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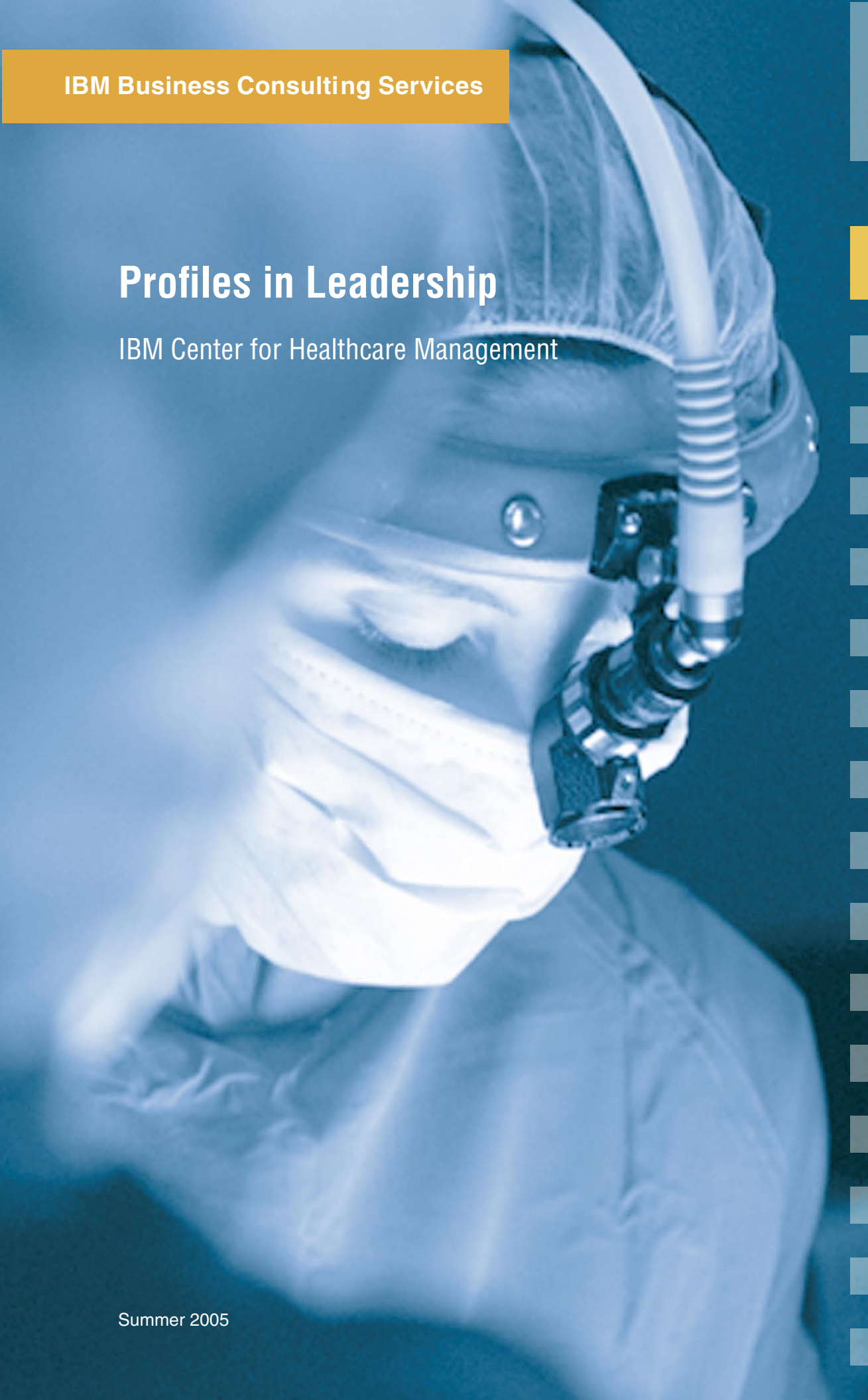
Healthcare and Life Sciences

Profiles in Leadership

IBM Center for Healthcare Management



Summer 2005

The IBM Center for Healthcare Management provides insight into critical healthcare issues confronting businesses, organizations and government agencies worldwide. We seek to promote the development of innovative ideas, research and best practices that enable private- and public-sector leaders to develop highly strategic management solutions.

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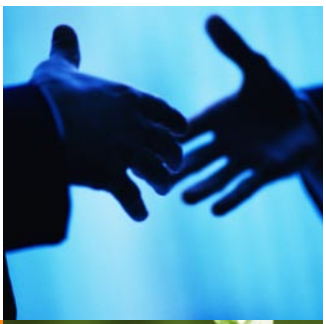
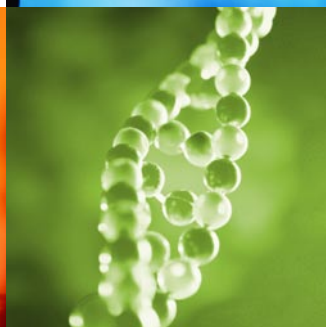




Letter from the editor

Welcome to **Profiles in Leadership**, a new healthcare industry publication from the IBM Center for Healthcare Management (CHM). Each issue of **Profiles in Leadership** will explore major business, management and public policy challenges in healthcare from the perspectives of premier thought leaders, along with their visions for what healthcare can and should become. We'll also delve into these individuals' career paths to illuminate the remarkable depth and breadth of experience among the leaders now shaping healthcare's direction in the United States and worldwide.

The CHM seeks to offer insights into critical healthcare issues confronting governmental and private-sector payors and providers. We intend to promote the development of innovative ideas, research and best practices that can help healthcare leaders improve the quality, safety and cost effectiveness of care.

Profiles in Leadership reaches across perceived boundaries to include the public and private sectors, large and mid-size entities, medical research and delivery, payors and practitioners, and numerous industry segments. We hope to offer a fresh, stimulating overview of the state and direction of one of the world's most rapidly evolving disciplines — in scientific, business, managerial and public policy terms.

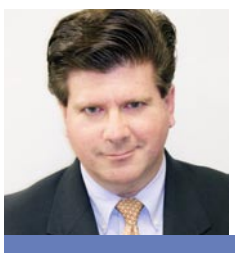
This issue highlights several of the most highly regarded private-sector leaders in American healthcare: Dr. Denis Cortese, Dr. Ralph Snyderman and Dr. Jeffrey Trent. They're joined by three influential public-sector leaders: Dr. Andrew C. von Eschenbach, Dr. Carolyn Clancy and Dr. William Winkenwerder Jr. You'll also find discussions with Michael Blaszyk and Mark Barnard, who are rewriting the rules for high-quality and cost-effective services in their respective markets. Interviews were conducted by IBM healthcare executives and Business Consulting Services partners, largely during the past few months.

Among the many thought-provoking ideas discussed in this issue of **Profiles**, one of the most fascinating areas involves personalized medicine. This much-awaited concept now is clearly taking shape in specific areas such as cancer diagnosis and treatment, and is being advanced still further by visionary concepts such as "prospective medicine." IBM's *Global Innovation Outlook*, a 2004 worldwide study of how innovation is occurring across government and healthcare, also highlighted insights into what some leaders are calling "predictive medicine." Please see *http://www-306.ibm.com/e-business/ondemand/us/innovation/gio.shtml* for more information.

Another theme is the appearance of new models of patient-centric healthcare delivery — characterized by a renewed focus on patient safety and comfort — that are being linked to new disease treatment paradigms, more optimized medical center operations, and unusual institutional partnerships. We also heard a great deal about the increasingly pivotal role of information technology (IT). Across government and private healthcare institutions, many leaders feel — and certainly hope — that the United States has reached a "tipping point" in effectively using information and IT to improve the productivity and delivery of care.

