

INTERVIEW

Twenty-Seven Fingers Without A Palm Is Not A Hand: A Conversation With Elias Zerhouni

The director of the National Institutes of Health stays focused on his organization's mission and looks to the future.

by Fitzhugh Mullan

ABSTRACT: The director of the National Institutes of Health, Elias Zerhouni, looks back on his first eighteen months at the helm of the NIH. During his tenure, appointed by a Republican president but himself a political Independent, Zerhouni has been called upon to navigate the treacherous waters where science meets politics. His efforts have been assisted by a new Roadmap supplemented by the recommendations of the Institute of Medicine, regarding the organization and priorities of the NIH. Priorities include continuing to work on infectious and chronic diseases, both at home and abroad, and focusing the efforts of twenty-seven separate institutes under one director and a common organizational mission.

EDITOR'S NOTE: Between 1998 and 2003 an alliance of research scientists, academic health centers, disease interest and patient advocacy organizations, business groups, and key members of Congress conducted a brilliantly successful campaign to double the annual budget of the National Institutes of Health (NIH) to \$27 billion. The sheer volume of new money as well as concerns about the organization and efficient management of the NIH have led to a series of congressional hearings and a congressionally mandated study of the NIH's organizational structure by the Institute of Medicine. In April 2002 President Bush nominated Elias Zerhouni, the fifty-one-year-old executive dean of the Johns Hopkins Medical Institutions, to head the NIH. Now, after more than a year and a half on the job, Zerhouni reflects on his NIH tenure with Health Affairs contributing editor Fitzhugh Mullan.

From Algeria To The NIH

Fitzhugh Mullan: Tell me about your road to the NIH. Many physicians have immigrated to the United States, but few have risen to the leadership of major institutions and organiza-

tions with the alacrity that you have.

Elias Zerhouni: I was born in Algeria in 1951 and came to the United States in 1975 at the age of twenty-four. I had just finished medical school, and, in reality, I didn't have either the means or the ability to stay here for a long time.

Mullan: What made you decide to come? Was it something about America or something about Algeria?

Zerhouni: Both, really. Algeria had a long fight against colonialism, and many young Algerians wanted to get out and experience the world. Typically, Algerians went to France, but my father was an educated man, a math and physics high school teacher. He admired America. I also had an uncle who was a radiologist. He told me, "America is the country of the future. That's where you need to go." America was seen as a giant, the place to go if you wanted to accomplish something and be accepted. The stories of immigrant scientists like Albert Einstein and Edward Teller were known in intellectual communities around the world. Henry Kissinger got to be secretary of state, and he could hardly speak the language. There was great admiration for the United States.

Mullan: How did you get to this country, and what was it like climbing the medical ladder?

Zerhouni: I had studied medicine, but I really had a bent for math, physics, and engineering. The combination of medicine and physics came together when my radiologist uncle showed me the first publication about the CT scan in the British literature. Algeria's system at the time allowed me to pick the residency of my choice since I was at the top of my class. In those days radiology was not a very popular specialty. They called radiologists "shadow doctors" because they were always in dark rooms, not dealing with patients. But I saw radiology as perfect for me—and the specialty of the future. The dean of my medical school, who was an internationally known neurophysiologist, was so taken by the fact that

"I actually believe that the director's job is very powerful. You need a vision, and you need to express it. The job comes with a bully pulpit."

the number-five student in the class picked radiology, he called me in. "This is very unusual. Students in your rank don't pick radiology. We don't have good training in radiology here, so why don't you consider going overseas?" I agreed, and he arranged a temporary position for me at Johns Hopkins. So I came. I didn't have a lot of money, and I didn't speak English very well. When my time was up, I was given a break because they needed night coverage in the ER. I had earned my equivalency license, and no one wanted to work nights. So I was given the radiology night shift as a money-making thing. And from there, one thing led to another. I had great teachers at Hopkins.

Mullan: You indeed followed through on your interest in CT scan technology, contributing to the field as a research scientist and rising through the ranks at Hopkins to become department chair and the school's executive dean. On being nominated to direct the NIH, however, you were not widely known in the research community. The president's choice was a surprise to many and, I understand, to you as well. Tell me about the vision you brought with you to the NIH.

Zerhouni: I'm used to being underestimated,

so in that sense it was no surprise. It was a surprise, though, that a nonbiologist would be picked, somebody from an associated field such as imaging. But that is a tribute to the growth of importance of disciplines like mine.

