



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

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## From the Desk of the NIH Director Elias A. Zerhouni, M.D.

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### Welcome to the National Institutes of Health

We are in challenging times, both for science and for the NIH. I have been listening to you, our constituents, and it's clear you are particularly interested in learning more about NIH research progress. I know you are also interested in the work of the 212,000 scientists we support in more than 3,000 research institutions across the country and around the world. Recently, I have learned that you need to hear more from NIH. This is the first of what will be quarterly updates from me to you. Also, to ensure more timely interaction, I have set up a special mailbox for learning directly about programs and projects that are important to you and your organizations. The email address is: [zerhounidirect@nih.gov](mailto:zerhounidirect@nih.gov).

#### The Future

We are transforming the way medicine is practiced, and we are doing it strategically, leveraging our research resources and infrastructure with working scientists everywhere.

The HapMap, Public Access, the Pathway to Independence Award, and the new Clinical and Translational Research Centers all reflect transformation. I find the easiest way to describe this new vision of medicine as the "Three Ps — Predictive, Personalized, and Pre-emptive."

**Predictive.** We will be predictive, using the new tools of genomic sequencing, proteomics and the new understanding of molecules to identify the susceptibility of patients to develop disease — and we will be able to do this prediction long before the first symptom appears.

**Personalized.** One size does not fit all. There is really no one-stop shopping. We began to understand this when we learned to adjust doses of medication or created specialized emergency room equipment to treat young children or we began to adjust treatments for individuals in a general way. What the future must hold is customized treatment; treatment that addresses the needs of the individual in order to be more strategic in combating disease.

We must also be **Pre-emptive**. If we know who will get diabetes, prostate cancer, or arthritis because of genetic susceptibility or other predisposition to the disease, we will be able to intercede before it takes its personal and economic toll. We will no longer diagnose diabetes, then just wait for diabetes to attack the eyes or feet — or appear in the next generation.

By being predictive, personalized, and pre-emptive, we can reinvent the way medicine is practiced. Our medicine of the future will make strategic use of significant, shared tools and collaborative teams of scientists. We are in the process of truly reengineering the medical research enterprise to ensure that the people's investment will return to benefit the people.

The research investment in NIH, in fiscal year 2006, is \$95 per person. That is in stark contrast to the growing national health care expenditure projected to reach \$3.6 trillion, approximately \$11,000 per person, by 2014, growing at an annual rate of about 7.0% based on Center for Medicare and Medicaid Services data. What do we have to show for it? For example, the total death rate from cancer has decreased for the first time in history, and we have *doubled* the rates of cancer survivorship. And do you know what the size of the investment has been since the launch of the War on Cancer in 1971? The cumulative investment at the NCI per American over the past 30 years is about \$258 per person. For that investment, we have reaped enormous results.

**Prostate cancer.** Just recently, NIH funding has made it possible to improve early diagnosis of prostate cancer. Scientists know that cancer patients produce antibodies against tumors. NIH scientists devised a blood screen for 22 antibodies produced in men with prostate cancer. This new test is right 92% of the time, a 20% improvement over the current method. Because the new test has a much lower rate of false positive results than PSA, antibody-based screening should translate into a significant reduction in the number of unnecessary prostate biopsies performed on the quarter of a million men diagnosed with potential prostate cancer each year.

**Diabetes.** Diabetes. An NIH-supported research study showed that tight blood glucose controls in people with type 1 diabetes, can cut heart disease and stroke by half. We are now looking at type 2 to see if the results apply there. We can give patients information that they can use immediately to help themselves.

**Avian Flu.** Computer models developed by the NIH-funded Models of Infectious Disease Agent Study (MIDAS) research network found that a carefully chosen combination of public health measures, if implemented early, could stop the spread of an avian flu outbreak at its source. The researchers found that antiviral treatment is a crucial component of a multi-pronged approach.

**Ovarian Cancer.** A new treatment for women who have advanced stage ovarian cancer, the fourth leading cause of death in women in the U.S., taking more than 20,000 lives each year, involves the administration of high doses of chemotherapy drugs directly into the abdomen. This approach is the first significant advance against this highly lethal cancer in more than a decade, and it boosts survival by 16 months.

**Heart Disease.** An undiagnosed syndrome has been revealed. In as many as 3 million women who have heart disease, cholesterol plaque may not build up in blockages, but instead spreads evenly throughout the artery wall. As a result, diagnostic coronary angiography incorrectly indicates that these women have "clear" arteries — no blockages. This finding allows alerting doctors to a significant difference in heart disease found in women that will require special tests and careful monitoring.

These are just a few examples of recent progress.

I like to believe that the NIH research investment is probably the very best thing this nation has done, and we're poised to do better. We expect to know the causes of the 10 most common diseases within the next 2 years...that is why I believe that a complete transformation is occurring. I want us to work together to build that future,

and I have asked the NIH leadership to join me in regularly reaching out to you to share life-changing information and advancements.

I hope you find this new desk-to-desk helpful.

For information about NIH programs, useful health information, and additional resources, see the NIH web site at [www.nih.gov](http://www.nih.gov).



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