulnerable populations: the disadvantaged, *underprivileged*, medically underserved, poverty stricken, socially marginalized, distressed populations, and the underclasses. Despite an extensive body of literature and various national and local efforts at reducing disparity in health and health care between vulnerable populations and the general public, there is no explicit consensus as to what constitutes *vulnerability*. The eleventh edition of *Merriam-Webster's Dictionary* defines vulnerable as "capable of being physically wounded" or "open to attack or damage." In a broad medical sense, vulnerability denotes susceptibility to poor health. Based on the epidemiological notion of risk—the probability that a person will become ill over a given period of time—everyone is potentially vulnerable over an extended period of time. Yet researchers and policymakers obviously do not have everyone in mind when they refer to vulnerable populations.

The common practice by researchers and policymakers, when addressing vulnerable populations, is to focus on distinct subpopulations (Aday, 2001). Among many others, these include racial or ethnic minorities, the uninsured, children, the elderly, the poor, the chronically ill, the physically disabled or handicapped, the terminally ill, the mentally ill, persons with acquired immunodeficiency syndrome (AIDS), alcohol or substance abusers, homeless individuals, residents of rural areas, individuals who do not speak English or have other difficulties in communicating, migrants or the newly immigrated, and the poorly educated or illiterate. For example, in *Healthy People 2000*, a U.S. national prevention initiative strategy for improving the health of the American people, vulnerable populations were identified as those with low income, the disabled, and minority groups (U.S. Department of Health and Human Services, 1979). These populations are at risk of poor physical, psychological, or social health (Aday, 2001), and are least likely to receive high-quality health care service (Meneses, Landier, & Dionne-Odom, 2016). However, systematic differences in health between social groups could be avoided or reduced by targeted interventions and policies (Marmot et al., 2012). In *Healthy People 2010*, the U.S. federal government launched a targeted initiative to eliminate racial and ethnic disparities in health, specifically infant mortality, cancer screening and management, cardiovascular disease, diabetes, AIDS, and immunizations (U.S. Department of Health and Human Services, 2000). In *Healthy People 2020*, the definition of vulnerability became much more expansive, with the overarching national goals including increasing quality of life, promoting health for all, and eliminating *health disparities* across all groups, with a vision of a society where people live long and healthy lives (Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020, 2008).

A closer examination reveals that this approach is somewhat arbitrary. The distinctions between many of these vulnerable groups are often very thin, with vulnerable subpopulations sharing many common traits and experiencing a convergence or interaction of multiple vulnerable characteristics or risk factors. For example, racial/ethnic minorities are disproportionately distributed at the lower end of the socioeconomic ladder, are more likely to be uninsured, and have poorer health than white Americans (LaVeist, 2005). The subpopulations identified as vulnerable often lack the necessary physical capabilities, educational backgrounds, communication skills, or financial resources to safeguard their own health adequately. They have also been shown to bear increased burdens of illness, have poorer access to health care, and receive health care of poorer quality. These commonalities call for a renewed conceptualization of vulnerability.

This chapter introduces a *framework* to study vulnerable populations that reflects the convergence of vulnerable characteristics. The framework will serve as the organizing principle for the literature reviews, related analyses, discussions of health and social programs, and suggested solutions that are presented in this book.

WHY STUDY VULNERABLE POPULATIONS?

This book is about vulnerable populations, and we have chosen to highlight those with minority racial/ethnic backgrounds, low *socioeconomic status* (SES), and no health insurance coverage. There are many reasons to focus national attention on the needs of vulnerable populations and reducing health and health care disparities experienced by these groups. We offer six reasons for enhancing the national focus on vulnerable populations:

1. Vulnerable populations have greater health needs;
2. The prevalence of vulnerable groups in the population is increasing;
3. Vulnerability is primarily a social issue that is created through social forces, and therefore can only be resolved through social (as opposed to individual) means;
4. Vulnerability is intertwined with the nation's health and resources;
5. Vulnerability can pose risks to social stability; and
6. There is a growing emphasis on equity in health.

Vulnerable Populations Have Greater Health Needs

Vulnerable populations are at substantially greater risk of poor physical, mental, and social health and have much higher rates of morbidity and mortality. Among many examples, they experience higher rates of various chronic conditions, such as cardiovascular diseases, arthritis, asthma, and diabetes, die at higher rates during infancy due to birth weight problems and poor prenatal care, tend to be more abusive with drugs, alcohol, cigarettes, and inhalants, and report more depression and social exclusion than other groups (de Chesnay & Anderson, 2019). Paradoxically, those with greater health needs usually have the lowest utilization of health care services (Richard et al., 2016). They typically face much greater barriers to accessing timely and needed care and, even when receiving care, tend to have worse *health outcomes* than others. The magnitude and multifaceted nature of their health needs places a greater demand on medical care, public health, and related social and human services delivery sectors.

There Is an Increasing Prevalence of Vulnerability in the United States

The United States has become increasingly multiethnic. By the middle of the twenty-first century, the minority population is estimated to nearly equal the size of the non-Hispanic white population (U.S. Census Bureau Population Division, 2008). Though the national poverty rate steadily decreased from 14.8% in 2014 (U.S. Census Bureau, 2018) to 12.3% in 2017 (U.S. Census Bureau, 2018), there were still 18.5 million people who reported deep poverty, meaning the household income was below 50% of the 2017 poverty threshold (U.S. Census Bureau, 2018). The poverty rate remained the highest for Blacks (21.2%), followed by Hispanics (18.3%), Asians (10.0%), and non-Hispanic Whites (8.7%). In 2017, there were still 8.8%, or 28.5 million people without health insurance.

Demographic shifts, immigration patterns, and socioeconomic trends in the United States and other nations will likely result in vulnerable groups becoming the majority population within this century. If nothing is done to improve their well-being, the health needs of these vulnerable populations will place an incredible strain on the capacity and resources of medical and social services to ensure a national population with a high level of health.

Vulnerability Is Influenced and Therefore Should Be Remedied by Social Factors

Vulnerability to poor health does not represent a specific personal deficiency but, rather, as described in Chapter 2, the interaction effects of many individual, community, and social or political factors, some of which the individuals involved have little or no control over. The creation of vulnerability in this way implies that society has a responsibility to assist these populations and actively promote the health of these individuals. Many programs are in place to address specific health disparities. The most effective approaches to mitigating the consequences of vulnerability and reducing levels of vulnerability in the first place must include broader health and social policies that address these social forces and environmental contexts.

Vulnerability Is Fundamentally Linked with National Resources

The well-being of vulnerable populations is closely intertwined with the overall health and resources of the nation. The United States continues to rank poorly compared with other developed nations on key national health indicators, including infant mortality, total mortality rates, and life expectancy (OECD, 2020b). Poor health not only has an impact on individual families and lives but also detracts from national productivity and economic prosperity (Andel, Davidow, Hollander, & Moreno., 2012). The poor health that vulnerable populations experience further subsumes national resources for social progress. For example, when negative health and social conditions (such as violence), which could effectively have been prevented, are left untreated or exacerbated by neglect, they end up costing society billions more dollars in treatment than in prevention. Fundamental improvement of the nation's health and resources cannot be accomplished without very specific efforts aimed at improving the health of vulnerable populations.

Vulnerability Can Pose Risks to Social Stability

Social stability offers a useful framework in public health for understanding the needs of vulnerable populations. The construct of social stability refers to the range of life structure that functions as protective factors against further systematic hazards and helps maintain one's social connections and roles (German & Latkin, 2012a). Vulnerable populations are more likely to face unstable life circumstances and social disadvantages, including homelessness, poverty, unemployment, incarceration, and social isolation. The literature on social determinants of health has pointed out the intertwined and reciprocal connections between these indicators of social stability and various health outcomes (Marmot, 2005). Moreover, empirical evidence shows that social stability characteristics tend to co-occur within impoverished communities, indicating an additive and synergetic negative effect of social vulnerabilities (German & Latkin, 2012b). It is therefore urgent to understand the systematic social needs of vulnerable populations and develop policies and programs to address overall social stability.

Vulnerability and Equity Cannot Coexist

Perhaps the most important reason for focusing on vulnerable populations is the guiding principle of *equity*. Equity is defined by the eleventh edition of *Merriam-Webster's* dictionary as “the quality of being fair.” There are various ways in which fairness is conceptualized. In terms of medical care, policies that ensure equal access to health services, such as universal health insurance or health care programs such as the promotion of an AIDS surveillance system, may benefit the public equally. Fairness could also be defined in a relative way, such that the degree of access to health services is determined in direct proportion to the health needs of an individual or a population. By this definition, an equitable health care system is one in which the health need of an individual is the sole determinant of his or her access to and use of health care. By either definition, if equity is a guiding principle for the United States, then vulnerability cannot be allowed to persist.

