

# Better Living through Behavioral and Social Sciences



## Yesterday

- Average life expectancy in 1900 was a mere 47 years. People gave little thought to their health until something went wrong. Often it was too little too late and, as a result, many people died prematurely.
- People did not know just how much their lifestyles contributed to their well-being. Prevention activities, such as cancer screenings, were rare and not promoted or reimbursed by healthcare insurers.
- Unrecognized, the twin problems of obesity and type 2 diabetes were stealthily growing.
- Scientists argued about whether health quality was a function of nature or nurture; that is, whether genetics or the environment shapes your health. Nature and nurture were seen as independent factors in predicting differences in health among people.
- There were large differences in death rates among people of different ethnic groups, as well for those with different levels of education, income and social position. The causes of these health disparities were unknown and often unacknowledged.
- Acquired immunodeficiency syndrome (AIDS) emerged. The human immunodeficiency virus (HIV) that causes AIDS was identified and its methods of transmission, including sexual intercourse, blood transfusions, and needle sharing by drug users, were discovered. However, no systematic behavioral interventions were available to prevent the spread of infection. In 1993, 80,000 new AIDS cases in the US were reported and 1,800 babies were born with HIV.
- By 1960, half of all men smoked and many women had started. The death rate from tobacco use exploded in Americans, from a handful of deaths in 1900 to the leading cause of preventable death in 2000.

## Today

- American life expectancy is now over 77 years, an astounding increase of 30 years in a single century. While an impressive achievement, research from epidemiology, demography, economics, sociology,

psychology, health services research, and other disciplines shows that we can do better. About 40% of premature deaths are related to factors that can be changed, such as smoking, poor diet, stress, inactivity, violence, accidents, as well as societal factors like discrimination, gender biases, poverty, lack of insurance, and poor access to quality healthcare.

- More and more people are getting screened regularly. Early detection (screening) is now a critical prevention tool, but one that also involves action. In 2008, almost 81% of women age 50 -74 had had a mammogram to screen for breast cancer within the past two years. But only about 56% of women without insurance got mammograms on schedule.
- Data from 2007 indicate that over 23 million Americans have diabetes, resulting in \$116 billion in medical costs and an additional \$58 billion in costs due to disability, work loss and premature death. But the risk of developing diabetes can be reduced. The NIH-funded Diabetes Prevention Program (<http://go.usa.gov/aZt>) studied over 3,000 adults at high risk for developing type 2 diabetes. After ten years of follow up, a lifestyle intervention to improve diet and physical activity was found to be twice as effective at reducing the risk of developing diabetes as an oral diabetes drug (34% for lifestyle versus 17% for the drug).
- NIH research has shown that for the majority of diseases, genes are not destiny. Health is the product of an interaction between our genetic makeup and the effects of the environment. Studies performed in non-human primates, for example, have shown that animals that have genes that put them at risk for poorer outcomes (such as aggression and anxious behavior), do fine if they are raised in nurturing environments.
- NIH-supported research on the biology of HIV and on decision-making, drug abuse, and sexual behavior helped reverse and slow the AIDS epidemic. As people engaged in less risky behaviors and medications that can slow progression or prevent AIDS were developed, the number of new AIDS cases in the US dropped

dramatically to below 40,000 in 2008, approximately half of what it was in 1993. We now can screen for HIV/AIDS, and have medications that can slow progression or prevent AIDS. But there is still a critical behavioral component to these successes. People must volunteer to be screened and must take medication regularly.

- Smoking rates have plummeted. This is perhaps the single biggest public health success story of the 20th century. In less than 50 years, over 40 million Americans have quit smoking, saving millions of lives and billions of dollars. For the first time ever US cancer deaths have decreased, mostly because so many people have stopped smoking. NIH-funded scientists played a role in discovering links between cigarette smoking and cancer, heart and other diseases and developing successful cessation treatments, prevention programs, and policies.

## Tomorrow

- New challenges emerge with increased life expectancy. Research is underway to design, implement and evaluate new mobile health technologies to allow seniors to remain in their homes longer. This research will allow older adults to lead independent lives in their own homes with the aid of automated assistance and health monitoring.
- Behavioral, social, and public health research focusing on the various pathways and causes of disparities in health and healthcare continues. Researchers in the NIH-funded Network on Inequality, Complexity, and Health (<http://go.usa.gov/aZe>) will use complex computer models to simultaneously examine the many risk and protective factors for health and help provide us with the knowledge we need to finally reduce and eliminate these disparities.
- The NIH is supporting Studying Community Programs to Reduce Childhood Obesity, which follow 30,000 American youth to allow researchers to determine which local, state, and federal policies and programs have the greatest impact on the healthy weight of young people. Findings from this program will help communities better target their resources for programs that work.
- Future research will explore the complex relationship between genes and the environment. Current studies are using continuous monitoring to examine the ways

that environmental factors, from toxins to nutrition and social factors, can affect how genes are expressed to ultimately shape our health.

- We know that exercise, healthy diets, and medications are effective ways to prevent and manage type 2 diabetes. Despite their importance to diabetes health, people often fail to engage in these behaviors. Current research at NIH focuses on helping people who struggle managing their diabetes by training their doctors to provide motivational counseling, an effective technique that can lead to increased healthy behavior. This research may allow healthcare providers to be more effective in managing diabetes.
- Until a vaccine or cure is found for HIV/AIDS, people will need to continue to take their medications and follow healthcare recommendations to remain healthy. In South Africa, where HIV/AIDS remains at epidemic rates, there are not enough doctors and nurses to provide individual assistance. Research supported by NIH is examining the ways in which simple cell phone text messages can help people with HIV/AIDS better manage their medications and improve their health overall. This low-cost support for patients may provide a way to improve health in resource-poor countries.
- Despite the declines in smoking, 20% of adults in the United States still smoke. In 2007, an average of 58% of smokers tried to quit for at least a day. These numbers highlight the difficulty of quitting successfully and current NIH-funded research aims to examine the effects of employer incentives on quit rates. This information will help companies determine the most effective ways to improve the health of employees and reduce healthcare costs.
- Successfully meeting our health challenges will require forging stronger partnerships among the biomedical and the behavioral, social, and public health sciences. Adopting a more collaborative approach will allow us to prevent and manage disease to minimize suffering, disability, and premature death.

**Office of Behavioral and Social Sciences Research**

<http://obssr.od.nih.gov/index.aspx>