Finally, these leaders' professional achievements are accompanied by tremendous curiosity about other disciplines. Many cited innovations from industries such as banking as being relevant to increasing the use and portability of healthcare records. They believe healthcare offers tremendous potential and faces critical challenges near-term — but that each of us, as individuals and patients, ultimately will be the beneficiaries.

I invite you to explore the following pages, and I trust you'll find these individuals as simulating in print as we did in personal conversations. ■



Neil de Crescenzo

Partner, IBM Business Consulting Services

Partner in charge,
IBM Center for Healthcare Management

Andrew von Eschenbach, M.D.

National Cancer Institute
United States National Institutes of Health

Transforming Cancer into a Manageable Disease

"I'm fortunate to help lead the effort to make the phrase 'you have cancer' obsolete."

Few individuals are as visible on the national healthcare scene – or have set as bold an agenda — as Dr. Andrew von Eschenbach. The articulate director of the National Cancer Institute (NCI), the largest of the United States National Institutes of Health (NIH), von Eschenbach leads a staff of 4,500 scientists, clinicians, administrators and investigators exploring cancer at every stage. His $4.8-billion budget funds an impressive 60 NCI-designated Cancer Centers. Perhaps most remarkably, von Eschenbach has set a highly public goal to eliminate suffering and death from cancer by 2015. "We have it within our grasp to continuously and rapidly accelerate the pace of progress" in prevention, early detection and treatment, says von Eschenbach, 63. "I think it really is quite doable."

That's largely because NCI researchers have advanced beyond the previous "seek and destroy" approach to fighting cancer. Rather than subject patients to intensive, debilitating treatments that may not save their lives, NCI is pursuing far more tactical approaches designed to preserve healthy cells and improve patient outcomes. The shift is made possible by advances in genomics, proteomics and related technologies, along with fast-accumulating knowledge of cancer in genetic, molecular and cellular terms. "Because we're understanding cancer at a very fundamental level, we're able to create and define an entirely new paradigm of 'target and control,' " von Eschenbach says. He believes the disease soon will be more avoidable, easier to detect and eradicate in its early stages, and more manageable should it take hold. As a result, many cancers could become like diabetes or other chronic illnesses – manageable rather than fatal.

Von Eschenbach's 2015 goal took on sharper urgency in January this year, when the American Cancer Society announced that cancer has surpassed heart disease as the primary killer of Americans under age 85. Already the country's most feared disease, cancer strikes one out of two men and one out of three women during their lifetimes. "Cancer carries with it, for both the person affected and those who love and care for them, an enormous burden of physical and emotional suffering," von Eschenbach says. "As a health care problem, it's one of the most significant challenges we must pursue and eliminate."

NCI: Covering the Cancer Spectrum

Created by Congress in 1937 and broadened in scope by the National Cancer Act of 1971, NCI's considerable responsibilities include research, practitioner training and development, knowledge dissemination, and creation of a national program to conquer the disease. Among its efforts: supporting and coordinating research by universities, hospitals, foundations and businesses nationally and internationally; conducting research in its own labs and clinics; supporting relevant scientific education at universities; and constructing labs, clinics and other facilities. Says von Eschenbach, "NCI's sphere of influence goes far beyond Bethesda, Maryland," the city where NIH is headquartered.

Its mandate is equally sweeping. NCI is charged with extending cancer knowledge; developing more effective detection, treatment and prevention strategies; and delivering those interventions, among other tasks. The largest of NIH's 27 Institutes and Centers, NCI's budget is nearly 70 percent greater than that of its closest sibling, the National Heart, Lung, and Blood Institute. In fact, NCI alone commands 17 percent of NIH's

While no magic bullet will eliminate cancer, "magic strategies" are likely to be finely tuned to individual genetics.

$28.6 billion funding for the current fiscal year. As director, von Eschenbach holds dual responsibility for internal leadership and liaison with other federal agencies. "The real privilege of this role is that it's both intramural and extramural," he says. What's more, "I'm fortunate to help lead the effort to make the phrase 'you have cancer' obsolete."

NCI intends to pursue seven strategic areas to detect, prevent and develop novel treatments for cancer in the coming fiscal year. Integrative biology seeks to understand the complex networks within and around cancer cells. Molecular epidemiology investigates the disease's behavioral, genetic and other causes. Advanced technologies foster bioinformatics, imaging, proteomics and nanotechnology research. Public health efforts in prevention, early detection and prediction seek to reduce occurrence and improve prognoses. Integrated clinical trials prioritize and accelerate new treatment protocols. Strategic development of interventions supports drugs and technologies targeted at the molecular level. Overcoming health disparities aims to pare cultural, ethnic and other differences in awareness and caliber of care. Sums up NCI's 2006 budget proposal, "Our new paradigm for eliminating the suffering and death due to cancer is to prevent its initiation and progression at every possible point."

Of Medicine and Management

Von Eschenbach is NCI's 12th director and a nationally recognized urologic surgeon. He earned his medical degree at Georgetown University in 1967, spent three years as a lieutenant commander in the U.S. Navy Medical Corps, then moved to Pennsylvania Hospital in Philadelphia for residencies in general surgery and urology. There he quickly became an instructor at the University of Pennsylvania School of Medicine. He joined the University of Texas M.D. Anderson Cancer Center as a urologic oncology fellow in 1976 and was invited to join the faculty just one year later. After becoming urologic oncology department chairman in 1983, von Eschenbach rose to executive vice president and chief academic officer of the entire M.D. Anderson center.

There he led a faculty of nearly 1,000 cancer researchers and clinicians, becoming known for supporting novel, integrated research. Von Eschenbach meanwhile served on the editorial boards of professional journals and helped lead cancer organizations – including the American Cancer Society, of which he was president-elect at the time of his 2002 NCI appointment by President Bush. He also has published more than 200 articles, books and book chapters. "I spent my entire career dealing directly with treatment of cancer patients and with very fundamental research," says von Eschenbach. "I was aware of the reality of patients suffering and dying from this disease, but I also had first-hand appreciation of the tremendous progress being made throughout the world."

While policies and procedures differ between the public and private sectors, "It's actually much more striking to realize how similar they are," he says. Both arenas are mission-oriented and peopled by individuals committed to making a difference in others' lives. Von Eschenbach's mandate is all the more vivid because he is a cancer survivor himself. The experience gave him "a real sense of urgency" about managing the disease, along with appreciation for the impact that cancer has on both its victims and their loved ones. Cancer touches nearly all Americans directly or indirectly, he points out, and is likely to become more common as baby boomers age. But raw statistics, says von Eschenbach, "don't really tell the story" in terms of cancer's drastic impact on people's lives.

Preempting the Process

NCI now views cancer as a disease process, not an end state. Its researchers believe the process begins before birth, with genes that determine susceptibility to particular cancers, and is impacted by environment and personal habits during an individual's lifetime. At some point, the interaction of environment, habits and genetics results in developing a cancer cell or cells that become a tumor. The tumor spreads and metastasizes to other parts of the body, and only then does the cancer generally result in death. "We've begun to understand that process," says von Eschenbach, including why individuals are susceptible, how cancers develop and grow, and how they spread and metastasize. NCI also is exploring interaction between tumors and the individuals afflicted by them.

As a result, NCI is beginning to define and develop interventions to prevent the process from occurring, detect it early when treatment is safer and more effective, and eliminate or control its development to enable people to live much longer. "Cancer is actually quite vulnerable to these new opportunities," von Eschenbach says. "There are so many steps where we can begin to think about preempting the process." While no magic bullet will eliminate cancer, he believes there will be "magic strategies" finely tailored to individual genetics. Says von Eschenbach, "The tools we're developing are making it possible to get the right treatment for the right patient, at the right time, for the right reasons."

