

The Primacy of Public Health

By John Steen

Over 10 days in January, the *British Medical Journal (BMJ)* conducted a poll among its readers to determine what they thought is the most important medical advance since 1840, the year of its founding. From a list initially suggested by its readers, an expert panel chose the top 15, which formed the basis for the vote. It also published a supplement in which experts argued the merits of each individual advance.

Among the 15, just four advances each received over 10 percent of the vote. They are:

1. Sanitation (clean water and sewage disposal):	15.8 percent
2. Antibiotics	14.5 percent
3. Anesthesia	13.9 percent
4. Vaccines	11.8 percent

The knowledgeable readers of the *BMJ* who voted (11,341) include physicians (28.6%), members of the public (22.8%), students (14.2%), and academic researchers (10.2%), and live largely in the U.K. (37.7%) and the U.S. (20.0%). Once again, its readers find that public health is principally responsible for the advance of medicine in that sanitation and vaccines are its province, while antibiotics are shared by public health and personal health care.

Here in the U.S., our media are full of articles about the need to improve health status, reduce racial and ethnic disparities, and reduce national health spending, with nary a one about the value of public health. It would seem that they should be addressing the need for public policy that gets at the root determinants of premature death and disability. In a now classic 1993 research article,¹ J. Michael McGinnis and William H. Foege related the ten leading diagnoses of death in the U.S. in 1990 to the actual causes of those deaths. They found that 50 percent of deaths were attributable to behavioral choices – as opposed to genetic and external factors – and therefore were potentially responsive to public health education and prevention interventions. The distribution of causes of death was found to be essentially the same 10 years later when assessed again by Mokdad and colleagues in 2000.²

The most prominent contributors to mortality in the United States in 1990 were tobacco (an estimated 400,000 deaths), diet and activity patterns (300,000), alcohol (100,000), microbial agents (90,000), toxic agents (60,000), firearms (35,000), sexual behavior (30,000), motor vehicles (25,000), and illicit use of drugs (20,000).

The leading causes of death in 2000 were tobacco (435,000 deaths; 18.1% of total US deaths), poor diet and physical inactivity (365,000 deaths; 15.2%), and alcohol consumption (85,000 deaths; 3.5%). Other actual causes of death were microbial agents (75,000), toxic agents (55,000), motor vehicle crashes (43,000), incidents involving firearms (29,000), sexual behaviors (20,000), and illicit use of drugs (17,000).

Since 1900, the average life expectancy for Americans has increased by about 30 years. Over twenty-five of the 30 years can be accredited to public health initiatives, while medical advances account for less than 4 years.³ How bizarre it is that U.S. healthcare expenditures total nearly \$7,000 annually for every man, woman and child, whereas in 2005, federal support for CDC was roughly \$25 per person per year, and state support for public health averaged \$35 per person. It has been estimated that a "fully effective" population-based public health program could be implemented with around 3% of our national health care expenditures.⁴

Public health's top ten achievements in the 20th Century include:⁵

- Vaccinations
- Safer and healthier foods

- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard

And so what are the factors that influence health status? Here they are:⁶

Health Behaviors – 50%
 Genetics – 20%
 Environment – 20%
 Access to Care: 10%

Eighty percent of health status, including the prevention of premature deaths, is preventable, 70% by public health, and 10% by medical treatment. And all of these factors assume that an infant has survived its first year of life, but the U.S. rate for infant mortality is among the worst of all large industrialized nations. Among 33 industrialized nations, the U.S. is tied with Hungary, Malta, Poland and Slovakia with a death rate of nearly 5 per 1,000 babies. That is primarily a reflection of barriers to prenatal care and maternal health, a consequence of our lack of universal health care, and of racial and income healthcare disparities. Among U.S. blacks, there are 9 deaths per 1,000 live births, closer to rates in developing nations than to those in the industrialized world.

Public Health Is the Answer, Just Ask the Right Question

I can think of no more stirring symbol of man's humanity to man than a fire engine.

