The nautilus shell is a marvel of the natural world. As the nautilus matures, its shell expands geometrically to accommodate the growing shellfish, unfolding into a functional home as well as one of nature's perfect logarithmic spirals.

First expressed by Descartes, the logarithmic spiral underlies not only the nautilus shell but also much of the natural world, including the human cochlea, the Milky Way, and a simple pinecone.
“Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before.”
—President Barack Obama

“If we want to prosper as a nation in the future, we have no choice but to improve the consistency, enhance the quality, and reduce the cost of health care. The IOM is working with us and others to draft a roadmap to achieve all of these things.”
—David M. Walker, President and CEO of the Peter G. Peterson Foundation, and former Comptroller General of the United States
The Institute of Medicine asks and answers the nation’s most pressing questions about health and health care.
The Institute of Medicine (IOM) is an independent, nonprofit organization that works outside of government to provide unbiased and authoritative advice to decision makers and the public. Established in 1970, the IOM is the health arm of the National Academy of Sciences, which was chartered under President Abraham Lincoln in 1863.

Nearly 150 years later, the National Academy of Sciences has expanded into what is collectively known as The National Academies, which comprises the National Academy of Sciences, the National Academy of Engineering, the National Research Council, and the IOM.

During the century and a half that has passed, much has changed in the world, particularly in the field of health and medicine. In 1863, for example, doctors conducted surgery, but infection and death were widespread, largely because hands and instruments went unwashed before surgery. Surgical antisepsis did not begin to spread widely in practice until after the late 1860s. Since then, we have seen the development of vaccines against diseases ranging from tetanus to polio. The world has witnessed the eradication of smallpox, a disease that sickened an estimated 50 million people per year as recently as the early 1950s. During the same time that such major advances were being made, new diseases continued to emerge. HIV/AIDS, identified in the early 1980s, has killed millions around the globe. Humans are living longer, more productive lives, but increasing numbers are also burdened by chronic disease. While hunger remains a serious problem in disadvantaged populations, affluent countries, such as the United States, are experiencing an alarming rise in obesity.

“THE INSTITUTE OF MEDICINE IS IN A UNIQUE POSITION TO HELP SHAPE [NATIONAL HEALTH] POLICY AND BASE IT ON OUR BEST KNOWLEDGE AND OUR HIGHEST VALUES.”

—EDWARD M. KENNEDY, UNITED STATES SENATOR, MASSACHUSETTS
The IOM is well equipped to adapt to such an ever-changing environment.

With a mission to advise the nation on matters of health and medicine, the IOM takes its role very seriously. Many of the studies that the IOM undertakes begin as specific mandates from Congress; still others are requested by federal agencies and independent organizations.

The IOM applies a distinct research process to provide objective and straightforward answers to difficult questions of national importance. Committees that conduct these studies are carefully composed to ensure the requisite expertise and to avoid conflicts of interest. These leading national and international scientists, all of whom serve as volunteers, are asked to set aside preconceptions and to rely on evidence in their pursuit of knowledge and truth.

Each year, more than 2,000 individuals, members, and nonmembers volunteer their time, knowledge, and expertise to advance the nation’s health through the work of the IOM. Membership in the IOM is offered to 65 individuals each year, elected by the current membership, and drawn from a range of health care professions; the natural, social, and behavioral sciences; and fields such as law, economics, administration, engineering, and the humanities. For those at the top of their field, membership in the IOM reflects the height of professional achievement and commitment to service.

“WITH HEALTH AND MEDICAL ADVANCES COME EXTRAORDINARY CHALLENGES; THE IOM UNIQUELY PROVIDES INVALUABLE PERSPECTIVE AND SUBSTANCE THAT POWERFULLY EQUIP DECISION MAKERS FOR THE BETTERMENT OF SOCIETY.”

—FORMER SENATE MAJORITY LEADER WILLIAM H. FRIST, M.D.
“WITH THE VARIETY OF CHALLENGES FACING OUR NATION TODAY—WHETHER IT IS EMERGENCY PREPAREDNESS, DRUG SAFETY, OR THE CARE OF OUR MILITARY AND VETERANS—THE INSTITUTE OF MEDICINE SERVES AS A TRUSTED SOURCE OF THOUGHTFUL, AUTHORITATIVE DELIBERATION.”

—MICHAEL O. LEAVITT, FORMER GOVERNOR OF UTAH, FORMER SECRETARY, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, AND FORMER ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY


Setting a course for the future of health care

The IOM has a key role to play in helping to shape the direction of health care in the United States and abroad, and each year it works to reinvigorate the health care system—to enhance quality and add value.

Today, perhaps more than ever, health care is a key item on the nation’s agenda. The United States spends twice as much per capita on health as the average of other industrialized countries, yet dozens of others have lower infant mortality and longer life expectancies.