Documents from the founding of the nation, in fact, identify equality as a governing principle. The U.S. Declaration of Independence states, “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.” These principles of equity, while pursued and interpreted in ways that are sometimes inconceivable today (for example, slavery had been looked at as an exception: slaves would be counted in the census for purposes of representation as “three-fifths of a human”), have at critical points in history been markedly important for vulnerable groups.

The abolition of slavery in 1865 marked what was perhaps the first national legislation reflecting the guiding principles of equality, and it immediately changed the status of this vulnerable population. Perhaps the second landmark legislation for vulnerable groups was the winning of women’s suffrage in 1920, giving women more, but still not fully equal, opportunity for political control in guiding the nation. While earlier public policy focused on equality in freedoms and political power, progressive policies in the 1960s enhanced race, gender, and SES equality in social and educational opportunities for U.S. citizens.

The Civil Rights Act of 1964, for example, made *discrimination* based on race, color, religion, and national origin illegal and has been updated several times to include other specific discriminatory factors, such as gender and sexual preference. The Johnson administration’s War on Poverty during the 1960s further shifted public attention and social policies toward issues of social, educational, and *health inequalities*.

The past two decades have evolved to see a national and political interest in equality of results attained, rather than just opportunity (Moss, 2000). Equity in the social and medical realms is considered a means to realize social justice. The need to eliminate systematic barriers to health and health care has long been recognized (Purnell et al., 2016). The Healthy People 2010 and 2020 initiatives explicitly identify health and health care equity as public health objectives and have called for a reduction in health disparities in the United States. Since 2011, the Centers for Disease Control and Prevention (CDC) Health Disparities and Inequalities and Strategies for Reducing Health Disparities reports have identified and addressed the factors that lead to health disparities and inequalities for various social and health indicators (People, 2013). The Institute of Medicine (IOM), in its landmark report, “The Future of Public Health,” asserted that “the ultimate responsibility for assuring equitable access to health care for all, through a combination of public and private sector action, rests with the federal government” (Institute of Medicine Committee for the Study of the Future of Public Health, 1988, p. 13). Many federal and state government agencies also have specific plans to remedy health disparities. Finally, the Affordable Care

Act (ACA) signed by President Obama in 2010 moved the United States further toward universal health insurance coverage in an effort that started with *Medicare* and *Medicaid* in the 1960s and the *State Children's Health Insurance Program* (later called the *Children's Health Insurance Program*, *CHIP*) in the 1990s. The ACA aimed to expand health coverage, make health insurance more affordable, improve the quality of coverage, and curb healthcare costs. The uninsured rate under the ACA dropped to record lows of 10.9% in 2016 but has since risen. At the end of 2018, the rate was 13.7%, according to Gallup data (Wit- ters, 2019).

Front-Line Experience: Managed Care Investing in Vulnerable Populations

Phinney Ahn, Executive Director of Medi-Cal (Medicaid) at L.A. Care Health Plan, describes how one managed care organization, designed to serve vulnerable populations, has made substantial investments in reducing financial, geographic, and cultural barriers to care. It has reached deep into the community to address a wide range of risk factors that contribute to poor access to care and poor health.

L.A. Care Health Plan is a community-accountable Medicaid managed care organization serving residents of Los Angeles County through a variety of programs, including Medicaid (called Medi-Cal in California), Cal MediConnect (a demonstration pilot for people dually eligible for Medicaid and Medicare) and L.A. Care Covered (California's Affordable Care Act exchange). Our mission is to provide access to quality health care for Los Angeles County's vulnerable and low-income communities and residents and to support the safety net required to achieve that purpose. With approximately two million enrolled members, L.A. Care is the nation's largest publicly operated health plan.

We understand that our members face many barriers to obtaining health care, including low incomes, social barriers to accessing care, and limited language proficiency to navigate a complex health care delivery system. Since most Medicaid beneficiaries in Los Angeles County get their care through managed care organizations, L.A. Care is continually looking for ways to ensure our members have the information they need to get care at the right place, the right time and in the right setting. We currently have 7 Resource Centers located throughout the County that bring health services and programs to the community, with 7 more on the way. Fitness and healthy cooking classes, new member orientations, and health screenings are just some of the resources offered. They are free and open to everyone, not just L.A. Care members.

It is also part of our mission to support the safety net. In 2018, L.A. Care committed more than \$30 million to our Elevating the Safety Net initiative, a long-term effort to address the physician shortage in L.A. County. The initiative consists of several grant programs to recruit and retain highly qualified primary care physicians for the L.A. County safety net. The initiative includes a provider recruitment program, a provider loan repayment program, medical school scholarships, and medical residency support grants to encourage new physicians to practice and remain in L.A. County.

Recognizing that it takes more than a visit to the doctor to significantly improve health outcomes, L.A. Care has prioritized five social determinants of health on which to focus. These include housing, food security, income security, transportation, and early childhood education. We use data to identify gaps in care that exist for our members and leverage resources and partnerships with community organizations to connect members with programs that can help address their social needs. In 2017, we also committed \$20 million to provide permanent supportive housing for L.A. Care members and other individuals experiencing homelessness and complex health needs, in recognition of the influence housing has on health.

In an effort to promote quality of care and improved outcomes, L.A. Care offers a continuous calendar of provider education events that promote the use of evidence-based guidelines and improve provider practices. We were also one of the first Medicaid plans to offer a “pay for performance” program to align financial incentives with preventive care and chronic disease management. A few years ago, we launched a robust initiative for contracted provider groups that ties incentives to performance in member satisfaction, quality, and utilization. As a result of our efforts to raise the quality bar for health plans, our Medicaid program has been awarded a Commendable Accreditation by the National Committee for Quality Assurance.

Since we believe that positive change comes from within the community, we work with 11 Regional Community Advisory Committees comprised of L.A. Care members and advocates who advise us on local health care needs and provide direct feedback on health plan materials and services. The committees take a grassroots approach to developing realistic solutions to health issues, while giving consumers a sense of responsibility to their community and voice to advocate for their health care. As we prepare for the future, L.A. Care and our consumer partners will continue to advocate to build on the successes of the ACA.

These multiple strategies work together to break down and overcome the multiple barriers our members face in navigating an increasingly complex health care system. L.A. Care is constantly working directly with our members, providers, and community partners to develop innovative programs to cater to the needs of our members. L.A. Care prioritizes health care quality, access, and inclusion—elevating health care for all of L.A. To learn more about L.A. Care, visit www.lacare.org.

MODELS FOR STUDYING VULNERABILITY

Over the years, studies of vulnerable populations have used different paradigms or models to examine why vulnerable groups experience poorer access to health care and poorer health status. Most of these models have examined individual-level explanations for why vulnerability has negative influences on health. They highlight characteristics of individuals, their health-related behaviors, and their personal socioeconomic circumstances and health care access. In recent decades, it has become widely acknowledged that individuals are embedded within larger social systems and interact with the health care system and a number of contextual forces that also affect health outcomes. This multifaceted nature of vulnerability leads to the development of models that have suggested a broader community-level conceptualization of vulnerability, whereby individuals have poorer health due to community or social forces. Here, we summarize the major relevant models that have helped define and shape our understanding of vulnerable populations.

Individual Determinants Model

Perhaps the most foundational, and most common, model for understanding vulnerability is one that identifies specific population groups with certain individual characteristics as inherently more vulnerable than others. The model focuses on characteristics such as age, gender, race and ethnicity, education, income, and life changes (Rogers, 1997). The key to understanding the individual determinants model is that it very clearly delineates vulnerable populations from non-vulnerable populations based on a list of any number of personal characteristics and is not designed to reflect any aspects of community or society that might reflect vulnerability.

Rogers, for example, argued that both women and men could be considered vulnerable populations, depending on the purpose of the classification. Women could be considered vulnerable because they report poorer health status, while men could be considered vulnerable because of their higher mortality rates and overall shorter life expectancy (NCHS, 2019). For women, vulnerability is derived from many factors, including the stresses of childbearing, child rearing, and caregiving, reflected in a greater *incidence* of depression and injury from domestic conflict. Women also often have fewer financial resources at their disposal because they still unfairly earn less income on average than men do.

Rogers also considered three stages of life as inherently vulnerable: childhood, adolescence, and old age. Children are vulnerable because they depend on others for care, whereas adolescents engage in more risk-taking behaviors, such as unprotected sexual intercourse and the use of drugs and alcohol. The elderly are at risk because of their decreased physical ability, and their risk can be compounded with the decline in financial resources and social support that may occur at this stage of life.

Minority race/ethnicity is considered a vulnerable characteristic in this model because certain groups have higher rates of poverty, morbidity (for example, both diabetes and hypertension are more common among African Americans than whites), and mortality. Educational attainment is considered a marker for vulnerability because those with higher education tend to have better health, which may be due to better access to medical care, a greater tendency to practice prevention, or other more subtle aspects of *social class*.