Mullan: The position of NIH director is enormously prestigious, but it can be argued that from a scientific point of view, it has relatively little clout. What did you see as the position's possibilities?

Zerhouni: I've always admired the NIH, and, coming in, I knew the agency fairly well. Plenty of people told me that this would be a bad time for the NIH since its budget had risen so quickly and wouldn't keep on at that rate. I knew that it was a campus of fiefdoms with twenty-seven different places that don't talk to each other. There's a lot of scrutiny from

Congress and a lot of tension everywhere. I knew all of those things very well. But this is an institution that does have the potential for truly making a difference. You're not given the opportunity to serve in this capacity more than once in a lifetime. I actually believe that the director's job is very powerful. You need a vision, and you need to express it. The job comes with a bully pulpit.

Roadmap For The NIH

Mullan: Recently you announced your Roadmap for the NIH. Is this Roadmap a statement of your vision? Some have suggested that the document is less a blueprint for change than a necessary response to critics who say that there should be some kind of new business plan for the NIH. They would argue that the map is not as different as it might be.

Zerhouni: I did have a sense that, before I came, different approaches had to be used for medical research. There were roadblocks to collaborative research. There were definitely scientific silos. You have to have the discipline as an institution to step back and formally ask the questions: Where are the roadblocks? What is it that no institute can do on its own,

but needs to be done? Where is science going, and where do we need to be? There are twenty-eight initiatives detailed in the Roadmap. It is a strategic framework with three key roles for the institution as a whole: to force debates across institutes that don't usually have debating forums; to make sure that we're strategic, and not tactical, in the way that we do things; and to have a portfolio strategy that takes into account cross-cutting areas, as well as emerging areas. There are areas of emerging science that absolutely require collaborative support or are sufficiently risky that no one institute wants to invest in them alone. The important breakthrough is the fact that all of the institute directors and myself got together and were able to put money in a common pool. The amount of money is less important than the fact that it was done as a common investment.

Mullan: What is the relationship between the Roadmap and the recent congressionally mandated IOM study of the structure and organization of the NIH?

Zerhouni: They're not related because we started the Roadmap process well before the IOM report, but the portfolio is the core issue for both documents. Because science is converging, the NIH needs to have an evolving portfolio, an emerging opportunity portfolio. That's what I think the Roadmap seeks to do, and many of the IOM recommendations address that as well.

Mullan: The IOM report declines to call for major reorganization. It does recommend a more prominent role for the NIH director. It talks about increasing the director's budget and augmenting the director's transinstitutional role. How do you feel about that?

Zerhouni: The Roadmap is consistent with the IOM recommendations. Over the years the NIH has had what I call a structural approach to portfolio management. Anytime there was a need and a vocal constituency, and Congress agreed, a structure was added to the NIH. That structure would get an appropriation

that would grow in lockstep with all of the other structures. The problem here is that no one cares for the entire institution except the director. So a solution suggested is to give more money to the director. That's not a solution, because then it sets up a conflicting situation. Seed money controlled by the director to incentivize new projects is OK. But at the end of the day we need a new way to manage the portfolio, and that's what I call functional portfolio management. The director needs the

ability to merge the fourteen different tracking systems that have developed to record and code what the NIH does. We need a decision support system that is available to everybody. We need to be able to plan across NIH. We need some funds in common. If you have twenty-seven fingers out

there with no palm, you don't have a hand.

The NIH And The U.S. Health Care System

Mullan: Let me ask you about your view of the role of the NIH in the nation's larger health care system. The NIH's successes in pushing the frontiers of biology and generating new technologies for medical practice have created a sense of scientific promise in the mind of the American public. The Human Genome Project, developing nanotechnologies, and increasing molecular capabilities have all contributed to this expectation. One envisions—and certainly patients hope for—a panacea of relief from disease and the continued extension of the life span. At the same time, we have a health care system that is enormously expensive, increasing at double-digit rates, inequitably distributed, and putting serious stresses on the rest of the economy. Most analysts characterize U.S. health care as technologically spectacular, hugely costly, and not terribly efficient. What do you see as the role of the NIH in the future of this country's health care quandaries?

