Editorials represent the opinions of the authors and THE JOURNAL and not those of the American Medical Association.

The Immediate vs the Important

J. Michael McGinnis, MD, MPP

William H. Foege, MD, MPH

WHEN HIPPOCRATES OBSERVED THAT "PROTECTing and developing health must rank even above that of restoring it when it is impaired,"[1] he set a standard that is difficult to meet. One of the most difficult challenges is to ensure that the urgent does not crowd out the important. In health, this challenge is especially difficult because urgent matters can be so riveting. At the personal level, the presence of illness or injury often overpowers all other concerns, and the search for effective treatment often dominates all other pursuits. At the policy level, with 15% of the US gross domestic product devoted to health care,[2] medical care expenditures often drive decisions in which cost cutting is aimed first at discretionary investments, such as those in prevention and public health that offer the greatest prospects for overall health improvement. Hence, tools are needed to facilitate the gathering, analyzing, and reporting of data in a fashion that enables taking action not merely on the urgent but on issues most important to the health of a population.

In health, the most basic measure of importance is found in mortality tables—the registry of leading killers drawn from death certificate data. Despite the vital statistics system relying substantially on unverified physician reports that may be subject to various sources of bias, the results over time seem to be reasonably reflective of the dominant diagnoses at the time of death. For example, while the occasional suicide may be reported as an accidental death, a coronary heart disease death is likely to be accurately recorded, with reasonable indication of related conditions.

Every death has a definable history that usually can be traced back for decades and sometimes even for generations. Reporting of deaths, diseases, and disabilities in traditional diagnostic categories tends to obscure the importance of factors that often play determinant antecedent roles in the occurrence of the reported conditions. When it comes to ranking health problems and committing resources, attention seems more naturally drawn to the conditions most proximate to serious illness or death. For instance, a diagnosis of lung cancer draws interest and immediate concern because it is life-threatening and the certainty of its threat is unquestioned. Yet, nearly 9 times out of 10 lung cancer is merely the natural pathologic consequence of exposure to tobacco use, the single most prominent actual cause of the lung cancer. Ability to make progress on many of the key health challenges will remain constrained until focus and resources are directed to the root causes of these conditions.

Fortunately, much has been learned from research of the past generation about the factors leading to disease and injury and the magnitude of their contributions. The National Center for Health Statistics reports that the 10 leading causes of death in the United States in 2000 were heart disease, cancer, stroke, chronic lower respiratory tract disease, unintentional injury, diabetes, influenza and pneumonia, Alzheimer disease, nephritis, and septicemia.[3] The article by Mokdad and colleagues[4] in this issue of THE JOURNAL assesses these mortality data against current knowledge about the contributors to those conditions. The findings indicate that the leading actual causes of death for 2000 are tobacco, poor diet and physical inactivity, alcohol consumption, microbial agents, toxic agents, motor vehicles, firearms, sexual behaviors, and illicit use of drugs. Together, these causes accounted for approximately half of all deaths in 2000, with nearly two fifths attributable to the top 3: tobacco, poor diet and physical inactivity, and alcohol use. This analysis is an update of our earlier report,[5] which estimated the contributions of the actual causes of death in 1990. The order of the ranking for 2000 is similar to that for 1990, with an especially notable increase in those deaths attributable to poor diets and physical inactivity and a decline in deaths due to sexual behavior.

However, there are some differences in the approaches used in these 2 studies. First, the 1990 estimate for the impact of poor diet and physical inactivity was drawn from the range of estimates of the proportion of deaths from conditions related to these factors. In contrast, Mokdad et al used hazard ratios in an ambitious primary computation of annual deaths from the specific issue of obesity, rather than the full range of conditions related to diet and activity patterns. They added a correction of 15 000 for the non–obesity-related deaths but noted that this may be conservative. This estimate seems low, given the substantial number of cardiovascular and cancer deaths that may be attributable to the dietary and inactivity patterns of those who are not overweight or obese. Second, the 1990 assessment parsed the alcohol-related portion of motor vehicle fatalities and assigned these deaths to the alcohol category, which explains the higher 2000 number for motor vehicle deaths and lower number for alcohol deaths estimated by Mokdad et

Author Affiliations: The Robert Wood Johnson Foundation, Princeton, NJ (Dr McGinnis) and the Bill and Melinda Gates Foundation, Seattle, Wash (Dr Foege). **Corresponding Author:** J. Michael McGinnis, MD, MPP, The Robert Wood Johnson Foundation, PO Box 2316, Princeton, NJ 08543-2316 (mmcginnis@rwjf.org).

©2004 American Medical Association. All rights reserved.

Downloaded from www.jama.com by ChristopherButtery, on February 3, 2006

al. Third, where data and issues were most complicated (ie, diet and inactivity, toxic agents), the 1990 report used the lower bound of the estimates generated. Fourth, because the 1990 report generated estimates and not actual counts for several categories, a series of rounding rules were applied: numbers greater than 100 000 were rounded to the nearest 100 000; greater than 50 000, to the nearest 10 000; and less than 50 000, to the nearest 5000.

