Rethinking Vulnerable Populations in the United States: An Introduction to a General Model of Vulnerability

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The United States has experienced and, at times, promulgated a long history of inequality among its citizens. From civil rights violations and suffrage restrictions that only started to resolve in the past 60 years, to increasing income gaps between the poor and rich through the early 21st century, inequality continues to pervade many aspects of modern life including education, employment, housing and other life necessities. Most deeply affected have been groups delineated by race or ethnicity, socioeconomic status, immigration status, culture and language, and sexual orientation.

Perhaps the most persistent manifestation of inequality has been an ongoing and, in some cases, increasing disparity in health and wellbeing across these social divisions. Today it is not considered surprising to see major health differences between whites and African-Americans, the wealthy and poor, or the insured and uninsured. But perhaps it should be more surprising, considering that most health disparities are not caused by the lack of sanitation, poor drinking water, or famine that claimed the lives of many of this nation's underprivileged in earlier years.

Things, in fact, have changed dramatically. The causes of health disparities are not always obvious and, as we are starting to better understand, are rooted very deeply in the social context surrounding modern life. The medical professions are beginning to unravel and understand the impact that personal social position and social class, racism and discrimination, social networks, and other more relational community factors have on population health. Some of this knowledge has been applied to design interventions to address health disparities, but most efforts are in their infancy.

Theory regarding vulnerable populations has dominated the social science and public health literature, but is...
needed in the medical sciences as well.\textsuperscript{5} The purpose of this commentary is to summarize existing models regarding vulnerable populations and describe a more comprehensive general model that, while previously applied to the field of public health, can be applied to the medical field to guide the collection and reporting of health data, and the design of health interventions to serve vulnerable populations.

Why Should Medical Professionals Focus on Vulnerable Populations?

There are several overarching reasons that health professionals should focus on reducing health disparities. First, the US was founded on the principal of equality and freedom. Personal health, however, has remained conspicuously absent from the list of advocated civil rights. If equity is indeed a guiding principle for the US., then it may be argued that disparities in health should not be allowed to persist.

Second, the health of the overall US population is far behind that of many other developed countries. For example, infant mortality, a common barometer of population health, remains substantially higher in the US than in thirty other countries (e.g. a rate of 6.9 deaths per 1,000 live births vs. 2.8 deaths per 1,000 births in Sweden).\textsuperscript{6} Achieving a similar level of health in the US cannot likely be attained without attention to the most vulnerable populations.

Third, the number and proportion of vulnerable individuals is increasing in the US. For example, the national poverty rate reached 12.3\% in 2006 (reflecting over 36.5 million individuals). Similarly, the uninsured population, increasing steadily since 1990, reached about 15.8\% of the population (or 47 million people) in 2006.\textsuperscript{7} As these groups grow, they place greater demands on the publicly-funded healthcare system and require greater policy attention.

Existing Models for Understanding Vulnerability

Studies of vulnerable populations have used many different theories or models to examine why vulnerable groups experience poorer health. Most of these have focused on a single explanatory factor (e.g. the lack of insurance on access to care) but have begun to acknowledge the multifaceted nature of vulnerability. The models are dichotomized as those that focus on: 1) attributes of individuals as causes of poor health, and 2) broader influences of communities on health.

Individual-level models suggest that vulnerability stems from lacking inherent material and social resources that are essential to well-being. Individuals who lack these resources (e.g. income, education, health insurance) have a greater risk of poor health. Individual-level models frequently tie the absence of these personal and social resources to higher rates of risk behaviors and lower rates of health promoting behaviors.\textsuperscript{8, 9} For example, vulnerable groups may eat unhealthfully because they lack the income (i.e. material resource) or education (i.e. social resource) to obtain healthful foods.\textsuperscript{10}

Community-level models focus additionally on the omission from individual-level models that material and social resources are greatly affected by personal surroundings.\textsuperscript{11} For example, families will encounter difficulty ob-
taining a livable wage if few stable and well-paying jobs exist in the community, fewer students will graduate from high school or attend college if there are no well-funded schools and affordable colleges nearby, and people will not be able to access medical services if few providers practice nearby and if they do not accept Medicaid or other relevant insurance products.