One of the most interesting components of the model is that major life changes, such as the loss of a job, the death of a loved one, the end of a close relationship, and other transitions (including a diagnosis of a major illness) impair individual health and functioning, making these transitions vulnerable periods.

Individual Social Resources Model

Another essential model of vulnerability has been proposed by Aday (1994). It suggests that individual risks stem from lacking certain intrinsic social and personal resources that are essential to a person's well-being. According to this model, social status, *social capital* (or social support), and human capital (the productive potential of an individual) influence vulnerability. In this model, individual characteristics are not themselves the determinant of poor health, but a reflection of larger issues, related to their personal and social resources, that contribute to vulnerability.

Social status is associated with biological characteristics such as age, gender, and race/ethnicity that can bring with them socially defined opportunities and rewards, such as prestige and power. African Americans, by this definition, are viewed as a vulnerable group because they experience more barriers to obtaining material resources (such as income) and nonmaterial resources (such as political power) that contribute to health and social advancement. Those with a combination of characteristics that are associated with poorer social status (for example, elderly African Americans) would be considered to have a higher level of vulnerability.

Social capital is defined as the quantity and quality of interpersonal ties a person has. These social ties reflect social resources that are instrumental in supporting psychological, physical, and social well-being. Aday (1994) provides an example of a single mother whose social capital (or social ties with friends) may be particularly helpful in offering child care so that she can direct energies toward personal advancements such as school or work.

Examples of those with less social capital are those who live alone, single-parent families, the unmarried or those without life partners, those who do not belong to any organizations or groups, or those who have a limited network of family or friends. Having strong social ties in this model serves as a buffer against vulnerability.

Human capital refers to the skills and capabilities of an individual that enable the person to advance and make productive contributions within society. Without human capital, individuals may experience barriers to social advancement, such as exclusion from the labor force, employment in low-wage or service sector jobs, or not being admitted to higher education. Higher social advancement is associated with better health (discussed in Chapter 2); without these opportunities, these populations may be considered vulnerable. This risk factor can certainly be modified through the provision of high-quality public education or vocational training.

Individual Health Behaviors Model

Many theories have been suggested for why the individual characteristics that both Rogers and Aday identified as vulnerable are associated with poor health. The next model explains this relationship through differences in personal health-promoting and *health-risk behaviors*. It is argued that vulnerable populations engage in fewer health-promoting activities, such as regular physical activity, healthful eating, and wearing seat belts, and in more risky activities, such as smoking, excessive alcohol consumption, and substance abuse (Lantz and others, 1998; Power & Matthews, 1997; Power, Matthews, & Manor, 1998). These behaviors have direct influences on specific health conditions (for example, smoking and lung cancer, physical activity and obesity, and alcohol use and car accidents) and, thus, contribute to disparities in health.

Proponents of the health behavior model suggest that vulnerable populations engage in fewer health-promoting and more health-risk behaviors due to psycho-social factors that create stress for individuals and lead to unhealthy behaviors. These factors include poorer social relationships and social support; reduced senses of life control and personal self-esteem; and racism, classism, or other stressors related to having less social power and resources (Lantz and others, 1998). These psychosocial stressors then create mental and physical barriers to the adoption of health-promoting behaviors (depressed individuals are less likely to exercise, for example) and lead individuals to adopt risky health behaviors as coping mechanisms, such as drinking alcohol and smoking tobacco to reduce stress. Chronic stress can also have direct physiological effects and reduce the likelihood that a person will be motivated to obtain medical care.

Several key publications support this health behavior model. The influence of health-promoting and health-risk behaviors on health was first recognized among the major industrialized countries by the minister of health of Canada (Lalonde, 1974). Written by Marc Lalonde, the report suggested that lifestyle factors, or rather, “habits of indolence, the abuse of alcohol, tobacco and drugs, and eating patterns that put pleasing of the senses above the needs of the human body” (p. 5), are major contributors to poor health. In the United States, the first installment of the Healthy People reports in 1979 (U.S. Department of Health and Human Services, 1979) and two major IOM reports have summarized evidence of the association between certain behaviors and illness (Hamburg, Elliott, Paron, & Institute of Medicine, 1982; Institute of Medicine Committee on Health and Behavior: Research Practice and Policy, 2001). Nevertheless, the literature cautions that health behaviors explain only a modest portion of health disparities.

Individual Socioeconomic Status Model

Another explanation for why individual vulnerability characteristics are associated with poor health status is the influence of individual SES. In general, SES is defined by income, education, and occupation, but the same concept is often referred to as social class in other countries. In the United Kingdom, where social class is a common term, there is a standard measure of SES (the Registrar General's measure of occupation) using an individual's father's occupation to categorize one's social class (Hart, Smith, & Blane, 1998). Assessed in this way, social class is a less mutable individual characteristic, because no matter how much occupational promotion or financial wealth a person achieves, his or her social class remains largely determined by the previous generation. Despite differences in measurement, SES remains perhaps the most commonly encountered explanation for any linkage between vulnerable populations and poor health care access and health status.

There is extensive evidence of the relationship between poor health and individual SES. Studies have demonstrated a clear inverse relationship between levels of income, education, and mortality. The most prominent evidence comes from Whitehall studies of British civil servants in London that demonstrated a nearly linear relationship between social class (defined by occupation) and mortality from most major causes of death (Adler and others, 2008; Marmot, 1993; Marmot, Shipley, Hemingway, Head, & Brunner, 2008; Marmot and others, 1991). Mortality was the lowest among high-level administrators and increased for each successively lower social class occupation, resulting in threefold differences in mortality for the highest and lowest social classes. Interestingly, behavioral risk factors for mortality, such as smoking prevalence, in these social class groups explained fewer than half of the differences in mortality, suggesting some clear limits to the ability of the health behavior model in explaining the influences of vulnerability (Pincus, Esther, DeWalt, & Callahan, 1998).

In addition to the health behavior model, two major mechanisms have been proposed for the relationship between individual SES and poor health. First, low-SES individuals have fewer financial resources to maintain and promote personal health adequately. For example, low-income groups experience greater difficulty paying for basic health and social needs, including nutritious food, safe and adequate housing, reliable transportation, and child care services, which have been shown to promote health and child development (Cunningham, 2018; Morrissey, 2019). Second, low-SES groups also have less financial access to health care services. Although health insurance programs exist for poor individuals, there are still many financial barriers to accessing needed health services. The role of SES, in short, influences not only the ability to protect and promote health but also the ability to receive treatment when health problems occur.

Community Social Resources Model

The next set of models advances the concept of vulnerability beyond just individual risk factors and explores more of the community-level determinants of vulnerability. These models are particularly important because they emphasize that vulnerability is not simply a matter of individual bad luck or lack of personal will or resilience. Rather, they propose that community or social factors contribute to vulnerability and also highlight the responsibility that society has in addressing the consequences of vulnerability.

The first of these models, proposed by Flaskerud and Winslow (1998), suggests that community resources, defined broadly, strongly influence the health of a community

and therefore contribute to the vulnerability of individuals living within the community. Although these social resources are similar to those proposed by Aday, the community social resources model is distinct in examining both community and individual-level social resources. Vulnerability in this model is therefore defined at the population level as social groups that experience differences in the availability of social resources and consequently have a higher risk for morbidity and premature mortality.

Flaskerud and Winslow use a very broad definition of resource availability, taking into account both socioeconomic and environmental circumstances. By socioeconomic resources, the authors refer to social status, social capital, and human capital factors, measured at the community level. These include, for example, community unemployment and poverty rates, the availability of high-quality schools, and the presence of community organizations such as churches or social clubs that create opportunities for social connectedness. In particular, the community poverty rate has been one of the most consistent *predictors* of morbidity and mortality in the United States (Do & Finch, 2008; Erwin, 2008; Kaler & Rennert, 2008). Social status is also an important resource to consider in that the lack of political power associated with lower social status leaves them out of the decision-making process for community resource distributions.

The authors also discuss environmental circumstances that would create vulnerability for poor health, including poor access to health care and poor quality of care. Community violence and crime rates are considered environmental circumstances that would influence health, but the authors raise these issues only in regard to hindering access to health care and social services, since top level health care professionals and social service providers are less inclined to work in these areas. Violence and crime in a community are also likely to have direct impacts on health, including through physical safety issues and even feelings of insecurity that may affect mental health. The authors finally highlight that poor health status of a population (the defining characteristic of vulnerability) may itself contribute to the poor resources in a population (for example, chronic illness may create difficulties with employment and social connectedness), creating a cycle of vulnerability. The authors suggest, however, that the influence of health on community resources seems to be relatively small.