The information by Mokdad et al—in particular the modeling on the contributions of overweight and obesity—allows a stronger measure of confidence in reporting results at the midpoints of the estimate ranges for various categories. Specifically, the estimated range reported in our 1990 analysis for tobacco-attributable deaths was 257 000 to 468 000; for diet and activity patterns, it was 309 000 to 582 000; and for alcohol use, it was 67 000 to 107 000. Applying the same approach for deaths in the year 2000 gives approximate ranges of 340 000 to 642 000 for diet and activity patterns, 261 000 to 490 000 for tobacco, and 59 000 to 110 000 for alcohol. The estimates would suggest that diet/physical activity patterns are now in fact likely greater contributors to mortality than tobacco is (and, in retrospect, probably were in 1990) and are most likely increasing in their impact. Another important category not included in the 1990 or the 2000 articles is medical errors, which, according to the report from the Institute of Medicine, are estimated to account for 44 000 to 98 000 deaths annually.[6]

Despite these differences in analytic approaches, the observed trends in actual causes of death from 1990 to 2000 reflect several important conclusions and implications: that 3 causes identified—diet/activity patterns, tobacco, and alcohol—account for a substantial proportion of preventable deaths in the United States; that poor diets and physical inactivity are increasing rapidly as actual causes of deaths; that, despite highly visible concerns about newly emerging and the potential use of infectious agents as biological weapons, the death toll from infectious diseases continues to decline; and that the past decade has been one of substantial progress against HIV/AIDS in the United States, which appears in these estimates as reduced deaths from sexual behavior.

During this decade, a number of changes also occurred in terms of public attention and capacity for action. Public awareness has increased about obesity as a clear public health threat and about the importance of the fragile public health infrastructure as the frontline safeguard against bioterrorism, emerging infections, and environmental safety, and as the public leader of efforts that will foster health-promoting lifestyles. Advances in information technology over the last decade offer the prospects for earlier detection of problems, better targeting of efforts, and more reliable monitoring of public health results. Continued progress depends on strong and vibrant public health capacity, working with the solid support and involvement of medical practitioners to engage effectively the health needs of the communities they serve.

Several priorities seem clear at this point. Because a substantial proportion of early deaths among the US population is preventable through lifestyle change, the social commitment to making those changes possible must be enhanced considerably. Decisions about whether to smoke, how much to drink, how much and what kinds of food to consume, and activities in which to engage are the result of strong cultural and commercial signals. Unless strategies are specifically designed to address and improve the clarity and utility of these messages, US society will fall far short of the possible.

As analyses of the underlying causes of disease are refined, it is also important to better capture and apply evidence about the centrality of social circumstances to health status and outcomes. Although the data are still not crisp enough to quantify the contributions in the same fashion as many other factors, there is no question that from cradle to grave, interpersonal linkages matter. For instance, studies consistently have shown that infant nurturing enhances socialization and survival.[7] Prenatal home visits to at-risk mothers can reduce the likelihood of both risky health behaviors and criminal activity by the children some 15 years hence.[8] Adults, including older people, who are socially isolated have a 2- to 5-fold higher death rate than others.[9] Parsing the ways in which social factors affect and protect health status, and the magnitude of the impact for some populations, will help to heighten sensitivity to the issues and better target interventions.

Refining insights into the root causes of illness and injury, presenting those insights in a fashion that can motivate and guide effective action, and marshaling the effort to monitor the results of these actions will require steady improvement in the knowledge base. National leadership and commitment at the policy level, such as suggested by Mokdad and colleagues, is an important ingredient for progress. If the nation can heed the insights they share, acceleration of the attention and action necessary for progress ought to be anticipated. After all, "Wisdom is knowing what to do next. Virtue is doing it."[10]

REFERENCES

1. US Department of Health and Human Services. Steps to a healthier US: the power of prevention. 2003. Available at: http://www.healthierus.gov/steps/summit/prevportfolio/power/. Accessibility verified February 20, 2004.
2. Levit KR, Lazenby HC, Braden BR, et al. National health expenditures, 1996. *Health Care Financ Rev*. 1997;19:161-200.
3. Anderson RN. Deaths: leading causes for 2000. *National Vital Statistics Reports*. Hyattsville, Md: National Center for Health Statistics; 2002;50:16.
4. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA*. 2004;291:1238-1245.
5. McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA*. 1993;270:2207-2212.
6. Kohn LT, Corrigan JM, Donaldson MS, eds. *To Err Is Human: Building a Safer Health System*. Washington, DC: National Academy Press; 2000.
7. McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. *Health Aff (Millwood)*. 2002;21:78-93.
8. Olds D, Henderson CR Jr, Cole R, et al. Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *JAMA*. 1998;280:1238-1244.
9. Berkman LF, Glass T. Social integration, social networks, social support, and health. In: Berkman LF, Kawachi I, eds. *Social Epidemiology*. New York, NY: Oxford University Press; 2000:137-173.
10. Jordan DS. *The Philosophy of Despair*. San Francisco, Calif: David Starr Jordan; 1902.

©2004 American Medical Association. All rights reserved.

Downloaded from www.jama.com by ChristopherButtery, on February 3, 2006