High-risk individuals accordingly may find themselves in one of three groups: those provided with information that helps them avoid cancer in the first place, those whose disease can be eliminated, and those whose cancer can be controlled effectively. For example, ovarian cancer now is nearly always fatal because the disease tends to be highly advanced by the time it's discovered. Combinations of new equipment and high-end computing might make ovarian cancer detectable far earlier using a single drop of blood, according to von Eschenbach. Similarly, NCI researchers are deploying genomics to define cancer not only by its anatomic site and distinguishing features, but its genetic makeup – a boon to developing highly effective, individualized treatment protocols.

Given that two out of three cancer patients now have a life expectancy of at least five years, "We're not starting at ground zero,"

von Eschenbach points out. "I believe the pace of progress will not be linear, but exponential." Delivery of care also is becoming an opportunity to understand cancer, and in turn, to direct research. "We're creating a circular continuum of discovery, development and delivery," he says. "I no longer see these efforts as being one type or another, but as part of a seamless integration."

As for the 2015 deadline, von Eschenbach draws an analogy to President Kennedy, who committed to putting a man on the moon before the U.S. had put anyone in orbit. Eight years later, NASA succeeded. "I believe we need to commit to a goal that's ambitious if we're going to mobilize and utilize the resources available," says von Eschenbach. What's more, he believes fervently that NCI must bring together academia and the private sector – including the biotechnology, pharmacy, information technology and medical device industries – in a "focused, cohesive, coherent way" to facilitate research and treatment.

Capitalizing on Information

For von Eschenbach, NCI's existing research facilities represent both a great opportunity and a considerable challenge. "Although we've created 60 individual centers of excellence, we haven't really integrated them into a cohesive platform," he says. In response, the institute has launched the Cancer Biomedical Informatics Grid (caBIG) to create a common bioinformatics platform. The voluntary network "will enable all our cancer centers to plug and play" into a virtual Web of NCI's research infrastructure, sums up von Eschenbach. Nearly 500 people from 50 NCI centers and other organizations now are working collaboratively on a three-year pilot that will integrate data from clinical trials, basic research, and other traditionally separate domains regardless of physical location. Says von Eschenbach, "Capitalizing on that kind of opportunity and infrastructure is one of the elements I believe will accelerate the timeline to success."

He also believes that university faculty, despite being notoriously protective of their own research, will participate eagerly. At present, individual NCI centers have invested substantially in developing bioinformatics platforms, yet many can't communicate even with those doing very similar work. By providing the infrastructure, NCI will spare cancer centers and universities from having to invest precious funds and time in building or customizing information systems. While NCI will continue emphasizing individual excellence, "we'll recognize that we'll accomplish our mission as a team," he says. "By yourself, you'll incur enormous costs, and you won't achieve your goal."

Yet for all the progress being made on the scientific side, he is critical of healthcare's sometimes-reluctant embrace of information technology (IT). Consider banking, for example. "We're all walking around with little cards in our pockets that can plug into machines on the sidewalk," he points out. Automatic teller machines (ATMs) not only dispense local currency, but allow us to access and update our account information. Among many other benefits, he believes a centralized information infrastructure would enable patients enrolled in NCI clinical trials to receive appropriate care, wherever they happen to be, should illness or complications set in. Says von Eschenbach, "I think the healthcare professions quite honestly need to take a lesson from many other industries."

The NCI's Cancer Biomedical Informatics Grid will integrate 60 individual centers into a cohesive bioinformatics platform for the first time.

Nor does he believe that privacy will be at risk. As in banking, where each bank retains information on its own customers, von Eschenbach believes healthcare information can and should be distributed. "We're not going to create a single, national repository," he says flatly. Moreover, the model calls for individuals to have personal information numbers (PINs) like those used with ATMs, enabling each patient to control his or her information. Says von Eschenbach, "All we want to do is create an infrastructure and a platform that, with the patient's permission, when appropriate, allows the information to be shared." The purpose: "Simply to serve a patient's needs and best interests."

Culturing Powerful Partnerships

At the same time, NCI is reaching out to other federal agencies. For example, the Food and Drug Administration (FDA) will be a major player in caBIG, enabling the agencies to seamlessly integrate discovery and regulatory data. Another effort with David Brailer, who is leading the federal electronic health initiative, seeks to integrate and coordinate NCI information in ways consistent with emerging, national standards. "We're seeing our opportunities not as cancer-centric, but cancer-led," von Eschenbach says.

That includes opportunities to accelerate the discovery and development throughout the scientific pipeline. Von Eschenbach spearheaded a partnership with the Center for Medicare and Medicaid Services to deliver emerging, targeted drugs and devices. NCI also is working closely with the Centers for Disease Control and Prevention, the American Cancer Society and other organizations to help develop community-based programs. The Institute even will collaborate with the Department of Energy for nanotechnology initiatives. Says von Eschenbach, "What that points out is how much we will accomplish as a nation when we collaborate and coordinate our efforts."

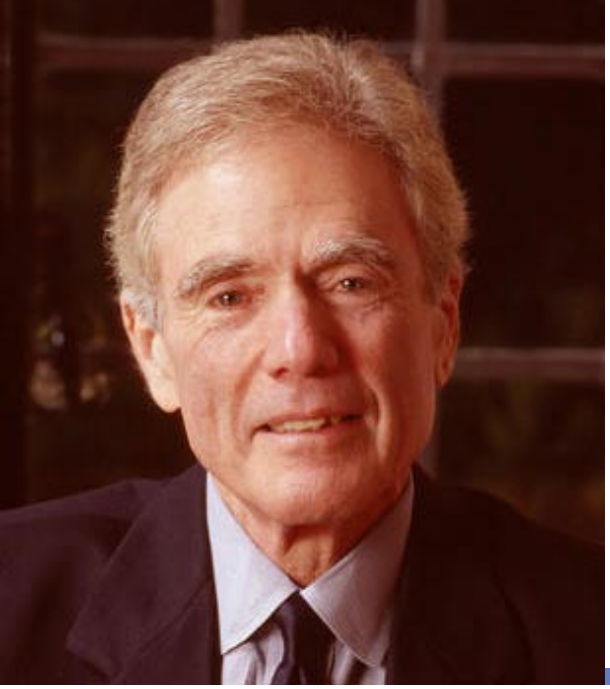
Technology as Catalyst

To von Eschenbach, the convergence of medical research and information is creating immense opportunities: IT that accelerates scientific research of all kinds, genomics and proteomics that enable researchers to decipher the biochemistry of a specific cancer, and fields such as nanotechnology that remain largely unexplored. He believes many discoveries also will have implications for other diseases. For example, progress in understanding angiogenesis, or how cancer cells trick the body into making new blood vessels to support a tumor, may greatly accelerate diabetes treatment. "Across the entire spectrum," enthuses von Eschenbach, "technologies are the catalyst for progress."

In fact, he sees NCI as catalytic as well. By moving away from a healthcare system based on statistical probabilities, such as treating a patient with a particular chemotherapy drug because it has a 60 percent chance of success, the Institute can further the nation's move toward personalized medicine. The bonus, von Eschenbach contends: fewer wasted resources as patients no longer are given unnecessary or ineffective treatments. "I really believe cancer can serve as a model for healthcare reform in this country," he says.

At the same time, von Eschenbach visualizes NCI helping spearhead anti-cancer programs abroad by helping nations leapfrog existing treatments. Just as cell phones dramatically accelerated phone use in nations with inadequate poles and lines, new treatments could eliminate certain cancers prominent in the developing world altogether, he believes.

In short, the size of his challenge may be exceeded only by his enthusiasm for meeting it. Says von Eschenbach, "When you combine technologies with the creative and intellectual talent of the cancer research community, the potential is mind-boggling." ■



Ralph Snyderman, M.D.

Duke University

Promoting a New Medical Paradigm

"I believe we need a paradigm shift from the current practice of medicine."

If the term "prospective medicine" isn't yet a household phrase, it's probably only because a few journalists and legislators still haven't met Dr. Ralph Snyderman. Duke University chancellor emeritus and a highly regarded professor in its School of Medicine, Snyderman is promoting a genuinely revolutionary approach to healthcare delivery.