Recent IOM efforts have highlighted the importance of disease prevention and reliance on evidence-based medicine, pointed to urgent needs for improved emergency services, placed renewed emphasis on the future of nursing, laid out the consequences on both the insured and the uninsured of failing to provide everyone with health insurance, recommended improvements in the organization and operation of the U.S. Department of Health and Human Services, examined how the health care system will cope with the onslaught of aging baby boomers, and determined the top priorities for research on the comparative effectiveness of medical procedures and technologies.
In the years since the IOM was founded, global health has developed into a more fully established and recognized field. Many health threats recognize no political or geographic borders. New and reemerging infectious diseases are just an airplane ride away. Global events, ranging from climate disruption to the intertwining of poverty, violence, and disease, threaten public health as well. As the world shrinks, health risks grow, and the United States has an important responsibility to maintain health and mitigate risk, both within its borders and on a global scale.

In its work bearing on global health, the IOM considers both how the United States can best protect its own residents and how it can join with others to help countries with limited resources tackle health problems within their borders. These complicated subjects call for critical thinking from a variety of perspectives and creative problem solving. Among its recent work, the IOM has produced a blueprint for the vital place of global health in U.S. policy, helped guide valuable foreign aid programs in areas such as AIDS, and highlighted the problem of emerging diseases and the growing burden of chronic diseases in many countries. The IOM has promoted more opportunity for U.S. health professionals to serve abroad and worked with counterpart academies of science and medicine in other countries to help them contend more successfully with the health problems of their own populations.

“IT IS TOO EASY TO IGNORE THE HEALTH PROBLEMS OF DEVELOPING COUNTRIES IN PRIORITIZING OUR NATIONAL CONCERNS. INSTEAD OF MAKING EXCUSES, THE INSTITUTE OF MEDICINE HAS TAKEN ON THE CHARGE OF IMPROVING THE HEALTH OF OUR WORLD POPULATION.”

—HELENE D. GAYLE, M.D., M.P.H., PRESIDENT AND CEO, CARE USA
Malaria is a treatable and preventable disease that kills 1 million people a year—90 percent of whom are children—largely because of the high price of the medicine used to treat it. On the basis of the central recommendation from the 2004 IOM report Saving Lives, Buying Time: The Economics of Antimalarial Drugs, an international partnership called Affordable Medicines Facility for Malaria was established in April 2009 to heavily subsidize the antimalarial drug market. The program could reduce the wholesale cost of drugs from $4 to just 5 cents per treatment.
“AS SECRETARY OF HEALTH AND HUMAN SERVICES, I RELIED HEAVILY ON THE INSTITUTE OF MEDICINE FOR UNBIASED, RIGOROUS, RELIABLE, AND UP-TO-DATE POLICY RESEARCH. THE IOM ALWAYS DELIVERED!”

—DONNA E. SHALALA, PRESIDENT, UNIVERSITY OF MIAMI, AND FORMER SECRETARY, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Advancing knowledge and shaping a research agenda

Situated outside of government and with a broad view of the research enterprise, the IOM is ideally placed to help guide medical and scientific research and identify priorities for the nation. Government agencies and public organizations alike depend on the findings and recommendations in IOM reports to determine how to structure their ongoing research activities or how to embark on new directions.

The IOM looks ahead to identify opportunities and challenges that lie on—or just over—the scientific horizon. In recent years, such work has focused on scientists’ understanding of the brain, advances in genomics and drug development, and stem cell research. The IOM has recommended ways to reduce conflict of interest in medical research and in other professional activities. In these multiple ways, IOM committees help pave the way for some of the most cutting-edge research taking place in the scientific community.
Public health is fundamental to every individual's health. An IOM committee in 1988 described the mission of public health as fulfilling society's interest in assuring conditions in which people can be healthy. Yet each individual's health and well-being are shaped by the interactions of his or her genetic endowment, environmental exposures, lifestyle and food choices, social conditions, income, and medical care. Collectively, these factors shape health at the population level.

Since its founding, the IOM has consistently stressed the value of prevention of disease, a basic tenet of public health. In studies ranging from core principles and needs in the field to specific issues such as health disparities, vaccine safety, smoking cessation, and reducing environmental hazards, the IOM continues to advance the best ways to ensure the public's health.

One of the most critical public health needs today is to prepare to respond to a variety of hazards, whether they are natural or are posed by malevolent humans. The IOM has helped federal agencies prepare for a variety of national emergencies that may arise, including nuclear incidents, biohazards, and influenza pandemics.
With more than 3 million Americans living in more than 15,000 nursing homes each year, providing quality care in these institutions is imperative. The 1986 IOM report *Improving the Quality of Care in Nursing Homes* had a dramatic effect on the care provided in nursing homes. Almost immediately, the report’s recommendations were translated into the Federal Nursing Home Reform Act, for the first time creating national standards of care and rights for people living in nursing homes.
A healthy nation is one in which all people eat enough of what they need and avoid as much as possible foods that are not healthful. For the United States, this remains an ideal. During the last 25 years, Americans have gained weight at an alarming rate. More than one-third of all adults in the United States—more than 72 million people—are obese, nearly double the percentage of obese adults in 1980. This dramatic shift has had a profound effect on those individuals—who are more likely to have high blood pressure, type 2 diabetes, and many other ailments—and also on the U.S. economy, raising the cost of health care and reducing the nation’s productivity, among other consequences.