Community Environmental Exposure Model

Other explanations for the influence of communities in creating vulnerability include the potential role of health-impairing environmental exposure. For example, it is hypothesized that lower-SES communities are exposed to more harmful environments, such as living in substandard housing with remnants of lead paint (contributing to lead poisoning in children), or living in inner-city or other crowded environments that have much greater exposure to air pollution. Such conditions (for example, unventilated shelters) also promulgate the transmission of tuberculosis and increase the likelihood of exposure to violent crime. Workplace safety also varies by community, depending on the primary industry in the area. Rural areas, for example, offer jobs primarily in agriculture and meatpacking, which have high rates of manual labor injury.

One study provides a particularly cogent picture of the influences of environmental risk exposures on individual health over time. The study was designed to collect data longitudinally on a cohort of people from birth to 33 years of age (Power & Matthews, 1997). Accumulation of environmental risk factors during these years was measured by factors

such as atmospheric pollution levels. Individual risk factors such as SES and smoking status were also taken into account, and both environmental and individual risk factors were clearly related to adult respiratory morbidity. The study demonstrated a strong occupational *gradient* for the prevalence of respiratory symptoms and several other measures, including health status, psychological distress, and job strain.

Community Medically Underserved Model

Community resources, as the community-focused models suggest, include the availability of medical care. The lack of available medical services in a community (referred to as medical underservice) has been commonly proposed as an explanatory factor for why certain populations have poorer health status. Although it is now generally recognized that medical care as a whole contributes only a small portion to the health of a population, the model suggests that the absence of health services directly impacts the population's health. For example, in this model, the poor health of rural populations is explained by the fact that there are fewer health care providers in these areas to help prevent health problems or treat health problems once they occur.

Wright, Andres, et al., (1996) have proposed a guideline for assessing medical underservice. Three components are used to define which populations might be medically underserved. The first is the limited physical availability of health care resources. For example, there are not enough health care workers, including doctors and nurses, to meet the demand for care. Second, there may be financial barriers to obtaining health services, such as patients who lack insurance or are underinsured, meaning that their insurance does not fully cover their costs. Third, there may be nonfinancial barriers such as the lack of transportation, language difficulties, or insufficient provider cultural sensitivity, which make it difficult for the community to access any health care providers that do practice in the area.

The federal definition of a medically underserved area (MUA) is based on the measurement of the primary care providers-to-population ratio, *infant mortality rates*, poverty rates, and proportion of elderly population (see <https://data.hrsa.gov/tools/shortage-area/mua-find>). The four criteria are used to decide which areas receive government assistance and Wright, Andres, et al., (1996) argue that these definitions allow some medically underserved populations to be missed. Individuals may live in areas with high provider-to-patient ratios, but providers may not be willing to accept low-income patients or those covered by Medicaid, which reimburses physicians at rates much lower than private insurance. Women and children may be considered vulnerable but are not accounted for by the current criteria, and infant mortality rates are a relatively rare outcome that could be augmented by using rates of low birth weight (which can cause substantial health problems for children and is much more common than infant mortality). Changes in these criteria have not yet occurred at the federal level, but they may provide a more realistic picture of medical underservice and may lead to greater action to address the health needs of vulnerable populations.

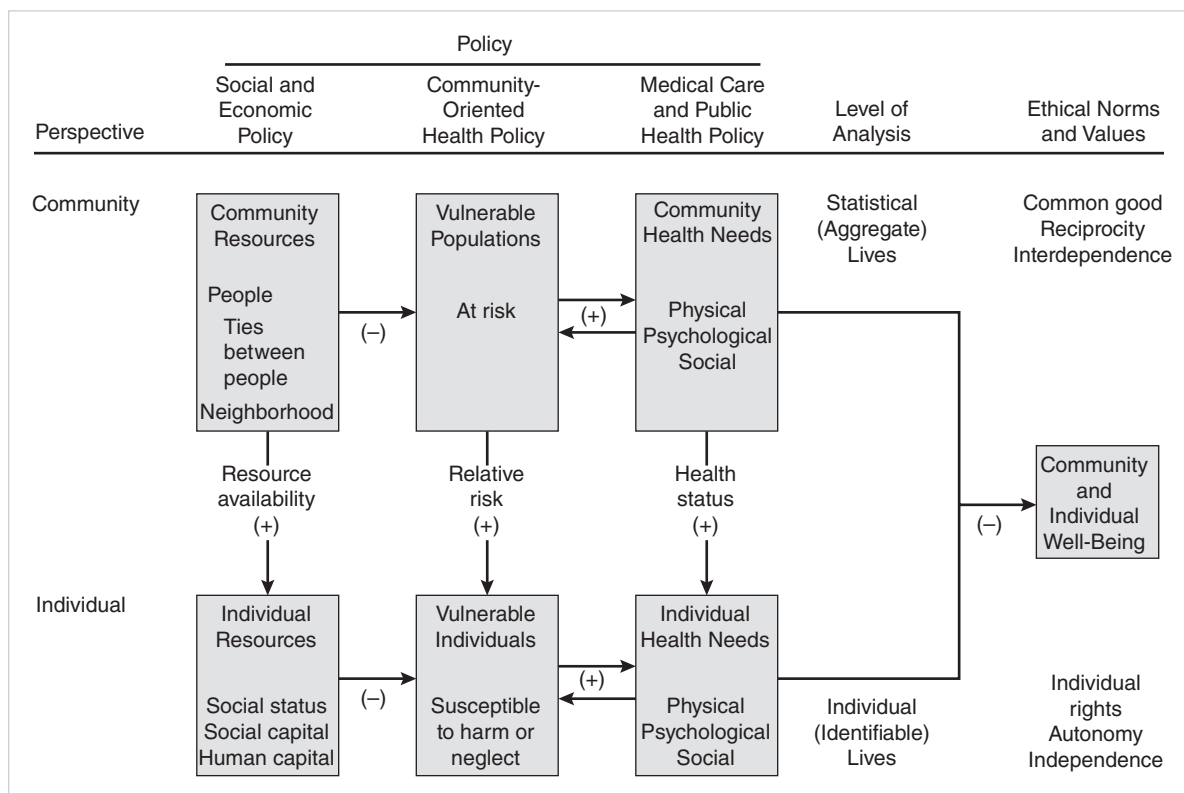
Individual and Community Interaction Model

Aday (1993) has developed perhaps the most comprehensive vulnerability model to date that combines many previous models and incorporates both individual- and community-level

risk factors that determine vulnerability to poor physical, psychological, and social health (see Figure 1.1). Individual-level resources include social status, social capital, human capital, and health needs. Community-level resources include community cohesion (or ties between people), neighborhood characteristics (such as unemployment rates, availability of parks and recreation opportunities, and community violence), and community health needs. Based on these individual and community risk factors, Aday identifies nine specific sub-populations deemed to be the most vulnerable: the physically vulnerable (high-risk mothers and infants, chronically ill and disabled, and persons living with HIV/AIDS), the psychologically vulnerable (mentally ill and disabled, alcohol or substance abusers, and those at risk for suicide or homicide), and the socially vulnerable (abusing families, the homeless, and immigrants and refugees). These specific groups, she argues, should be focal points for intervention.

In considering interventions, Aday suggests that vulnerability is presumably influenced by ethical norms and values at both the individual level (for example, individual rights, independence, and autonomy) and the community level (for example, belief in the common good, a sense of reciprocity, and interdependence). Vulnerability is also influenced by both social and health policies (for example, welfare assistance, community regulations, public health programs, and health insurance coverage). Thus, interventions should take into account these factors when trying to prevent or modify the consequences of vulnerability.

FIGURE 1.1 Aday's Framework for Studying Vulnerable Populations



Sinners and Victims Social Policy Model

Last, an even bigger picture approach to understanding vulnerability considers the role of moral values in deciding whether or not a population is defined as vulnerable and ultimately how this affects social policy decisions. Based on the work of Morone (2003), this model describes how our view of a number of health issues today has been influenced by competing Puritanism and social gospel beliefs since the founding of the United States. As Morone (2005) describes, Puritanism was generally concerned with the negative effect that social and religious sinners had on the larger community. In comparison, social gospel followers were more concerned about the influence of societal trends, economics, and politics on members of the community. Mechanic and Tanner (2007) argue that this same moral division is at the heart of how society views the health problems of vulnerable populations, and even vulnerable populations themselves.

The issue of teen pregnancy is a good example to illustrate this model, with two polarized views. The first view is that teen pregnancy is an issue that results from the misbehavior (or sin) of the teenager. The teen had some understanding of the consequences of premarital sex, chose to have sex anyway, and did not use protection (or did not use it correctly) during sex, and did not use emergency contraception afterward. From this point of view, the teen was a sinner, potentially not only jeopardizing the well-being of the child and family but also likely costing society (since single mothers constitute a large proportion of those living in poverty, receiving income assistance and food stamps, and qualifying for government health insurance). This was all preventable if the teen had simply chosen not to sin.