A General Model of Vulnerability

The next evolutionary step that we propose requires the explicit recognition of the convergence of these individual and community risks that lead to vulnerability. We have developed a more “general” model (see Figure 1) to highlight the contributions of and the interactions between individual and community risks.1 Risks are categorized as predisposing, enabling, and need as defined by Andersen and Aday.12

Figure 1. A General Model of Vulnerability

Distinctive Characteristics of the General Model

The general model of vulnerability has a number of distinctive characteristics. First, it is a comprehensive model including both individual and community level risks. One’s vulnerability is determined by the interactions between individual and community, such that the determinants of vulnerability may be beyond individual control. This avoids a tendency to “blame the victim” and highlights the importance of societal intervention.

Second, the model focuses on attributes of vulnerability for the total population rather than focusing on subpopulations. While it recognizes individual differences in exposure to risks for certain conditions, there are common or crosscutting traits affecting many vulnerable sub-populations. This calls for a more integrated approach to reducing disparities that targets the most common vulnerability traits in the community.
Third, a major distinction of the model is the emphasis on convergence of risks that have additive or multiplicative impacts on health. Examining vulnerability status as a multi-dimensional construct can reveal gradient relationships between vulnerability and health outcomes, and improve our understanding of patterns of health disparities.

Application of the General Model to Hypertension

To describe how the general model can be applied in medicine, we begin with the well-known disparity that African American men experience a disproportionately high rate of hypertension, a key factor in cardiovascular disease. In 2003, nearly one-in-three African American adults (~32%) reported they had hypertension compared to 20% of whites, 19% of Latinos, and 16% of Asians.2

Predisposing risks include a slight genetic predisposition for hypertension among African Americans.13 Community predisposing risks include being more likely to live in inner-city areas with fewer parks and recreation areas for regular exercise, and fewer and less accessible grocery stores with greater nutritional resources.14-16 African Americans are more likely than other groups to be employed in lower wage and blue-collar jobs that contribute to higher stress levels,17, 18 and perceive higher levels of discrimination, which is thought to be a form of chronic stress and has been associated with hypertension.19-21

Enabling risk factors for hypertension include the individual lack of income that affords individuals the ability to buy hypertension-protective goods and services such as healthy foods, organized recreational activities, and leisure time away from work. Lack of health insurance limits regular access to healthcare services that may prevent or treat hypertension.22, 23 At the community level, low-income areas offer few well-paying jobs with health insurance, and medical providers are less likely to practice in these areas.24 African Americans are more likely to experience these risk factors.25

Taken together, these predisposing and enabling risk factors combine to affect the likelihood that African Americans will have hypertension (see Figure 2). According to the model, hypertension rates are higher among African Americans because 1) they have a predisposition for hypertension, 2) live where stressors are higher and opportunities for health promotion are fewer, and 3) are less likely to have access to healthcare services to prevent and treat hypertension. The general model focuses on the complement of risk factors that, together, contribute the presence of this problem.

Implications for Public Health, Medicine, and Policy

Understanding the contributors to health in this way suggests that single-pronged interventions will be less effective than those that target multiple risks. For public health professionals, this means designing data collection strategies to monitor these critical risk factors and implementing programs that cross sectors (e.g. health promotion that focuses on educating individuals about hypertension prevention and educating private and public sector officials about urban design in low-income communities).
For medical providers, this means understanding the context of these risk factors, and intervening where possible (e.g. extending access for vulnerable populations and efforts to reach vulnerable patients for screening and treatment). For policy-makers, this model suggests that existing categorical approaches to program funding for vulnerable populations are inefficient and uncoordinated. Instead of funding programs for separate conditions and sub-populations, it may be more efficient to fund programs that target a range of risk factors that are common across priority health disparities.

In conclusion, the general model is one tool that professionals in public health, healthcare, and policy may use to better understand and resolve disparities. Because of the complexity of risk factors that contribute to poorer health of vulnerable populations, a model that is designed to focus explicit attention on the combination of key risk factors may help to unite these fields as they continue to document and resolve disparities.

References