In essence, he says, medicine is practiced backwards. Physicians focus on treating diseases, a holdover from medical practices dating to the late 19th Century, not on altering the probability of an individual developing a specific disease long before it manifests. Yet rapid-fire discoveries in genetics and related technologies mean conditions now can be identified — and headed off — before they emerge. This is Snyderman's view of prospective medicine: anticipating risk, proactively preventing disease, or treating it based on each individual's genetic and environmental factors. Contrast that with current practices, which focus almost exclusively on reacting to events after they've occurred.

As such, Snyderman's approach takes the emerging field of "personalized" or "individualized" medicine considerably further. Personalized medicine, in which treatment reflects an individual's unique genetic makeup, clearly is a tremendous boon, and Snyderman is enthusiastic about its potential. But as with traditional care, personalized medicine usually begins after symptoms appear. That's often relatively late in the progression of a disease, when physicians are least able to arrest its march or affect a cure.

Similarly, Snyderman's approach leaps far beyond generalized "lifestyle counseling" on healthy habits. Although prospective medicine inherently contains a strong educational component, personalized medicine is far more comprehensive than raising awareness of generalized risk. "I believe we need a paradigm shift from the current practice of medicine," says Snyderman, "to one where individuals are assessed to determine their own risk of diseases, and then are given the means to avoid them."

As an example, he cites a common patient type: a middle-aged man with severe heart disease. "If you take that person and go back to birth, he had a range of susceptibility for heart disease based on his genetics," Snyderman points out. Over time, the impact of environmental exposures, stress and numerous other factors converted the man's initial risk profile into specific metabolic changes – which inevitably triggered progressive coronary artery disease. "We should not be focusing solely on making the diagnosis once the problem occurs, then trying to avoid further problems," asserts Snyderman, 64. "In this new model, we would know of the person's heightened risks and could engage him in prevention early on." For instance, physicians might caution the youth as early as 15 years old, then track his progress over the decades. Says Snyderman, "Imagine how much more effective such an approach would be."

He maintains that prospective medicine is also the most viable means to control healthcare costs over the long term. By postponing diagnoses until diseases are in their latter stages, the current system focuses on the stages when treatment must be most intensive – and most expensive. The result is a costly, wasteful and often ineffective healthcare structure driven more by tradition than by scientific principles, Snyderman contends. Only by integrating rapidly emerging breakthroughs in genetics, related biomedical fields and information technology, he says, can the United States rescue a healthcare system that Snyderman calls "broken and unsustainable in its present form."

Reimaging Academia - as Career Path and Care Provider

Snyderman's resume is both gold-plated and a departure from the academic mainstream. He earned his M.D. at the State University of New York, performed his internship and residency at Duke, then spent five years exploring immunology at the National Institutes of Health (NIH). Snyderman moved back to Duke in 1972, receiving global recognition for inflammation research into the precise molecular understanding of the functions of white blood cells, and three years later was heading Duke's rheumatology and immunology division. Unlike the vast majority of university faculty, however, Snyderman jumped to the private sector in 1987. He spent two years as senior vice president for medical research and development at Genentech, Inc., one of the world's most successful

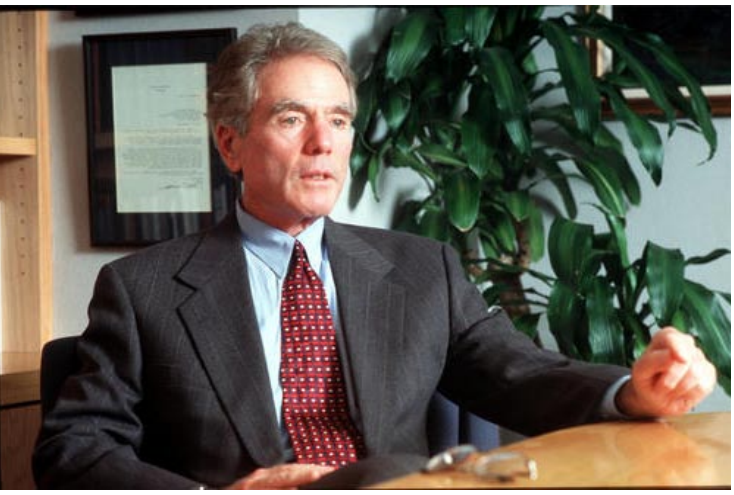
"Prospective medicine would be shallow if it only began with the onset of disease."

biotechnology companies, before returning to Duke as chancellor for health affairs and dean of the medical school.

Over the next 15 years, Snyderman dramatically repositioned Duke Medical Center, developed the Duke University Health System — a healthcare network of which he was also president and chief executive officer — and substantially expanded the Health System. Those initiatives transformed Duke Medical Center from a specialized academic model to a novel, highly respected system for comprehensive patient care.

He meanwhile served on the esteemed Pew Health Professions Commission for public policy, was a counselor for the Institute of Medicine, chaired the Association of American Medical Colleges (which represents nearly all accredited North American medical schools, major teaching facilities, faculty and students), and was president of the Association of American Physicians, among many other roles. Now on sabbatical at the University of California at San Francisco, Snyderman is writing, working to develop tools to facilitate the viability of prospective medicine, and catching up on the region's leading-edge biotechnology industry with venture capitalists.

Snyderman began his "glorious, exciting years" as Duke's health affairs chancellor in 1989 determined to boost the medical school's academic rank and reputation. But he quickly realized those goals weren't enough. "Healthcare was changing dramatically," he says. "It became really clear that the structure of the medical center wasn't viable



going forward." Like most of its counterparts, Duke focused tightly on research and education. Clinical care, which revolved around narrow specialties, was largely a stepchild to the academic mission. Alternatively, Snyderman felt, "we ought to be using our tremendous academic capabilities to develop better models of healthcare." Rather than expand the classical academic model, he encouraged his team to "envision healthcare in a more ideal state, driven by the strengths of our academic mission."

The result: "transformation of Duke from a medical school, research and teaching hospital into a comprehensive health system" that includes Duke University Medical Center, two community hospitals, numerous clinics, hospice and home care, wellness centers, and community partnerships. Physicians and staff stress patient education, outpatient procedures and other less costly alternatives, while continuing to provide specialized inpatient care. In sum, Duke now views clinical care not as an end product, but as part of a continuous feedback loop. "We have a tremendous focus on using research and development to improve care," Snyderman says. At the same time, Duke strives to identify healthcare needs to hone Duke's curricula and research. That businesslike approach, adapted to an academic enterprise, is a notable departure from most university medical centers.

Premiering Prospective Medicine

Medicine makes its earliest professional appearance in Middle Eastern papyrus papers dating to about 3500 B.C. As recently as the late 1800s, however, illness continued to be attributed largely to metaphysical concepts like miasmas and humors, or simply to sinful thoughts and behaviors. Medical concepts turned radically with the emergence of science, including germ theory, biochemistry, pharmacology, and insight into specific pathological mechanisms of disease. But "the initial focus was on understanding disease and we're still emphasizing the pathology of disease," Snyderman says.

In his view, modern science is enamored by the quest to identify specific molecular defects that cause disease. But given the complexity of chronic illnesses, "I find it highly reductionist to believe that for every human malady, there's a single molecular defect," says Snyderman, "and that our approach should be exclusively to find and fix it." Physicians are trained to begin the interaction with patients through a specific "chief complaint," then work to identify and address the disease. "This is an appropriate disease-based approach, but it's not sufficient to foster prospective care," Snyderman points out. "The current medical record and approach are really a root-cause analysis of failure."