Zerhouni: Rising health care costs, the aging of the population, and the rise of chronic dis-

“What is needed is an acceleration in research and discoveries aimed at the preclinical phase of disease.”

ease are strategic challenges for the country. These are the defining questions of the next decades. The problem with technology, though, is not that we have it but that the methods we have are not effective enough. The paradigm that we operate under is not the right one. We wait for someone's illness to reach the catastrophic stage, and then we try to put the pieces back together. That is the most expensive way to do something. We know now that for every disease discovered in the clinical stage, there has been a long, pre-clinical period. What is needed is an acceleration in research and discoveries aimed at the preclinical phase of disease. We need to stimulate systems of biological research, understanding what we need to do to avoid explicit disease. This will require new teams of scientists organized differently and composed of different disciplines. This really calls for a revolution in the way we approach research.

Clinical And Health Services Research

Mullan: Measuring and monitoring the success of health care is in the realm of health services research or the evaluative clinical sciences. Within the federal government, the Agency for Healthcare Research and Quality [AHRQ] is charged with this mission. Its budget has consistently been about 1 percent of the NIH budget. As you sit astride the NIH's mission, what is your sense of the relationship between health services research and basic and clinical research? What is your view of the size of the respective budgets dedicated to these two areas?

Zerhouni: The fundamental scientific question that you are asking is this: Is the problem in health care the fact that we don't know if Coke is better than Pepsi or approach A is better than approach B? Or is the problem that we have not made the final discoveries that will accelerate our ability to prevent the onset of disease? The answer is yes to both. But the role of the NIH is the latter—to organize its activities to make sure that we have the relevant new knowledge to create health. Our work shouldn't be done for health policy pur-

poses. That, in my view, is the purview of AHRQ. We need to make sure that the missions don't get confused.

Mullan: Improving the science of disease prevention and minimizing debilitating disease processes would certainly provide benefits for both individuals and the system. But it is hard to imagine a world in which the body won't break down—probably bit by bit. Gerontologists talk about the “rectangularization” of the death curve, meaning that individuals and populations would live to a certain point and then die quickly without debility, avoiding both the prolonged suffering and costs associated with chronic disease. But it is hard to foresee a rectangular world in which there won't continue to be a gray zone between youth and death in which inquisitive, intelligent, well-to-do Americans won't want implantable defibrillators, cataract surgeries, and cardiac care units. The NIH has proven successful at producing Pepsi, Coke, and a variety of other brands. The question of which works best and at what cost would seem to be of vital importance to our society. Surely the productivity of our research enterprise in an epoch of an aging population will cost us dearly if we continue to treat the evaluative sciences as an afterthought to the basic and clinical sciences.

Zerhouni: As a general principle, it is important to stay focused on your mission. There is no question that we need a policy decision-making capability reinforced by research. But I don't think that relates to finding the molecular events that we need to understand now if we're ever going to get that “rectangular” curve.

Privatization At The NIH?

Mullan: How is morale at the NIH? The administration's A-76 initiative is pushing all federal agencies including the NIH to privatize as many functions as possible, entering into competitive bidding with outside companies for functions that have always been basic government work. Secretary of Health and Human Services Tommy Thompson is also consolidating many HHS functions in his office so that the NIH's latitude in areas such as its budget and personnel management will be dimin-

ished. How are these changes playing on the NIH campus?

Zerhouni: Change is always threatening. A change that threatens jobs is even more disturbing. There are families behind these jobs. Nobody has given me instructions to privatize the NIH. My instructions are to do whatever I can to assure the public that the agency is doing the best job it can. We are dealing in an environment where there is a profound belief that government is not as effective as it could be. It's wasting taxpayers' dollars. We are charged with answering this through a competitive process that says that if the private sector can do it better, why should we be doing it? When I came here, I evaluated how the agency does its job. A statistic: Between 1998 and 2003, when our budget doubled, the total number of NIH personnel increased by 2.5 percent. The NIH has prospered because we have created better systems and work flow. We've become more productive. If we can't do the job better than anybody else out there, then there's something wrong with what we're doing. We won the first competition, by the way, demonstrating that our grants management administration was more effective than the outside bidders. I have talked to Secretary Thompson very directly about the various proposed consolidations that would centralize NIH functions in his office. He was very open. I don't believe that one size fits all. He understands the differences between a research agency and other agencies and the need to have our own process for administrative restructuring. We've come to an agreement whereby local implementation and authority will stay with the NIH.