The other view is that teen pregnancy is the result of a very misguided society in which teens are victims of the social, economic, and political culture in which they live. From this point of view, teens have little choice but to engage in premarital sex, given their level of exposure to increasingly sexually oriented pop culture on television, in music, and in film. Further, society might be seen to offer few economic opportunities to women, leaving women with the belief that they are only to be valued for their sexuality and without any real motivation not to become pregnant. One might also view political culture as encouraging women to become pregnant, because some government assistance programs might appear to reward teens for having more children. This would be preventable if teens were simply not made victims by the social, economic, and political culture around them.

Which side is right? It is probably clear that neither side is perfectly correct, but it is certainly fair to debate whether one side better explains why teen pregnancy occurs. Mechanic and Tanner argue that whether society views a population (in this case, teens who become pregnant) more as sinners or as victims has major ramifications for whether society decides to help and particularly whether policymakers create social policy to intervene. If a particular legislator views teen pregnancy as an issue of sinners, the chance is slim that the legislator will spend tax dollars to prevent it (since teens should prevent this themselves). However, if a legislator views a teen mother as the victim of society, whether society has done harm to that teen, the legislator is much more likely to spend tax dollars to intervene.

There are many health issues like this for which disparities exist, such as obesity, cardiovascular disease, alcohol abuse, HIV and other sexually transmitted infections, opium epidemics, medical marijuana, and the larger war on drugs. This model also likely explains why it is generally thought to be easier to convince legislators to spend tax money on children than on adults: society tends to view children as victims rather than sinners.

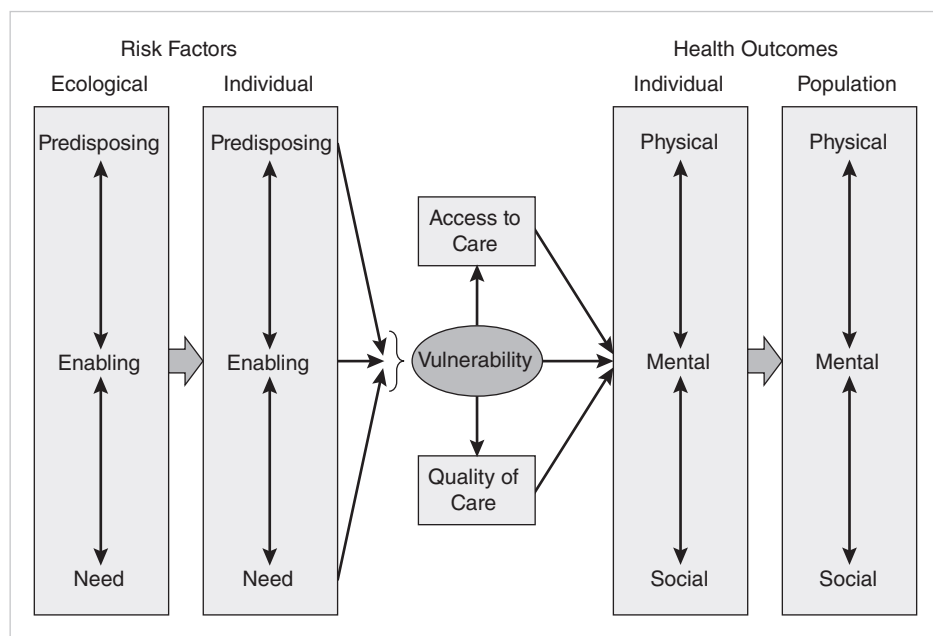
THE VULNERABILITY MODEL: A NEW MULTILEVEL CONCEPTUAL FRAMEWORK

Each of the models discussed in the previous paragraphs reflects an evolution in defining, researching, and developing approaches to reducing or eliminating the health effects of vulnerability. Some of the more progressive models have recognized the overlap between individual and community-level determinants of vulnerability, and others include the availability of medical care services as a predictor of vulnerability. The next evolutionary step, which we propose, requires a model that synthesizes previous work and recognizes the convergence of individual, social, community, and access-to-care risks that lead to vulnerability. We now turn to a discussion of a new model that we propose for both studying and assisting vulnerable populations (Figure 1.2).

In this book, vulnerability denotes susceptibility to poor health or illness. Poor health can be manifested physically, mentally, developmentally (as with language delays in children), socially (as with poor job performance), or emotionally. Since poor health along one dimension can be compounded by poor health along others, health needs are considerably greater for those with multiple health problems than for those with single health problems.

Vulnerability to poor health is determined by a convergence of predisposing, enabling, and need characteristics at both the individual and ecological levels. In laying out the now well-known access to care framework Aday (1993) and Aday and Andersen (1981) have defined predisposing characteristics as those that describe the propensity of individuals to use services, which include demographic characteristics, such as age, sex, and family size;

FIGURE 1.2 A General Framework to Study Vulnerable Populations



social structure variables, such as race/ethnicity, education, and occupation; and health beliefs, such as beliefs about health and the value of health care (Aday & Andersen, 1981). Enabling characteristics are the resources that individuals have available for the use of services, including those specific to individuals and families (examples are income and insurance coverage) and attributes of the community or region in which an individual lives (for example, the availability of health care services). Need factors are specific illnesses or health needs that are the principal driving forces for seeking health care.

These predisposing, enabling, and need characteristics converge and interact, and they work together to influence health care access, health care quality, and health status. Translated into the terms of our vulnerability model, health needs directly imply vulnerability, predisposing characteristics indicate the propensity for vulnerability, and enabling characteristics reflect the resources available to overcome the consequences of vulnerability. Therefore, individuals are most vulnerable if they have a combination of health needs, predisposing risk factors, and enabling risk factors. For example, individuals who have asthma (a need factor), are Latino (a predisposing factor), and uninsured (an enabling factor) would be considered more vulnerable than individuals who have asthma alone.

In our model, we emphasize the importance of vulnerability determinants at community or ecological levels. This implies that vulnerability does not represent any personal deficiency of the populations defined as vulnerable, but rather that they experience the interaction of many risks over which individuals may have little or no control. The model also implies an important role for society in addressing the health and health care needs of vulnerable populations.

Distinctive Characteristics

The vulnerability model has a number of distinctive characteristics. First, it is a comprehensive model, including both individual and ecological (contextual) attributes of risk. A person's vulnerability is determined not only by his or her individual characteristics but also by the environment in which he or she lives and the interactions among individual and environmental characteristics. Inclusion of ecological factors implies that attributes of vulnerability are beyond individuals' control, and their reduction requires societal efforts. Compared to models that focus on individual characteristics alone, a multilevel model (including both individual and ecological elements) not only more accurately reflects realities but also avoids a tendency to "blame the victim."

Second, this is a general model focusing on attributes of vulnerability for the total population rather than a specific model focusing on vulnerable traits of subpopulations. Although we recognize individual differences in exposure to risks, we also think there are common, crosscutting traits affecting many vulnerable populations. Due to current public funding options, a categorical approach to assisting vulnerable groups will likely continue. We believe such an approach is piecemeal, inefficient, duplicative, uncoordinated, and inadequate. It tackles symptoms rather than causes and is unlikely to substantively and fundamentally improve the situations of vulnerable populations. Our general model calls for a comprehensive and integrated approach that focuses on the most critical and common vulnerability traits in the community. Such a practice is more efficient and likely to bring more tangible improvement in the situations that vulnerable populations face.

Third, a major distinction of our model is the emphasis on the convergence of risk factors. The effects of experiencing multiple vulnerable traits may lead to cumulative

vulnerability that is additive or even multiplicative. Individuals with multiple vulnerability traits may have especially poor health status. Examining vulnerability as a multidimensional construct can demonstrate gradient relationships between vulnerability and outcomes of interest and improve our understanding of how to intervene. The findings are likely to be more precise and can provide better guidance to policymakers. For example, if we see a gradient relationship between a set of vulnerability characteristics and, for instance, health care access and health outcomes, not only is our understanding of the patterns of vulnerability enhanced, but we learn what crosscutting characteristics (or combinations of characteristics) policymakers should target limited resources toward addressing to best help vulnerable populations and reduce disparities.

Components of the Model

Based on the overview presented above, we provide a graphical representation of our model of vulnerability (see Figure 1.2) and describe components of this model. Vulnerability, which is at the center of the figure, is most closely affected by individuals' predisposing, enabling, and need attributes (in the second to left column) and is also influenced by these same risk factors at an ecological or community level. It is important to note that in our model, the predisposing, enabling, and need attributes are more than just risk factors for poor access; they also reflect risks for poor quality of health care and poor health status. These risk factors then combine, interact, and work together to create a level of vulnerability for each individual that is associated with negative health care access, quality of care, and health outcomes (see the columns on the right) at both individual and population levels.