The biotech revolution – including genomic sequencing, gene expression analyses, proteomics to analyze thousands of proteins within tissue samples, metabolomics to measure hundreds of metabolites, molecular-level diagnostic imaging, and medical informatics that process massive quantities of research data – may turn the traditional model of medical practice on its head. "These technologies are giving us the capability to look at the initial development and progression of disease," enthuses Snyderman. "Right now we think of disease starting from the time we become aware of its clinical appearance. Why don't we start viewing inception as the time the risk appears, and then follow it forward?" Put differently, he says, "prospective medicine would be shallow if it only began with the onset of disease."

To Snyderman, the model is clear: anticipate and minimize each person's risks for the onset and progression of disease. Such a system would require health risk assessments, early detection, means for prevention and early intervention, individual health plans, effective delivery systems and a viable payment structure. He advocates initially attacking the chronic diseases – atherosclerosis, heart failure, cancer, diabetes,

neurodegenerative issues and psychiatric disorders – that account for a stunning two-thirds of American healthcare expenditures.

For example, information systems could process vast quantities of genomic, imaging, biomarker and other data to create meaningful statistical inferences for each individual for these diseases. More powerful diagnostic methods could be developed — as could methods to delay disease progression – before underlying pathology becomes irreversible. And existing, proven treatment could be implemented much earlier and customized for each person.

Prospective medicine would anticipate and minimize each person's risks for the onset and progression of disease.

To that end, Snyderman now is working to predict risk under open-heart surgery. Surgeons currently must decide whether to utilize heart-lung machines during coronary bypass surgery based on broad population data. But certain individuals connected to the machines have a relatively high incidence of complications in the following year. To identify those individuals most likely to suffer lasting damage, Snyderman and his colleagues are mining large cardiovascular databases to locate other, more specific risk indicators. Says Snyderman, "Even though it's narrowly focused, let's find a handful of these applications and develop them now — as proof of concept for the value of health risk assessment and risk prediction."

The Information Connection

Following Snyderman's lead, Duke University Health System is working to bring patients closer to prospective medicine. Duke seeks to integrate patient records, lab test results and other clinical data with genetic and proteomic research. The outcome will be a more personalized – though not yet fully prospective — view of each patient's medical condition that simultaneously protects individual privacy. Duke wants to locate and screen clinical-trial candidates. "In the clinical arena, aggregation of large amounts of data is essential" to build knowledge, Snyderman says. The resulting infrastructure and processes will support collaboration within Duke and, through entities such as the National Cancer Institute, with other health systems.

Similarly, he believes that the National Healthcare Information Infrastructure now under development could be a tremendous boon for medical quality and cost containment. "It's absolutely necessary," Snyderman says. He believes lack of standards and ability to communicate across institutions, or even within the same institutions, have cramped both medical progress and cost control: "One of the biggest obstacles to rationalizing medical practice has been our tremendous insularity and segmentation." But developing protocols across research and clinical practice, institutions and industry segments "is going to take a national effort," he acknowledges. "There's almost no single institution, or even a small aggregate of institutions, capable of solving the problem by itself."

What's more, large-scale, interactive databases would be immensely helpful as people move across physicians' offices, clinics, labs, hospitals and insurers. "The information needs to follow them in some appropriate way," Snyderman says. Contrast that with the current system, in which patients often find themselves carrying their own records between doctors or wandering hospital corridors with their own medical charts and no idea where to go. "The culture needs the will to say, 'We need to fix this for all the right reasons,' " he says. " 'It's humane, it's better medicine, and economically it's a necessity.' "

Toward Real Cost Control

In Snyderman's view, seemingly uncontrollable healthcare costs can be traced not only to lack of prospective care, but to current reimbursement practices. The Duke University Health System, for example, launched a preventive care program for congestive heart-failure patients that improved outcomes and pared costs by nearly 40 percent. Its reward? Because patients traded costly, well-reimbursed inpatient procedures for education and outpatient care, which are far less expensive to administer but reimbursed at rates below actual costs, Duke's margins for congestive heart failure treatment fell sharply. Clearly, that experience is a strong disincentive for institutions to offer preventative, let alone prospective, care.

At first glance, the heavy research emphasis suggests that prospective medicine would require huge up-front investment. But "I'm not sure that it's more expensive than the current system," Snyderman muses. The same number of dollars now going to late-stage care "could be redistributed to intervene in an appropriate, thoughtful way at an earlier time," he says. "I could not guarantee that overall healthcare costs would go down, but I certainly could guarantee greater efficiency for each dollar spent." Giving individuals a greater stake in their own health might also encourage self-monitoring and lifestyle changes. With precise information on their own risks, "you have to hope individuals will take more responsibility," Snyderman says. Whatever the relative cost, prospective care "will be more rational," he says. "It puts prevention foursquare on the individual."

Charting the Future

Snyderman would roll out prospective care in a way that generates meaningful savings early on – and avoids driving up costs before the nation realizes benefits. Currently, the Centers for Medicare and Medicaid Services (CMS) operate with a budget of about $650 billion annually. "I suspect that one could take $200 million to $500 million a year, which is almost budget dust, and fund a number of regional pilot projects in prospective care" that would generate value within three years, Snyderman says. Among the eventual benefits: improved outcomes, better patient safety, greater opportunity for individuals to be responsible for their own health, and more affordable cost structures. Nor does he foresee many alternatives. "I don't think healthcare can continue in the way we've been going for another three to five years," he says. "The current system is unsustainable."

The same couldn't be said of Snyderman, who plans to return to Duke as a fulltime faculty member in mid-2005. There he'll teach medical students and residents; mentor Ph.D. students; conduct inflammation research; and assist the new chancellor, among other activities. And, of course, he'll work toward prospective care, including how best to address infrastructure, technical and cultural hurdles. It seems safe to say there will be no dust, budgetary or otherwise, under Dr. Ralph Snyderman's energetic feet. ■

Denis Cortese, M.D.

Mayo Clinic

Blending Leading-Edge Medicine with Traditional Patient Care

"We're at a point with IT and genomic-based analytical techniques where we can achieve more in the next 10 years than we have in the past 100."

If two words are synonymous with "medical excellence," they well may be "Mayo Clinic." Often the destination of choice for patients with complex or rare diseases, Mayo Clinic is renowned for its collaborative, intensely thorough approach to patient care. Its physicians and staff are acclaimed for achievements in practice, education and research, any one of which might be remarkable at another institution.

From its roots as a small-town medical practice in 1888, Mayo Clinic has grown into a comprehensive institution with three high-profile locations around the United States, along with numerous other health-related services. The organization operates one of the nation's most highly regarded medical schools. Its celebrated researchers are pioneering biotechnology and bioinformatics frontiers. Yet Mayo Clinic also is known for its caring, compassionate attitude toward patients — including the determination to treat each person as an individual – despite its considerable complexity and scale.

In fact, what comes across most clearly in conversation with president and chief executive officer Dr. Denis Cortese is Mayo Clinic's exceptional focus on collegiality. An accomplished pulmonary physician and researcher, Cortese oversees an annual budget of $5 billion, sees patients, teaches in Mayo Clinic College of Medicine and participates in a near-dizzying lineup of national and international boards. He is quick to credit his physician colleagues and adamant about the caliber of Mayo Clinic staff. "The values here really are on teamwork and integration," says Cortese, an affable, youthful-looking 61. " Mayo isn't about personal gain. It's about working with each other to solve patients' problems."

Small wonder that Cortese also is passionate about the state of American healthcare. He believes the system should mirror Mayo's philosophy of putting patients' needs first – and that such a goal is fiscally achievable. While public dialogue centers on the breakdown of the current system, Cortese points out that U.S. healthcare neither was created, nor evolved, as a cohesive entity. "What we have is a loose confederation of public and private interests that too often conflict with each other," he says. "We all have a responsibility to unite and share knowledge." Cortese accordingly supports reforms that would redefine the roles of the federal government, hospital management companies, insurers and other industry sectors. "We need to give people access to the best possible care, and do it in cooperative, cost-effective ways," he says. "Dramatic structural changes will enable healthcare to serve our society better."