The Role Of Politics In Research

Mullan: The presidential decision to confine government funding for stem-cell research to a limited number of cell lines has become something of a metaphor for political decision making within the scientific setting. From your

perspective, has the decision itself caused problems, and what does this kind of judgment mean for science policy in the future?

Zerhouni: This is a topic where people are polarized. This causes a problem for me because it's very hard to keep the discussion focused on the facts. I don't think disease should involve politics. Disease doesn't know politics, and I hate to see the NIH become a political football. Decisions pertinent to stem-cell research touch social, ethical, and moral issues that

“Decisions pertinent to stem-cell research touch social, ethical, and moral issues that must be debated in a setting that is larger than science policy alone.”

must be debated in a setting that is larger than science policy alone. I think that the president's decision did open the doors to federal funding of research involving stem cells, and that is a very good thing. From the point of view of the scientific community, it's not enough. I understand that, and we are at the center of the debate. We have, nonetheless,

the capability to build the infrastructure of stem-cell research. There's no limit on the funding for that research.

Mullan: The Bush administration has been characterized in the press and elsewhere as extraordinarily reliant on politics and ideology in making appointments and managing the government agencies. As someone who is a participant in that, a consumer in a sense, of the policies of this administration, how do you see those pressures?

Zerhouni: First of all, I think you hear those things about every administration. Second, I am not a political person. I come from a professional background, and I'm a registered Independent. So, to be appointed by this administration, I guess, says something about putting competent people in charge of major agencies. Third, as far as appointments go at the NIH, I have not had any pressure to take someone or remove someone else. On the scientific side of things, I've not gotten directives to appoint anyone who was not competent to serve on advisory councils. The public members are obviously the prerogative of the administration.

Global Health Issues

Mullan: On some level, global health has always been a concern of the NIH—for example, the Fogarty International Center, the eligibility of scientists in other countries for NIH awards, and the role that the National Institute of Allergy and Infectious Disease [NIAID] has played in the battle against HIV/AIDS. Given the rapid changes in everything from disease patterns to informatics in recent years, is the relationship of the NIH to what I'll broadly call global health evolving in any significant way?

Zerhouni: Because of my understanding of the developing world, I am personally committed to making sure that the role we play in global health is positive and growing. With the doubling of the NIH budget, we've been able to build relationships and scientific infrastructure in many more countries than we had before. NIAID, for example, now has HIV/AIDS activities in eighty-five countries. Through the NIH Foundation we have created a partnership with the Gates Foundation on what we are calling Grand Challenges in Global Health—identifying the key research challenges to making progress in global health. The Gates Foundation is providing \$200 million, but we will be looking for support from all over the world. The challenge here is not just money; it's a human capital issue. There are not enough people with appropriate training around the world focusing on these issues. We've been strong advocates of the president's plan for global AIDS, which should help build research capacity in these countries.

Mullan: The NIH's roots extend back to the turn of the twentieth century to the Hygienic Laboratory of the Marine Hospital Service. Infectious diseases were the principal target of research then and for many years to follow. In the second half of the century, chronic disease became the focus of the work of the rapidly growing NIH with new institutes designated to house specific areas of research—the National Cancer Institute and the National Heart Institute were two of the earliest. Infectious disease and many diseases of poverty such as tuberculosis and malaria that are endemic in

much of the world really seemed to have fallen off the NIH's radar screen. Is that true, and is that changing?

Zerhouni: The NIH is the National Institutes of Health, not the International Institutes of Health. We have to serve those who support us: the American taxpayers. Today new infectious diseases are emerging, and old ones are reemerging, and our agenda is shifting back. AIDS affects us just as it does the rest of the world, and we are heavily invested there and will continue to be so. Is this funding sufficient, and is it effective? Those are the questions we need to ask. We are not ignoring those diseases, but they have a relative importance that should fairly reflect the burden of disease here in this country.

Concluding Comments

Mullan: Have you enjoyed your eighteen months at the helm of the NIH?

Zerhouni: I think it was everything I thought it would be, and more. Sometimes the "more" is what I don't enjoy so much. Over all, it has been very good. I've recruited six new directors. They're outstanding. The collaboration is real. Yes, there are difficulties, particularly in the administrative area, but we can tackle them. I'm very pleased by the fact that the NIH is second to none.