The IOM has worked to help local, state, and national policy makers counter the obesity epidemic in America. IOM committees have examined the problem and solutions to childhood obesity. In 2008, the IOM established, with support from the Robert Wood Johnson Foundation, the Standing Committee on Childhood Obesity Prevention. Bringing together experts representing a range of fields and drawn from government, academia, and the corporate sector, the committee serves as a focal point for national and state-level discussions.

The IOM has a long history of examining the nation’s nutritional well-being and providing sound information about food and nutrition to help consumers make the best choices about what they eat. One recent study, for example, provided new guidance on optimal weight gain during pregnancy. More generally, through more than three dozen sets of guidelines, now known as Dietary Reference Intakes (DRIs), IOM provides estimates of the amounts of nutrients that individuals need to consume. Health care professionals and policy makers, including federal nutrition officials who develop nutrition programs, as well as the food industry, rely on this guidance from the IOM.
Both the Walt Disney Company and the Cartoon Network pledged to stop using their cartoon characters to advertise food products for children that are high in calories and low in nutrients, after publication of the IOM reports *Food Marketing to Children and Youth: Threat or Opportunity?* and *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth*. In 2006, Disney began using its characters to promote the consumption of fruits and vegetables, and by 2009, it had promoted more than 250 products.
"THE ROBERT WOOD JOHNSON FOUNDATION IS PROUD TO WORK WITH THE INSTITUTE OF MEDICINE TO ADDRESS THE NATION'S MOST PRESSING HEALTH AND HEALTH CARE ISSUES—EXAMINING CHILDHOOD OBESITY PREVENTION POLICIES, THE ROLE OF THE NURSE IN QUALITY IMPROVEMENT, AND THE CONSEQUENCES OF BEING UNINSURED."

—RISA LAVIZZO-MOUREY, M.D., M.B.A., PRESIDENT AND CEO, ROBERT WOOD JOHNSON FOUNDATION
Meeting **unique health needs of select populations**

**Certain populations face unique health challenges that demand distinctive solutions.** Women and children stand out among those groups because of their specific health needs. In addition to recommendations for weight gain during pregnancy, recent work includes an examination of adolescent mental and behavioral health and an assessment of the federal family planning program. The IOM recently undertook a series of studies related to disability and disabled populations designed to help the Social Security Administration fulfill this vital aspect of its mission.

Military and veteran populations face health challenges of a scope and complexity that few other Americans ever experience. Active-duty personnel may directly face the risk of injury or death. Both combat forces and personnel serving away from the front lines may experience lengthy exposures to hazardous environments. Beyond immediate physical threats, military personnel often must cope with high-intensity, stressful, and dangerous environments, sometimes for months or years at a time. In a series of studies ranging from traumatic brain injury to long-term health effects of exposures in combat environments, from studies of field nutrition requirements to smoking cessation, the IOM strives to assist the Departments of Defense and Veterans Affairs to preserve the health and meet the health needs of those who serve in uniform.
The IOM seeks to improve health through shared knowledge. While expert, consensus committees are vital to our advisory role, the IOM also convenes a series of forums, roundtables, and standing committees to facilitate discussion, discovery, and critical, cross-disciplinary thinking.

The forums and roundtables at the IOM bring together leaders in government and industry, scientists and other experts from academia, practitioners, representatives of public interest groups, and consumers. The IOM offers a mutual venue for open dialogue, on topics as complex and diverse as new drug discovery and development, public health and medical preparedness, evidence-based medicine, environmental health sciences, neuroscience and nervous system disorders, health disparities, and microbial threats. At the IOM, individuals of goodwill from diverse perspectives can gain shared understanding and fresh insights. If a topic matters in an important way to health, sooner or later it will find a place on the agenda of the IOM.

IOM cultivates leadership and enhances policy making by building a core of sophisticated experts through several highly regarded fellowship programs. These include the Robert Wood Johnson Health Policy Fellowship Program, the IOM/American Academy of Nursing/American Nurses Foundation Nurse Scholar, and the IOM Anniversary Fellows.

“IT'S A SHOT IN THE ARM TO THE REFORM MOVEMENT TO HAVE THE PRESTIGE AND POLICY HEFT OF THE INSTITUTE OF MEDICINE ON THE SIDE OF TRANSPARENCY.”

—SENATOR CHARLES E. GRASSLEY, REPUBLICAN OF IOWA, DISCUSSING CONFLICTS OF INTEREST IN MEDICINE
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