Epitomizing Excellence

Mayo Clinic itself is renowned for a comprehensive, systematic approach to delivering high-caliber care. The world's largest private, not-for-profit healthcare organization, the organization may be best known for its clinics in Rochester, Minnesota; Jacksonville, Florida; and Scottsdale, Arizona. It employs 47,000 individuals, including 3,000 physicians and 2,000

clinical residents and research fellows. Their aim: to diagnose and treat all patients accurately and thoroughly by tapping collective knowledge and expertise. Physicians frequently review one another's notes; consult during patient exams; and engage in regular, cross-specialty information sharing and peer assessment.

Significantly, at the beginning of the last century, Mayo Clinic was the first American healthcare entity to develop a unified patient record – and ensure that record arrives in the hands of each caregiver before she or he sees a patient. A variation of the original system, in which records shot through tubes to their destinations, is still in use today. In this century, an electronic medical record is at doctors' and other caregivers' fingertips at all times.

For the good of patients, said co-founder Dr. Will Mayo in the early 1900s, "Individualism in medicine can no longer exist."

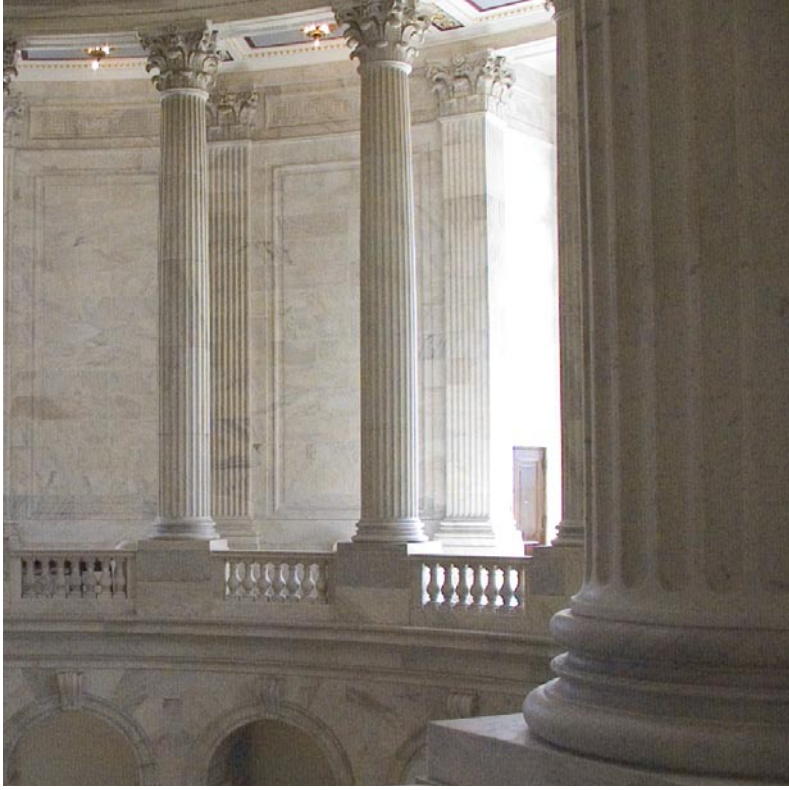
The peer-review approach continues into its management structure. Unlike virtually any other American healthcare entity of its scale, Mayo Clinic is physician-led. Doctors balance medical practice, teaching and research while rotating in and out of executive roles. Management decisions, whether involving business issues or patient care, are made by a physician-administrator team. In essence, the structure resembles a professional partnership more than a corporate hierarchy. Mayo Clinic's leaders historically have fostered the same cooperative spirit throughout the organization. That may explain why Fortune magazine ranked Mayo Clinic as one of the nation's "100 Best Places to Work" for the past two years – and why its benefactors provided $136 million in research, education and other funding in 2003 alone.

Joining Medicine with Management

Cortese's own career is deeply intertwined with Mayo Clinic. He received his medical degree from Temple University in Philadelphia and in what was clearly a life-defining decision, began his internship and residency at Mayo Clinic in 1970. Four years later, Cortese left to serve in the U.S. Naval Corps, returning to Rochester – then the sole Mayo Clinic location — as a pulmonary medicine specialist in 1976. He quickly became visible for his pioneering, successful work in treating lung cancer with photodynamic therapy.

Cortese was appointed to the Mayo Rochester board of governors in 1987, the start of a leadership path he has followed for nearly two decades. In 1993, he moved to the new Mayo Clinic site in Jacksonville, where he was appointed to the board of governors two years later. Cortese chaired Mayo Clinic Jacksonville's board of governors between 1999 and 2002, served on Mayo Clinic's overall board of trustees from 1989-1993, and rejoined that board from 1997 to the present. He returned to Rochester in 2003 to serve as president and CEO.

Given the institution's three-pronged commitment to practice, education and research, Cortese is also a practicing pulmonologist and a professor in Mayo Clinic College of Medicine, and was engaged in research funded by the National Institutes of Health from 1977 to 1986. Elsewhere, he is a member of the Harvard/Kennedy School Health Care Delivery Policy Program and Healthcare Leadership Council. Cortese serves on the advisory boards of the information technology (IT)-oriented World Community Grid and a Rand Corporation project examining the value of IT in healthcare, among other entities.



Broad Scope, Tight Focus

Mayo Clinic's reach is both broad and deep. Its three sites house practitioners in virtually every medical specialty. Mayo Health System, a network of clinics and hospitals, delivers care in Minnesota, Iowa and Wisconsin. Mayo Medical Ventures licenses and commercializes tools for medical practice, runs a pharmacy and publishes medical information. Mayo Collaborative Services Inc. provides specialized referral laboratory and pathology services. Other entities include a national air-ambulance company, a third-party benefits administrator, a nurse help line, and onsite pharmacy services.

On the academic front, Mayo Clinic College of Medicine is training an astounding 3,000 practitioners and researchers, including 160 students and 1,900 residents. The balance is made up of graduate students, physician-scientists and nurses. Even the organization's scholarly journal, Mayo Clinic Proceedings, ranks among the top three general medical journals read by internists and general practitioners in the United States.

Despite the institution's scope, its mission is simple: "Mayo will provide the best care to every patient every day through integrated clinical practice, education and research."

One of Mayo Clinic's primary differentiators is that each of those elements is expected to inform and drive the others. In a commonly used internal analogy, the approach is something like a tricycle. The front wheel, patient care, provides direction; the rear wheels, one each for education and research, power its momentum.

In fact, Mayo's 2005 research budget is over $400 million. About $270 million stems from competitively awarded National Institutes of Health grants, with the balance contributed from operating funds, private sources and by more than 132,000 benefactors. Says Cortese, "Research is absolutely vital to the way we practice our specialties and advance the care we give our patients."

That care has proven a remarkable draw. Mayo Clinic patients often are referred by their primary-care physicians or specialists, yet a large number also seek out its services on their own. Mayo Clinic has no contractual relationships that require people to utilize its care. Says Cortese, "All patients who come to us do so because they choose to."

Yet Mayo Clinic physicians and staff treated over 511,000 patients at its three locations in 2003. Mayo Clinic provides those services with slender operating margins, channeling its revenue to support education and research. Physicians are salaried so that they can focus on providing superb care, not selling additional services or billing more hours. Says Cortese, "It often comes as a surprise to people to discover that we're really driven by mission and not by money."

