Comparing the United States' and China's Shifting Health Challenges

The United States and China both face the question of how to prioritize programmatic resources and policy interventions to make the greatest impact on the health of their populations.

I discuss strengths and limitations of the expert panel survey used by Wu et al. in "The 20 Most Important and Most Preventable Health Problems of China: Opinions From Chinese Experts Using a Modified Delphi Process," in this issue of *AJPH*.

I juxtapose this method with several US approaches to priority setting at the federal, state, and county levels and suggest steps for moving from research to action. (*Am J Public Health.* 2018;108:1603–1606. doi:10.2105/AJPH.2018.304782)

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Setting national priorities to improve health and prevent disease is vital. Ideally, priorities should be driven by scientific processes, but in reality, they tend to be driven by perception, political realities, feasibility, and timing. Those of us in public health feel it is imperative to put science and data first so that there can be broad agreement and a common understanding that underlies the discussion of priorities.

Difficulty in setting health priorities is magnified when there are rapid changes in economic, social, and political conditions. Such is the case in China. That nation's explosive economic growth over the past 40 years brought many advantages to its people, including increased longevity and progress in controlling some occupational and communicable diseases.

China faces shifting health challenges, with noncommunicable diseases now accounting for the vast majority of all deaths, many attributable to environmental degradation, global warming, changes in health-affecting behaviors, and aging of the population. In addition, emerging diseases threaten the public's health, and even infectious disease notifications for common infectious diseases have increased despite substantial investments in disease control and prevention.

Like many other countries, including the United States, China faces the question of how to prioritize programmatic resources and policy interventions to make the greatest impact on the health of its 1.3 billion inhabitants. "Prevention first" has been selected as the national priority. However, an operational plan specifying which diseases to prevent and which to control, as well as target objectives and what interventions are needed to effect the desired improvements, has yet to be published.

US APPROACHES TO SIMILAR PROBLEMS

The United States confronts issues of shifting health burdens similar to China's. To address them, the United States has worked through public or private sponsors at three levels—federal, state, and county—although not always in a coordinated fashion.

Work on a major prevention-oriented, data-driven, federal government–coordinated decennial product, *Healthy People*, began in 1980. *Healthy People 1990*, the initial *Healthy People,* had two overarching goals, 15 topic areas, and 226 objectives. Since then, the scope and number of objectives have increased in every succeeding iteration, sometimes dramatically. The latest report, *Healthy People 2020*, included 42 topic areas and more than 1200 objectives.

One major addition in recent reports has been an increased focus on the social determinants of health, including economic stability, education, neighborhood and built environment, and social and community context. In planning for *Healthy People 2030*, the issue of health equity has become more central. For each objective or related group of *Healthy People* objectives, the Department of Health and Human Services coordinated a group of experts charged with developing quantifiable targets and identifying the policies, programs, and systems that could be employed to achieve the objectives.

However, quantifiable targets alone are insufficient. They need to be coupled with interventions that move the needle. Fortunately, over the past 40 years, increased attention and investment have accelerated development and application of scientific methods to assess the

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ability of different interventions to improve the health of populations. The US Preventive Services Task Force, a federal government–supported independent volunteer panel of experts in disease prevention and evidence-based medicine, performs systematic reviews to develop clinical preventive service recommendations for clinicians. A companion with a similarly composed expert panel, the Community Preventive Services Task Force, performs parallel analyses to select interventions to prevent disease and improve health for public and private sector organizations. The task force staff also performs economic analyses on recommended interventions, adding a critical dimension to the information available for decision-makers. Both task forces are staffed by federal agencies. Other well-established nonprofit groups performing systematic reviews on potential population-oriented interventions include the Cochrane Collaboration and the Campbell Collaboration.

Rankings have been incorporated in several data-driven products. State health rankings, privately funded but with the participation of public and private sector experts, are used to annually rank the relative health of each state's population on the basis of a wide range of then current and trend data on behaviors, community and environment, policy, clinical care, and outcomes. The County Health Rankings and Roadmaps, funded by the Robert Wood Johnson Foundation and operated by the University of Wisconsin, are used to rate health using more than 30 measures that relate to two outcome metrics and four major determinants (clinical care, social factors, the environment, and individual behaviors) on a yearly basis. A major emphasis of this product is its action orientation. Rankings are a

starting point for action by the adoption of health-promoting policies and programs. The County Health Rankings offer step-by-step guidance and tools to help users move from data to action. Other initiatives are oriented to helping cities, counties, or regions assess and improve health and health equity in their jurisdictions.

End products of these and other projects with similar aims support the development of goals, objectives, and recommended evidence-based interventions. However, expert opinion is still required for the *Healthy People* process and others with similar goals because of the lack of baseline data for a growing percentage of the mushrooming objectives. For the *Healthy People* series, small groups of experts are convened by topic to develop reasonable targets to be achieved within the next decade. Because of data limitations and uncertainty regarding effective interventions, many groups defaulted to a 10% improvement target for their area. Despite likely future improvements in surveillance data, methods, and interventions, expert opinion will continue to be a necessary input when setting goals and objectives.