-- Kurt Vonnegut

What we need is basic primary and preventive healthcare services, but we do not have a delivery system that is designed to provide primary prevention. We don't even have one that has been designed at all, just co-opted and driven by profitmaking, but there is no profit for business in prevention, just for people. That is what public health does, and it is uniquely a government function.⁷ Our poor health rankings are pointed testimony to its underappreciation and underfunding. It is the misfortune of public health that its greatest benefits are invisible. While it protects everyone against maladies unimagined today, its detractors are able to criticize it with impunity.⁸

That was not always so, but we forget. The mistrust of government clouds public health in its role of primary prevention, but that view is only a generation old. Before the advent of good sanitation and vaccines, plagues were feared far more than cancer is today, and childhood was something more to be survived than enjoyed. In 1796, when Edward Jenner first successfully immunized a child against smallpox, it was the world's deadliest infectious disease. For the next century and a half, medicine and public health systematically eradicated all those deadly childhood diseases save one, polio. The Salk vaccine (1955) was both the triumph of this process and its last effective publicity. A generation later, we had already become used to the luxury of our ignorance, that luxury underwritten by the effectiveness of public health. And the fastest growing sector of the healthcare industry thrives in the shadow of that ignorance, offering its sham procedures and cures as wish fulfillment for those age-old yearnings of mankind continually being addressed in much more practical ways by public health. Today, it would take a vaccine against all cancers, a newly virulent smallpox, or the Ebola or Marburg viruses to remind us how to be grateful for primary prevention.⁹

Public Health in the 21st Century: A Better Society

What would it take to get us to see that our best interest is served by strong support for public health? What would it take to get us to see that our support for the highest standards for education is far more fundamental... to everything? A recent research article¹⁰ looked at vital statistics data for 1996-2002 in order to determine the number of averted deaths attributable

to medical advances and the number of deaths that would have been averted if adults with lesser education had experienced the mortality rates of college-educated adults. The result: medical advances prevented 178,193 deaths, whereas giving all adults the death rate of those with a college education would have saved eight times as many, 1,369,335 lives. "On the basis of how many lives can be saved, our data suggest that efforts to correct the social conditions causing education-associated excess mortality should be proportionately greater than society's investment in medical advances." The authors concluded: "Formidable efforts at social change would be necessary to eliminate disparities, but the changes would save more lives than would society's current heavy investment in medical advances. Spending large sums of money on such advances at the expense of social change may be jeopardizing public health."

¹ McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA*.1993; 270:2207-2212. [Abstract](#).

² Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA*. 2004; 291:1238-1245. [Abstract](#)

³ Turnock, BJ. *Public Health: What it is and How it Works*, 3rd Edition. (Jones and Bartlett Publishers, 2004).

⁴ The Core Functions Project, *Health Care Reform and Public Health, A Paper on Population-Based Core Functions*, Rockville, MD: U.S. Public Health Service, 1993. In 1993, public health spending (\$8.4 billion) represented 0.9% of total health spending, whereas "fully effective" spending (\$25 billion) would have required 2.7%.

⁵ CDC. "Ten Great Public Health Achievements—United States, 1900–1999." *Morbidity and Mortality Weekly Report* 48 (1999): 241–243.

⁶ CDC and the University of California, Institute for the Future, 2000; and *Prevention Report, "A Time for Partnership, Report of State Consultations on the Role of Public Health,"* U.S. Public Health Service, December 1994/January 1995.

⁷ In its *World Health Report 2000*, the WHO asserted that governments should be the "stewards of their national resources, maintaining and improving them for the benefits of their populations. In health, this means being ultimately responsible for the careful management of their citizens' well-being."

⁸ Nevertheless, in nationwide Harris Poll results released in February for a survey conducted online among 2,337 adults in mid-January, ninety percent of those surveyed said they know what the CDC does, and 84 percent gave it positive marks, the highest performance marks among 13 federal agencies they were asked to rate.

⁹ Information on National Public Health Week 2007 may be found at <http://www.nphw.org>, which offers an overview of what public health can do. It is what should be publicized throughout the year, not just during the first week of April.

¹⁰ Steven H. Woolf, Robert E. Johnson, Robert L. Phillips, Jr, Maike Philippsen. "Giving Everyone the Health of the Educated: An Examination of Whether Social Change Would Save More Lives Than Would Medical Advances," *American Journal of Public Health*, 97: 679-683 (April 2007). <http://www.ajph.org/cgi/content/abstract/97/4/679>.