Tradition and Transformation

Mayo Clinic's founders hardly could have visualized its eventual, worldwide reputation. In 1864, Dr. William Worrall Mayo moved to Rochester to examine new Civil War recruits for the Union Army. When a tornado hit in 1883, a local Catholic mother superior, Mother Alfred Moes, offered to build and staff a hospital if Dr. W.W. Mayo and his sons – then in medical school — would provide care. They agreed, and brothers William J. and Charles H. Mayo soon came aboard. Faced with a burgeoning practice, the Mayos opted to bring in a physician partner in 1892. Another partner, Dr. Henry Plummer, developed the Mayo's unified paper record system in 1907. The Mayo brothers' collaborative processes were also the beginning of a new healthcare dynamic. For the good of patients, said Dr. Will Mayo at the time, "Individualism in medicine can no longer exist."

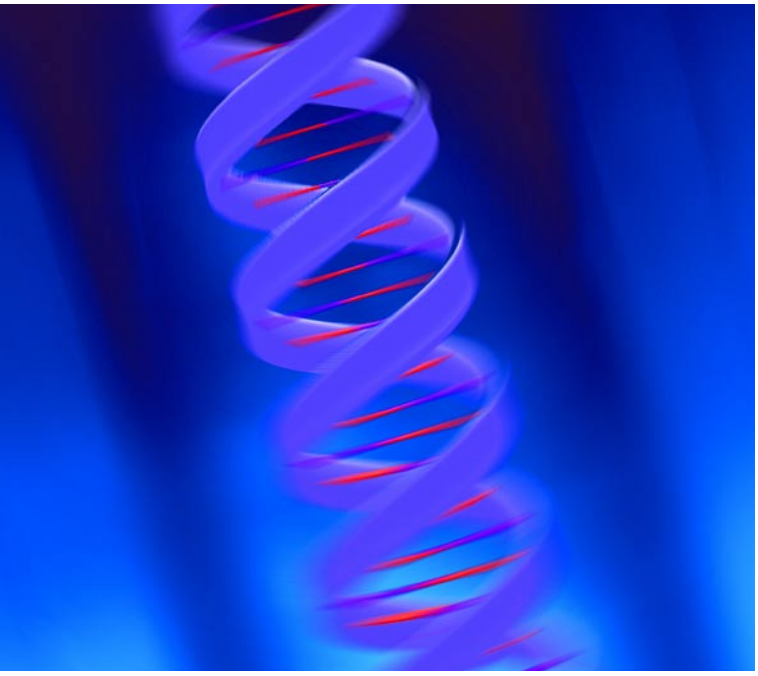
Mayo Clinic milestones include creating some of the nation's first medical specialties and specialist

training programs, including orthopedics, neurology, thoracic surgery and dermatology. Its physicians developed the cancer-grading system, isolated cortisone and thyroid hormones, and effectively treated tuberculosis for the first time. The institution proposed then-novel insulin therapy for diabetics, performed the first FDA-approved total hip replacement and introduced CT scanner use in North America, among many other breakthroughs. Its researchers now are exploring genomics, proteomics and other breakthrough technologies, along with efforts such as large-scale clinical data mining.

Since its founding, Mayo Clinic has trained more than 15,000 physicians and treated more than six million patients. What hasn't changed, says Cortese, is the philosophy summed up by Dr. Will Mayo in a 1910 speech: "The best interest of the patient is the only interest to be considered, and in order that the sick may have the benefit of advancing knowledge, a union of forces is necessary."

Evolving Information Technology

At the point that Mayo Clinic decided to shift from paper-based to electronic patient records, it already had a unified record for each patient — regardless of how many physicians, medical specialties or other services were involved in that person's care. That put the organization substantially ahead of many healthcare entities, which must struggle to collect data, in differing formats, from different physicians, departments, locations and information systems. As a result, "We were looking to information technology to take us to the next level," says Cortese. "We knew there were opportunities in research and patient care. The question was how to extract the most powerful, or maybe revolutionary, information out of the wealth of data we have — and how to use this information to generate new knowledge."



Mayo and IBM since have dedicated three years to combining 5 million records into a single clinical database. Using a system that is designed to protect data security and patients' privacy, physicians and researchers will be able to access comprehensive, integrated records – including patient files, lab results, X-rays and electrocardiogram results — from consenting Mayo patients. Following an agreement in 2004, Mayo and IBM are extending the effort to include data mining and pattern-recognition tools, which could help generate new therapies and lead to genuinely personalized medicine. Researchers also will deploy pattern-recognition tools to search for relationships among specific proteins, genetic makeups, and responses to treatments.

"We need tremendous infrastructure to translate [genomic and proteomic] discoveries into meaningful patient care."

Such capabilities eventually may aid doctors in making patient-care decisions, such as designing an individual's chemotherapy protocol based on the presence or absence of certain genetic markers. Rather than treating with broadly based chemotherapy, a physician could tailor the protocol to spur efficacy and reduce debilitating side effects. Says Cortese, "We're at a point with IT and genomic-based analytical techniques where we can achieve more in the next 10 years than we have in the past 100."

Concurrent with those projects, Mayo will become the first medical entity to harness IBM's Blue Gene® supercomputer for molecular modeling of disease. "When you connect medical records with new

discoveries in areas like genomics and proteomics, you're talking about creating a huge amount of information," says Cortese. "We need tremendous infrastructure to translate these discoveries into meaningful patient care."

Advancing the Dialogue

Yet the most advanced medical technologies are unlikely to benefit a broad range of Americans without changes to healthcare delivery. To that end, Cortese suggests that healthcare entities, public and private, focus on several goals. One is to facilitate transparency of care, in which systems could be established to enable doctors and hospitals to share information on medical errors or near-errors without fear of reprisal. Another is to initiate protocolized treatment, in which physicians would be responsible for applying the best standard of care – but practice their art by deciding, jointly with patients, how best to treat each individual based on his or her unique circumstances and desires.

A third goal is to apply engineering-systems models to streamline the U.S. medical system and, ideally, to create a very large, adaptive learning organization. Possible roles for national government would be to help finance healthcare for those who cannot afford insurance, set standards for affordable healthcare, and foster development of IT standards. Cortese suggests that the latter should facilitate transparency of information; communication between patients and their physicians and nurses; and connectivity between individuals, hospitals, clinics and other healthcare delivery organizations.

Talk very long with Cortese, and you'll hear many more ideas, from concrete, readily implementable suggestions to long-range, wouldn't-it-be-great-if goals. But the consistent thread is an emphasis on providing patients with compassionate interactions, greater safety and consistently improving outcomes. What you won't hear much about is Dr. Denis Cortese. After all, he heads Mayo Clinic – and Mayo Clinic wouldn't exist without many other equally committed, concerned and exceedingly collegial employees. ■

Michael Blaszyk

Catholic Healthcare West

Turning Around a Terminally Ill Institution

"Anybody can do a turnaround [by cutting costs.] What's much harder is to do one systematically, and improve patient and employee satisfaction at the same time."

Four years ago, Michael Blaszyk walked onto what he calls a "burning platform" at Catholic Healthcare West. One of the nation's largest nonprofit hospital companies, San Francisco-based Catholic Healthcare West (CHW) had lost a staggering $1 billion in 4½ years, including $307 million in 2000 alone. Operations were painfully inefficient, labor relations were strained, and CHW's bonds had slid to near-junk status. The 41-hospital, $6-billion (2005 revenues) entity since has executed a remarkable turnaround. Caliber of care, employee and patient satisfaction, profitability and credit status have risen dramatically, while staff turnover has dropped. Among the leadership brought in to implement the turnaround: executive vice president and chief financial officer Michael Blaszyk.

Blaszyk may have seemed an unlikely choice for the job. He had not established himself as a high-profile corporate turnaround specialist or worked in the complex, pacesetting California market. Although Blaszyk, 52, was recruited from a major Midwestern university healthcare system, the network – like many of its academic counterparts – had much less autonomy than he discovered at CHW. Coming aboard was, says Blaszyk, "a demanding transition, but a rewarding one."