RANKING CHINA'S HEALTH PROBLEMS

In China, the Prevention First national priority, like the *Healthy People* initiative in the United States, needs to be translated into discrete activities. In support of Prevention First, a working group from China's Center for Disease Control and Prevention developed an innovative approach to add the broad-based opinions of health experts to the surveillance data on health and health care. As reported in this

issue of *AJPH*, Wu et al. (p. 1592) asked experts in medicine, public health, and medical research to use a modified Delphi process to achieve consensus in the identification and ranking of the most important health problems and the most preventable problems over the next 20 years in China. The panelists were given a list of 106 diseases and health-related conditions so they could identify and rank the top 20 in terms of importance and the top 20 for preventability. As part of the process, panelists could add up to five additional diseases or health-related conditions. This creative use of a modified Delphi technique yielded clear priorities for both importance and preventability of diseases and health-related conditions for the 1.3 billion people living in the world's most populous nation.

One strength of this survey is the ability to compare importance and preventability scores. Another strength is the revealing of differences in perceptions among medical, public health, and medical research experts. Composite scores by professional field revealed broad agreement on some rankings (e.g., diabetes, hypertension, and air pollution) but strikingly different rankings on others, such as emerging infectious diseases, smoking, hepatitis, depression, and unhealthy diet. Time engaged in practice also made a big difference in some composite rankings. Of particular note, those with 15 to 30 years of practice ranked liver cancer number one (vs 12th and 8th for older cohorts) and coronary heart disease 11th (vs 4th and 5th).

An additional strength, which, paradoxically, can also be considered a limitation, is that lacking the receipt of objective information on burden, the judgments of the expert panelists were likely to be significantly influenced by

their own experience and criteria for importance. These might include how many people they believed to be affected; the problems they see in their patients, population, or research; and their perception of trends.

It appears there was no information provided to the panelists on disease burden, health behaviors, or the impact of past interventions on the overall population and sociodemographic segments. Moreover, the article does not suggest that the panelists were given information on trends. This raises the question, for example, of whether air pollution would have received the same importance ranking if panelists were told that air pollution is trending downward and that the trend is expected to continue.

Information on the surveyed panel is limited (including only invitation response rate, basic demographic characteristics, current professional field, and time engaged in that field) and leaves open the question: What knowledge base did participants bring to the rankings? Their area of specialty or expertise is not specified—a crucial omission because it presumably informed their choices. How would an academic urologist or cell biology researcher decide how to rank road safety versus breast cancer or HIV?

The minimal number of changes in ranked items between rounds and quick achievement of consensus may reflect limited familiarity of most panelists with the wide range of disparate diseases and health-related conditions to be ranked. A possible source of bias is how the initial 106 diseases and health-related issues were presented to the panelists. Were they presented in roughly the rank order of disability-adjusted life years

(DALYs) or mortality, even though these baseline measures were not included? If not, how did the working group undertaking the study determine the initial order? The limited scope of some panelists' experience may predispose them to support the initial rankings if they come from an authoritative source, unless a panelist perceived that their area of expertise was being undervalued in the first of the two rounds of ranking.

To be sure, the survey yielded at least a few surprises. Mental disorders are ranked lower than one might expect, considering that the 2016 Global Burden of Disease report from the Institute for Health Metrics and Evaluation ranks mental disorders third among causes or risks of disease burden in China (2200.73 DALYs per 100 000).[1] Most surprisingly, substance abuse and addiction were not among the top 20, despite alcohol and drug use being fifth among risk factors driving the most death and disability combined for China in 2016, after having a 10.5% increase in DALYs since 2005.[2] China's assistant minister of public security estimates that there are more than 14 million drug users, and the 2014 Drug Review Annual Report estimates at least 49 000 deaths from drug abuse in that year.[3]

Although the population drinking level in China used to be much lower than in many high-income and middle-income countries, per capita alcohol consumption rose from 2.5 liters in 1978 to 6.7 liters in 2010. It is important to note that more than half of the Chinese population aged 15 years and older abstain from alcohol: 42% of men and 71% of women. This means the alcohol consumption level of those who actually drink was 15.1 liters in 2010, higher than the equivalent figure in the United Kingdom, the United States, Sweden, Germany, Australia, New Zealand, and many other countries. Further, great disparities exist in alcohol consumption and rates of dependence. The rates of alcohol use disorder are 9.3% among men and 0.2% among women, a male–female ratio of 47 to 1, which is substantially higher than in most other countries in the world. Alcohol use contributes to more than 310 000 deaths and 13.8 million DALYs per year in China.[4]

Also surprising is that musculoskeletal disorders were not ranked among the top 20 by any of the three groups of participants, despite being ranked fifth among disease and injury in China for disease burden in 2016.[1] Musculoskeletal disorders caused 26.98 million lost DALYs among the Chinese in 2016, accounting for 7.72% of the country's total disease burden.[1] Low back and neck pain tops the list of health problems that cause the most disability, and the Institute for Health Metrics and Evaluation also ranks osteoarthritis and other musculoskeletal disorders among the top 10.[2]