Individual Risk Factors Individual predisposing attributes in our model, reflecting risk factors for poor access to care, quality of care, and health status, include demographic factors, belief systems, and social structural variables that are associated with social position, access to financial and nonfinancial resources, and health behaviors that influence both health and health care access (Exhibit 1.1). Individual factors such as race/ethnicity, gender, sexual preference, or other factors may also be foci for discrimination. Individuals generally have little control over most predisposing attributes.

Individual enabling attributes include SES, financial and nonfinancial social resources, and factors such as health insurance coverage associated with the use of health care services. Perhaps the most commonly cited enabling risk factors are low income or lack of health insurance coverage. Even with the enactment of health care reform in 2010, it is likely that certain subpopulations will remain uninsured. Having a low income has some direct influences on health status (described in Chapter 2). Both risks create substantial barriers to obtaining needed health care.

Low educational level and language barriers are also commonly cited as important risk factors for poor health care access, quality, and health status (DuBard & Gizlice, 2008; Green & Nze, 2017; Zajacova & Lawrence, 2018). Education has a direct impact on health (for example, less-educated individuals are more likely to smoke), but both low education and difficulty speaking English produce substantial barriers to appropriate health care, including difficulty speaking with health care providers, communicating treatment preferences, reading health materials and prescription drug instructions, and following through

Exhibit 1.1 Measures of Predisposing, Enabling, and Need Attributes of Vulnerability at the Individual Level

Predisposing Factors

- Demographic characteristics associated with variations in health status, such as age or gender
- Inherited or cultivated belief systems associated with health behaviors, such as attitude, conviction, culture, or health belief
- Social structure variables associated with social position, status, and access to resources, such as race/ethnicity or gender

Enabling Factors

- Socioeconomic status factors (such as income, education, and occupation) associated with social position, status, access to resources, and variations in health status
- Individual assets (human capital) that enable one to be economically self-sufficient, such as inheritance, wealth, or skills
- Factors that enable the use of health care, such as health insurance, transportation, literacy or language concordance with health care providers

Health Need

- Self-perceived or professionally evaluated health status, such as physical and mental health, diagnoses for diseases, and illness; quality-of-life indicators, such as physical functioning, social limitations, cognitive limitations, and limitation in work, housework, or school; certain subpopulations defined by high health risks including physical health (chronically ill and disabled individuals, persons with AIDS), mental health (alcohol or substance abusers), and social well-being (abusing families, homeless people, and refugees)
- Values and knowledge regarding health problems that affect one's perception of health needs

on recommended treatments. Overall, enabling risk factors are generally more modifiable than predisposing factors; for example, educational opportunities can be expanded through programs such as *affirmative action* and Healthy Start.

Individual need attributes include self-perceived or professionally evaluated health status and quality-of-life indicators. Certain subpopulations are defined by their health; these include infants born with low birth weight, chronically ill or disabled individuals, persons with HIV/AIDS, the mentally ill and disabled, alcohol or substance abusers, and those who have been abused and have greater health care needs (Aday, 2001). For example, chronically ill persons or those who have other functional disabilities, such as the frail elderly or children with disabilities, may have particular difficulty obtaining needed health services due to special challenges created by their physical illness or mental condition; examples are extensive reliance on caregivers for accessing health care or difficulty communicating health needs. Such individuals may be in need of highly specialized providers or even teams of providers, and access to these specialists is not always facilitated or well-coordinated by

insurance plans. In addition to these pathological indicators, individuals' perception of whether they need health services or not may also be determined by one's values and knowledge about health problems and services (Lo & Fulda, 2008). For example, parental beliefs about the timing of pediatric routine visits are suggested to influence whether their children receive recommended preventive care (Hughes & Wingard, 2008).

In our model, the bidirectional arrows linking predisposing, enabling, and need attributes at both the individual and ecological levels indicate that these risk factors influence one another. For example, racial/ethnic minorities (a predisposing attribute) are disproportionately represented in the low-SES groups (an enabling attribute). Having health insurance (an enabling attribute) is less likely to low-income groups (an enabling attribute) and is essential for ensuring access to health care, particularly for subpopulations with chronic illnesses (a need attribute). Poorer health status (a need attribute) reduces the ability to maintain stable employment and earn income (an enabling attribute), and incomes are generally reduced for retired older individuals (a predisposing attribute) who may receive income only through the *Social Security* system.

Predisposing, enabling, and need attributes in our model each independently influence vulnerability status, as reflected by the three separate arrows. In addition, these three attributes converge and interact to jointly determine one's vulnerability status, as indicated by the larger bracket encompassing the three attributes. Indeed, the major difference between this framework and other models is the emphasis on the convergence of risks. Operationalizing vulnerability as a combination of disparate attributes is preferred to studying individual factors separately, because a population group that is considered vulnerable rarely experiences the risks in isolation. Those with one particular risk factor are more likely to have multiple risks.

Ecological Risk Factors Since individuals live in communities, they are clearly influenced by the environment around them. Traditional research agendas primarily focus on those toxic substances existing in the physical environment while more recently, increasing efforts have been put into the study of human-made physical and social features that may also affect health outcomes (Frumkin, 2005). Our model indicates that individual attributes of risk are influenced by ecological attributes of risk (the farthest left column in Figure 1.2) and that they combine to influence vulnerability. As with individual risks, predisposing, enabling, and need risk factors exist at ecological levels as well (see Exhibit 1.2).

Ecological predisposing attributes include neighborhood demographic composition; the physical environment; community design and built environment; political, legal, and economic systems; and cultural and social norms and beliefs. Geographical areas composed of larger populations of older individuals or inner-city areas with a larger number of teenage mothers create greater vulnerability because they require a higher intensity of medical care, financial, and social resources. For example, the low birth-weight rate is higher among teenage mothers (WHO, 2020), and low birth-weight babies require much more intensive care, monitoring, and social assistance than other infants, drawing resources away from other medical or social services for the community. Similarly, areas that are characterized by dilapidated housing or substandard, public low-cost apartments have substantial health risks, such as lead poisoning from lead-based paint, and they may offer inadequate safety protections; there may be nonfunctioning smoke detectors and dark and unmonitored halls, for example (NCRC, 2019; Taylor, 2018). The community design and built environment are also

Exhibit 1.2 Measures of Predisposing, Enabling, and Need Attributes of Vulnerability at the Ecological Level

Predisposing Factors

- Residence or geographical location, for example, rural versus urban, and inner city versus suburban
- Neighborhood composition, for example, racial/ethnic integration or segregation
- Physical environment, for example, pollution, population density, and crime rates
- Community design and built environment, for example, land use mix, street connectivity, and transportation systems
- Political, legal, and economic systems, for example, industrialization and market domination
- Cultural and social norms or beliefs, for example, religions, notions of justice, and level of tolerance for diverse cultures

Enabling Factors

- Socioeconomic status and social class, for example, neighborhood income level, high school or college education rates, and unemployment rate
- Resource inequalities, for example, the distribution of income or wealth within a population
- Workplace environment, for example, occupational safety, health promotion practices, workplace stress, and health insurance benefits
- Social participation, social capital, social cohesion, and the collective efficacy of the neighborhood environment, for example, characteristics of individuals' social networks, such as family structure, friendship ties, neighborhood connections, religious organizations, and attributes of the community or region in which individuals live
- Health care delivery system, for example, availability and accessibility of medical care (both primary and specialty care), and public health or social services

Need Factors

- Population health behaviors, for example, smoking, exercise, diet, alcohol use, drug abuse, and seat belt use
- Population health status, for example, rates of mortality and morbidity for leading causes of death, life expectancy, infant mortality, and obesity
- Population mental health and social well-being, for example, rates of mental illness, homelessness, suicide, homicide, and quality of life
- Health disparities/inequalities, for example, racial/ethnic disparities in health, SES disparities in health

related to health. For example, the accessibility of recreational facilities, land use mix, transportation systems, and urban planning have been proven to influence the level of walking and physical activity (National Research Council (US), Institute of Medicine (US), Woolf, & Aron, 2013a). Social and political systems that tolerate high levels of health disparities (such as the United States) are also considered predisposing risks.

Ecological enabling attributes include socioeconomic position and social class in relation to others, workplace environments, social resources, and health care delivery system factors. For example, rural communities tend to have fewer economic opportunities besides agriculture and therefore tend to have higher rates of unemployment or employment in lower-wage sectors. Rates of educational attainment are also lower in these areas and populations tend to be older as well (McKinsey Global Institute, 2019). Poor areas similarly tend to have fewer high-quality educational systems, since local taxes account for a substantial proportion of school system budgets, and revenues generated through taxes are lower in low-income areas. Individuals living in communities with a high level of distrust amongst neighbors as a result of neglected properties and criminal activities also tend to have poorer health outcomes (Subramanian, Kim, & Kawachi, 2002). These community SES barriers contribute to medical underservice, in part determining where health care providers will work (shortages are due in part to the lack of incentives for health care professionals to practice in rural and inner-city areas), and limiting health insurance coverage opportunities, since large companies that offer coverage are less attracted to these areas.

Ecological need attributes include community health-risk factors such as pollution levels, health-promoting community behaviors such as health fairs and recreational opportunities, and trends in health status and health disparities. For example, rural areas and inner-city urban areas experience much higher population rates of asthma due to the presence of dust and pollution in the air, which aggravates the lungs of potential asthmatics and increases the severity of conditions among those with asthma. Crime and violence also create unsafe living conditions for community members, increase the risk of personal injury from violence (more so for teenagers), and may sabotage community feelings of solidarity and degrade mental health.

Like individual attributes, ecological attributes also influence one another. For example, compared with other industrialized nations, the United States (a predisposing attribute) tolerates a higher level of disparities in income, education, and access to health care (all enabling attributes), despite the fact that these SES and health care access disparities are causally linked to poor population health (a need attribute). Another example is that inadequate employment opportunities (an enabling attribute) may contribute to population health behaviors such as alcohol abuse (a need attribute) that are tolerated by a community based on cultural norms (a predisposing attribute) despite their contributing to neighborhood insecurity and levels of violence (a need attribute). Relationships such as these are demonstrated in the model with the bidirectional arrows; their independent and combined relationships with individual risk factors and, ultimately, vulnerability are also depicted.

The consequences of vulnerability Vulnerability has direct influences on health care access, health care quality, and health status measured at the individual and population levels. The right side of our model in Figure 1.2 depicts aspects of health care access, quality, and health outcomes that vulnerability may impact. Whereas the ultimate effect of vulnerability is poorer health status, initial consequences may be observed in reduced access to health care and lower quality of care among those able to gain access. Different types of access can be measured (see Exhibit 1.3), such as *potential access to care* (factors that facilitate obtaining care), *realized access to care* (actual receipt and use of health care services), and *appropriate access to care* (receipt of care in relation to recommended care or treatment guidelines) (Andersen & Aday, 1978). Quality of care may be measured in many ways (see Exhibit 1.4), including examining the appropriateness of care, efficiency and safety in

Exhibit 1.3 Example Measures of Health Care Access

Potential Access to Care

- Insurance coverage, for example, whether insured and type of insurance
- Usual or regular source of care, such as whether an individual knows a provider or place where he/she can get needed health care
- Availability of health care facilities and providers, such as availability of needed provider types, hospitals, and affordable clinics
- Structural barriers within the system such as transportation, waiting times, and dealing with appointment times, waits, etc. (Agency for Healthcare Research and Quality, 2005)

Realized Access to Care

- Preventive care, including visits for checkups, immunizations, and screenings
- Acute care, such as number of primary care visits
- Specialist care: receipt of needed care from specialists including mental health, obstetrics and gynecology, and other specialty-trained physicians
- Emergency care such as number of emergency room visits
- Hospitalization such as number of hospitalizations
- Non-physician practitioner care, such as nutrition services for poor pregnant teenagers from dieticians

Appropriate Access to Care

- Timeliness of care, for example, receipt of health care without delay when perceived as needed
- Obtaining all needed care and services such as screenings, lab tests, and prescription medications

care, particular experiences in the delivery of care, and satisfaction with care (Institute of Medicine Committee on Quality of Health Care in America, 2001).

Health status and health outcome measures represent a critical end point for assessing the influences of vulnerability. The World Health Organization (WHO) has defined health as a “state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 1948). This definition recognizes that health is influenced by a combination of biological, social, individual, community, and economic factors. In addition to its intrinsic value, health is a means for personal and collective advancement. It is not only an indicator of an individual’s well-being, but a sign of success achieved by a society and its institutions of government in promoting well-being and human development.

Health status and outcomes can be measured along physical, mental, social, or emotional dimensions for individuals and can also be measured at the population level. Physical and mental health can be measured according to health symptoms, morbidity (the

Exhibit 1.4 Example Measures of Health Care Quality

Appropriate Care

- Receipt of preventive care in accordance with professional or national guidelines, for example, receipt of childhood immunizations according to the recommendations of the American Academy of Pediatrics
- Receipt of acute care according to recommended treatment guidelines, for example, receipt of care for diabetes including recommended screening and blood tests at regular intervals, counseling on nutrition, exercise and self-management

Efficient and Safe Care

- The absence of duplicative tests and procedures, for example, not having to repeat immunizations because records of previous immunizations were lost
- Reduced hospital readmissions for preventable conditions such as due to the top two conditions for which hospitalization is considered preventable: heart failure and pneumonia
- The use of specific systems for improving care, such as an electronic health record or registry (Adirim, Meade, & Mistry, Council on Quality Improvement and Patient Safety, Committee on Practice and Ambulatory Management Safety, 2017)

Experiences in Care

- Continuity of care, whether the patient sees the same doctor or nurse practitioner each time for primary care and whether the doctor or nurse practitioner knows the patient well
- Coordination of care, whether someone at the primary care doctor's office helped the patient make a specialist appointment and whether the primary care doctor followed up with the patient on the specialist visit

Satisfaction with Care

- Reported satisfaction with the quality of health care delivered by the patient's doctor or nurse practitioner, for example, ratings of health care quality on a scale of 1–10
- Reported satisfaction with how well the doctor communicated with the patient, how well the doctor listened to the patient, and how well the doctor was able to explain things

numbers and types of diseases people have), and mortality. Social and emotional health can be measured through social networks, *social participation*, and engagement with the larger community. Although mental, social, and emotional dimensions of health are less frequently measured, they are now recognized as important components of health status and outcomes. In addition, general measures of health are commonly used to more broadly reflect the sum total of physical, mental, social, and emotional health on perceptions of health, functioning and disability, and life achievements and satisfaction.

While positive health or health and life achievements are now believed to be part of broad conceptual definitions of health, the most commonly used indicators remain poor health or health deficits (Breslow, 2006). The major reason is that health status has been defined historically in terms of health problems, such as disease, disability, and death.

Measuring Vulnerability in Research

In research, vulnerability may be studied by using distinct population groups defined by one or more vulnerable attributes. Examples of vulnerable groups defined by one risk attribute are racial/ethnic minorities (predisposing characteristic), the uninsured (enabling characteristic), and the chronically ill (need characteristic). Examples of vulnerable groups defined by two risk attributes include uninsured racial/ethnic minorities (predisposing and enabling), children with chronic illness (predisposing and need), and low-income persons with AIDS (enabling and need). Examples of vulnerable groups defined by the convergence of predisposing, enabling, and need attributes of risk include children in low-income families with asthma or uninsured minorities who experience depression.

Sample sizes permitting, it is possible to include more than one risk attribute within predisposing, enabling, or need factors. For example, one can study minority children in low-income, uninsured families (two predisposing and one enabling attributes). Conceptualization of vulnerable populations should be guided by the study purpose and availability of sufficient sample sizes and accurate and reliable measures for both the vulnerable groups and the groups with which they are compared. Ultimately, however, the operationalization of vulnerability should always be based on the presumption that the interaction between multiple individual and ecological factors contributes to a higher level of vulnerability and a greater risk of poor health.

Focus on Vulnerability in Clinical Practice

Vulnerable populations require special considerations in the practice of clinical medicine. They often have limited access to medical care and live in areas with limited resources. Their communities are often characterized by poor schools, high crime rates, higher access to illegal drugs, and a lower income environment, all of which can influence poor health (Mechanic & Tanner, 2007). While health care providers rarely receive any training about these social risk factors, and often feel that such issues are outside the realm of medicine, their strong influences on health are such that providers must find ways to become involved in these social issues if they truly want to improve their patients' health.

Similarly, clinical intervention programs to reduce health disparities are likely to be ineffective if their designers do not fully acknowledge the social and environmental factors that influence health and incorporate them into the design. In order to implement effective clinical intervention programs, they must be appropriate for the target vulnerable group and address the range of risk factors that lead to health disparity (Kilbourne, Switzer, Hyman, Crowley-Matoka, & Fine, 2006). These risk factors may go beyond the narrow range of risk behaviors themselves and extend to the concept of structural vulnerability which refers to an individual being at risk through his or her interface with socioeconomic, political and cultural/normative hierarchies (Bourgois, Holmes, Sue, & Quesada,

2017). For example, if a clinic wants to implement an effective clinical intervention to, say, reduce obesity rates, then in addition to simply screening for body mass index and providing counseling on how to eat right and exercise, the following additional activities might be considered.