Tracking demographic trends is important, particularly for ranking the importance of Alzheimer's disease and other dementias. The rapid decline in fertility in China since the 1970s combined with dramatically increased life expectancy has caused rapid population aging. According to the US Census Bureau estimate, it will take China just two decades for the proportion of the elderly population to double (from 7% to 14%), compared with 45 years for the United Kingdom and almost 70 years for the United States.[5] China's dependency ratio for the elderly (the number of people aged 65 years or older for every 100 people aged 20–64 years) was 15% in 2015 and is expected to rise to 49% in 2050, with the number of elderly people rising from approximately 140 million to 350 million in this same period. In other words, by 2050 China will be supporting an elderly population that exceeds the current population of the United States and that is more than twice the population of Russia.[5]

With the rapid aging of China's population, health and macroeconomic models predict an unfolding Alzheimer's disease epidemic. Simulated Chinese Alzheimer's disease prevalence quadrupled during 2011 to 2050 from six million to 28 million,[6] and annual costs associated with the illness are projected to be US $1.89 trillion by 2050.[7] Yet despite the huge elderly population and growing demand for care, very little is known about the economic costs of dementia care in China. Responsibility to care for those with dementia mostly falls on the shoulders of unpaid caretakers, as the formal care sector is still in its infancy. For perspective, the United States has one quarter of China's population but about half the number of Alzheimer's disease patients and 73 000 beds in specialist treatment centers, whereas China has fewer than 200 beds.[8]

In a country with an older population, disease incidence and prevalence will swell not only for dementia but also stroke, cancer, fractured hips, osteoporosis, Parkinson's disease, lower back pain, sleep problems, and urinary incontinence. China's low fertility rate over the past two decades (currently 1.6 births per woman compared with the world average of 2.4[9]) means that there will be fewer family members to care for infirm elders suffering from dementia and other diseases that are associated with significant disabilities. The looming challenges of meeting the needs of China's older population will surely need to be at the forefront of the nation's 20-year health strategy and appear to deserve a higher ranking.

With respect to preventability, there are also some surprises. As an example, oral diseases are not ranked among the top 20. As demonstrated by the results from the fourth national oral health epidemiology survey (2017), oral diseases are still highly prevalent in China, and they are getting worse. The reported caries prevalence rates of children aged five years and 12 years were 70.1% and 34.5%, respectively. These problems are almost entirely preventable through public health and behavioral interventions. If dental care deserves a high priority, the dentist–population ratio of one to 10 000 reported in 2009 needs a substantial increase.[10]

EXPERT OPINION: A PIECE OF THE PUZZLE

Interpretation of survey results would be facilitated by understanding whether the panelists interpreted preventability to include treatment (sometimes referred to as tertiary prevention). The broader the definition of preventability, the greater the importance of medical insurance coverage and access to care. Should coverage be considered an underlying determinant for many identified priority diseases and health-relevant conditions?

A noteworthy feature of the survey is the inclusion of both upstream and downstream health problems, although this approach complicates the interpretation of the rankings. For example, how should we interpret the fact that

smoking is ranked first in preventability, whereas lung cancer, for which smoking is the major cause, is ranked 11th? Diabetes mellitus is ranked first in importance and second in preventability, but unhealthy diet, the primary determinant of type 2 diabetes, is ranked only 14th in importance and 5th in preventability.

It would have been helpful to start with an overarching model with outcomes and determinants separated to avoid having both of these on the same list. Considering the burdens and prevention opportunities by age group, knowing urban versus rural residence and gender would also be helpful for determining priority opportunities for prevention.

China is far from homogeneous with respect to health and medical care. Instead of one national pattern, studies have illuminated a number of distinct, geographically defined patterns. Although many wealthy provinces have mortality rates on par with those of the United States, populations in most rural provinces are characterized by poorer health outcomes and high levels of adverse health determinants and disease burden.

This survey did not directly address the social determinants of health and health inequity, such as income, education, occupation, transportation, and housing. Inclusion of these underlying health and disease determinants is critical for identifying health-promoting policies and programs with the greatest potential impact.

In a research to action paradigm, this survey addresses the question of priorities on the basis of expert opinion. To operationalize the results also requires an understanding of what works to reduce population burden. An essential step is to compile the

best evidence on impact from studies of intervention effectiveness and develop quantifiable targets on the basis of the most impactful interventions.

Despite their limitations, surveys of "experts" can be helpful in several ways. They contribute an important perspective worth considering in the prioritization process, especially when data are incomplete with respect to burden and intervention effectiveness. Survey results can also identify misconceptions that are widely held, even among experts. These can be addressed through continuing education. Considering that experts are often queried by the media, they can help align public perceptions with the best scientific knowledge. In addition, the results can promote interaction among researchers and other medical and public health thought leaders, help establish research priorities, and invite collaboration among nations faced with similar challenges. **AJPH**

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