The clinic could develop special education sessions to improve “healthy literacy,” such as how to read nutrition labels and provide tips and information about neighborhood resources (such as a local YMCA) to help families find ways to exercise during a busy day. The clinic might talk to the health plans with which they are contracted to find out what resources they offer to patients (for example, some health plans provide discounts to fitness centers or will even pay for weight watchers memberships for certain eligible adults), and then connect patients with those resources. Clinicians, who can have a particularly strong voice in public affairs, might also become involved with their local community center or talk with local city planners about improving local recreation leagues or local parks.

In recent years, the use of digital mobile technologies in health care has become a popular and relatively new modality. Consistent evidence shows that significant weight loss is clinically achievable as a result of mobile technology-based/-assisted services (Bacigalupo et al., 2013). The clinic could also incorporate new technologies to deliver efficient health service to vulnerable populations.

Of course, there are major barriers to serving vulnerable populations in the most effective ways. Health plans do not yet reimburse most of these activities, and primary care providers often find their offices extremely busy and generally under-staffed. Nonetheless, such activities can make a career more personally rewarding, as health care providers often find it frustrating to have such sporadic contact with patients and find that their 5-min discussions with patients seem to have little or no effect. Things may change, however, as health plans, foundations, and governments are beginning to recognize the value of clinicians becoming involved in these activities.

Three Key Risk Factors

Although there are many predisposing, enabling, and need attributes of vulnerability, this book primarily focuses on three key risk factors—race/ethnicity, SES, and health insurance coverage—because they are three of the most powerful demographic predictors of poor health care access and health, and therefore vulnerability. These three factors are closely intertwined but exert independent effects on health. They are also indirectly associated with, or contribute to, other vulnerability traits.

Race/ethnicity has long been a major basis of social stratification in the United States (LaVeist, 2005). While race and ethnicity are closely associated with SES and health insurance indicators, the effect of SES is not entirely equivalent across racial/ethnic groups. For example, even within categories of SES, racial/ethnic minorities often have higher rates of morbidity and mortality than whites. The racial differences exist even after adjusting for variations in health insurance, stage and severity of disease, comorbid disease, and the type of health care facility (Williams & Wyatt, 2015). The failure of SES to completely account for racial variations in health status emphasizes the need to give attention to the unique factors linking race and ethnicity with health. Because race/ethnicity and SES in the United States are so closely intertwined, there is an urgent need for research to understand how risks and resources in the social environment are systematically patterned by race/ethnicity and SES, and how they combine to affect health outcomes (Williams, Priest, & Anderson, 2016).

The relationship between SES and health care access, quality of care, and health outcomes is quite well known. Variations in income and wealth, educational attainment, and

occupational position as markers of socioeconomic inequality have long been associated with variations in health status and mortality (Adler & Ostrove, 1999; Mackenbach and others, 2008). Persons with high income, education, or occupational status live longer and have lower rates of diseases than those with lower SES. SES is also closely linked with health insurance status (due to health coverage provided primarily through employers and income-based eligibility for *safety net insurance* programs like Medicaid), but both have independent effects on health.

Health insurance coverage has long been regarded as a marker for access to health care. The IOM concluded in 2009 that lacking health insurance contributes to excess mortality in the United States (Institute of Medicine Committee on Health Insurance Status and Its Consequences, 2009). The IOM's Committee on the Consequences of Uninsurance has concluded in multiple reports that providing health insurance to the uninsured would improve health and increase life expectancy (Institute of Medicine Committee on the Consequences of Uninsurance, 2002, 2003, 2004). The reports suggest that providing insurance would most greatly benefit the most vulnerable groups and thus would likely help reduce health disparities. There is also evidence indicating that Medicare eligibility reduces 7-day mortality around 0.8–1.0% (Card, Dobkin, & Maestas, 2009). The health care reform law of 2010 attempts to address this vulnerability. Since most features of the legislation began in 2014, it will take many years before its full impact is realized. Nevertheless, a few preliminary results have shown that gaining insurance coverage substantially decreased the number of uninsured Americans and improved health-related outcomes after 3 years (Courtemanche, Marton, Ukert, Yelowitz, & Zapata, 2018). Specifically, Medicaid expansion under the ACA has resulted in significant coverage gains and improved access to care (Kaiser Family Foundation, 2019).

Given well-established disparities in race/ethnicity, SES, and health insurance in access to health care, quality of care, and health status, timely and accurate knowledge of these three aspects of diverse vulnerable population groups is of critical importance in developing interventions to reduce these disparities. Focusing on these disparities is also consistent with current long-term national health priorities. Healthy People 2010 focused national attention on racial/ethnic and SES disparities in health and health care and, in a bold step forward from Healthy People 2000, called for the elimination of disparities in health and health care access. Similarly, the overarching goals for Healthy People 2020 include increasing the quality of life, promoting health for all, and eliminating health disparities across all groups, with a vision of a society where people live long, healthy lives (Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020, 2008). Healthy People 2030 reiterates the goal of eliminating health disparities, achieving health equity, and attaining health literacy to improve the health and well-being of all. It also emphasizes the importance of social, physical, and economic environments (Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2030, 2018).

There is ample health data available according to race and ethnicity, SES, and health insurance coverage, making it possible to demonstrate the disparities associated with these factors. National protocols have institutionalized the collection and reporting of health data according to these factors. For example, the U.S. Office of Management and Budget (1978) requires that federal agencies report health statistics for four race groups (American Indian/Alaskan Native, Asian and Pacific Islander, black, and white) and one ethnic category (Hispanic origin) (U.S. Office of Management and Budget, 1978). Regarding

SES, in 1998, the U.S. Department of Health and Human Services (1998) issued its first annual report of U.S. health, which included a special chart book on SES and health, and later editions have continued to report health data using characteristics of SES (National Center for Health Statistics, 1998). Finally, almost all major national health surveys have included health insurance coverage data in addition to SES and race/ethnicity.

SUMMARY

Over the years, studies of vulnerable populations have used different paradigms or models in examining the characteristics that make populations vulnerable. These include individual demographic, behavioral, and socioeconomic characteristics; community characteristics; and the interaction of individual and community characteristics. Each of the models reflects an evolution in defining, researching, and developing approaches to reducing or eliminating the health effects of vulnerability. Some have recognized the overlap between individual and community-level determinants of vulnerability, and others include the availability of medical care services as a predictor of vulnerability.

In this book, we have defined vulnerability as a multidimensional construct reflecting the convergence of predisposing, enabling, and need attributes of risk at both individual and ecological levels. This broad definition of vulnerability

presumes that vulnerable populations experience risks in clusters and that those susceptible to multiple risk factors, such as being of racial/ethnic minority background and living in poverty, are likely to be more vulnerable than those with a single risk, such as high-income minorities. Although there are many predisposing, enabling, and need attributes of vulnerability, this book primarily focuses on race and ethnicity, SES, and health insurance coverage because they are three of the most powerful predictors of poor health and health care access and, thus, vulnerability. These three factors are closely intertwined but exert independent effects on health. They are also indirectly associated with or contribute to other vulnerability traits.

In the next chapter, we delve into the mechanisms of vulnerability and the many pathways through which these influence health care access, quality, and health disparities.

KEY TERMS

affirmative action
discrimination
equity
foundations
framework
gradients
health
health disparities
health outcomes
health-risk behaviors
incidence
inequalities
infant mortality rate

managed care organization
Medicaid
Medicare
minority
predictor
preventive care
primary care
quality of care
social capital
social class
social support
socioeconomic status

State Children's Health Insurance
Program (SCHIP)
potential access
realized access
regular source of care
safety net insurance

social cohesion
social participation
social security
underprivileged
vulnerability

REVIEW QUESTIONS

1. What is vulnerability? How can this concept be applied to the field of health care delivery?
2. Identify three possible risk factors that could be used to characterize vulnerable populations. Why might these risk factors be associated with vulnerability?
3. What are the five main reasons to focus our national attention on vulnerable populations? Briefly describe the rationale for each reason.

ESSAY QUESTIONS

1. Why should the concept of vulnerability focus not just on independent risk factors but also on profiles of multiple risks? How might this understanding change daily business in the pursuit of good health for everyone in the United States, including how politicians, health care administrators, local health programs, and health care providers operate or practice?
2. How is the concept of equity a guiding principle in focusing national efforts on vulnerable populations? What does equity mean in terms of health and health care access? How does the concept of health care as a right illustrate this concept of equity? Given that health and health care equity for vulnerable populations will likely require extensive political intervention and large costs, should this rationale of equity be prioritized over other factors, such as economics and politics? If so, why?