Under the direction of chief executive officer Lloyd H. Dean, who arrived just ahead of Blaszyk and recruited him, the new leadership team quickly repositioned CHW from a holding company to a hands-on hospital operator. Operations have been streamlined, hospital management responsibility decentralized, and intensive quality-improvement efforts put in place. By 2004, CHW had recovered enough to begin carefully acquiring hospitals. The company also logged a $246 million net income gain, or roughly a $500 million reversal from Blaszyk's arrival, four years earlier. "We've probably had the most dramatic turnaround in the healthcare industry," he acknowledges.

What's more, that turnaround has taken place in an organization focused on the poor and disenfranchised. CHW's mission revolves around providing high-caliber, compassionate care, particularly to those least fortunate or able to care for themselves, and on improving the quality of life in communities it serves. In a sign of its burgeoning resilience, CHW provided more than $560 million in charity care and community benefits in 2004.

About CHW

One of the largest Catholic hospital systems in the American West, CHW owns and operates 42 hospitals and healthcare centers in California, Arizona and Nevada. Its 8,000 physicians and 40,000 employees deliver care to more than four million people annually. CHW's roots stretch back more than 150 years, when eight nuns from the Sisters of Mercy order arrived in San Francisco to help care for residents overcome with cholera,

"Our goal is to achieve the highest-quality outcomes, and the way to do that is to measure variation."

typhoid and smallpox. In 1986, two Sisters of Mercy organizations joined their healthcare networks to create CHW, some of whose hospitals have operated for more than 100 years.

Like other nonprofit entities, which control 85% of the nation's 5,000 hospitals, CHW depends on patient fees, donations and borrowing under tax-exempt bonds. Nonprofits are forbidden from issuing stock, and any surplus revenue must be cycled back into hospitals annually. CHW also differs from non-Catholic operators, both for- and not-for-profit, in two notable ways: its emphasis on caring and advocating for the poor, and its triple-tiered governance structure. Rather than vest final authority in a Board of Directors, CHW's Corporate Members, which consist of Sisters who represent its sponsoring congregations (now numbering seven in all), have certain reserve powers and appoint Directors to a Board that, in turn, works with senior management.

Both its management structure and commitment to social justice, however, may have contributed to CHW's financial and operating woes. CHW had grown fast and haphazardly, resulting in complex administration that included 27 different Boards of Directors and 10 culturally conflicted regions. Other issues included regionalized decision-making unresponsive to hospitals' local needs, lofty operating costs, poor investment returns and an overstretched real estate portfolio. By 2000, the Sisters and the principal Board of Directors realized that without drastic intervention, the company was headed for certain financial disaster.

Under Dean's direction, Blaszyk and the executive team implemented a three-year, hard-hitting "economic revitalization" program for managing to precise financial and operational targets, along with softer ones such as staff and patient satisfaction. CHW now functions with a single, unified governance system; operational decisions carried out largely at the individual hospital level; and a balanced emphasis on its charitable mission, financial health and quality of care. While CHW has sold medical office buildings and some hospitals, the company did not engage in asset fire-sales or massive layoffs.

"Anybody can do a turnaround" through draconian cost-cutting, Blaszyk points out. "What's much harder is to do one systematically, and improve patient and employee satisfaction at the same time."

A Life in Health

To say that Blaszyk has spent his career in healthcare is almost an understatement. Beginning as a hospital orderly at the age of 18, Blaszyk completed his undergraduate studies at Wayne State University and earned an MBA in health services administration from the University of Colorado. He has served as director of health economics and finance at the Michigan Hospital Association, executive vice president at Boston Medical Center, and managing partner of consulting firm William M. Mercer's Northeast regional healthcare practice, among other roles. Blaszyk came

to CHW from University Hospitals Health System in Cleveland, Ohio, where he was senior vice president and CFO. He also co-developed the well-regarded "100 Top Performing Hospitals – Benchmarks for Success" study and taught at Boston University and Case Western Reserve University.

While his consulting skills proved "fully transferable" to executive roles, says Blaszyk, he finds a fundamental difference in accountability. Consultants may seek to provide the best caliber advice, but "as an executive, your role is to create the architecture and controls to ensure success," Blaszyk says. He also senses the distinction in visibility. "In an organization like CHW, it's essential to live the values" of dignity, excellence, stewardship, justice and collaboration, he says. "We're a very transparent organization, and a failure to show that in every area will cause people to lose confidence in you."

Blaszyk believes IT is vital for healthcare to match other industries' productivity gains.

That may be particularly sensitive for Blaszyk, who continually must reconcile CHW's goals of solvency and service. But rather than contradict one another, the two simply amplify the need for smart, information-based operations, he believes. "The better we manage our resources, the stronger we can be in realizing our mission," says Blaszyk. "Our goal is to maximize the use of resources to the good of the many." Blaszyk's current responsibilities bridge finance, operations and such atypical CFO tasks as co-developing CHW's values integration program.

Furthering Financial Management

Blaszyk and his team also took a somewhat unconventional approach to financial management. Early on, they determined that if CHW could bring all its hospitals up to the 25th percentile of CHW's best practices and productivity, the company would earn a 4 to 6 percent operating margin – precisely their target range. They accordingly focused on internal metrics, not industry standards. "We weren't concerned about what everyone else was doing," Blaszyk says. The result was a fresh, detailed look at finance, quality, safety and employee satisfaction measures that has positioned CHW as the performance-measurement leader among Catholic hospitals.

The "economic blueprint" developed under Blaszyk's direction and implemented at CHW had three principal components: focus on growth, improve same-store sales, and exercise disciplined real estate management. "I'd like to tell you it was innovative, out-of-the-box thinking," smiles Blaszyk, "but the truth is that it was very much back-to-basics." Specifically, that meant optimizing the collection cycle and net realizable value of revenue, upgrading peer management processes, and selling off under-performing physical assets. Reducing overhead, workers' compensation and employee turnover also topped the agenda. CHW simultaneously sought to cap supply chain costs and standardize information technology, which differed radically among regions and hospitals.

Among those targets, Blaszyk is a particularly keen proponent of expanded revenue cycle management, which he defines as "the interface between clinical and financial systems." In brief, many hospitals view the "charge master" – a record describing each patient's care as she or he traverses through various services and departments – as fee logs for each service performed. Blaszyk instead deploys the charge master to describe everything done for a patient, which improves CHW's ability to measure physicians' and hospitals' outcomes against each other. "Our goal is to achieve the highest-quality outcomes, and the way to do that is to measure variation," he says. By optimizing business processes and reducing unnecessary

variation, says Blaszyk, CHW de facto improves financial results: “If we can do that, we think we can be very successful.”

Given its charity mandate, CHW also extends the concept of revenue cycle management, typically seen as the process of arranging payment during patient scheduling, to other services. Its scope includes enrolling the uninsured in government programs, assessing their financial assistance needs, and arranging payment up-front. The dual benefit: more assured collection and less anxiety for patients already under considerable stress.

Improving Infrastructure, Rewarding Risk

One of Blaszyk’s first major moves: standardizing IT on a single platform. By 2000, CHW had spent $500 million attempting to create an internal system, with little to show for its investment. Blaszyk signed a 10-year, $600-million outsourcing agreement in 2001 to consolidate 20 separate data centers and numerous help desks with a single outsourcing vendor. That action generated $25 million in savings in the first year alone.

CHW recently committed $200 million to clinical and information management systems over the next seven years. The company now is developing solutions aimed at reducing errors and increasing quality of care. By 2010, CHW hospitals will be equipped with computerized physician order entry (CPOE), bedside medical device interfaces, adverse drug event rules and general clinical support. The result will be a system in which physicians and other care providers will have access to clinical information at the point of care, reducing the time to initiation of clinical treatment and improving outcomes. The changes reflect Blaszyk’s conviction that information-based decisions are crucial to effective management. “In God we trust,” he smiles. “All others bring data.” In addition, he considers creation of feedback loops – in which employees have access to impartial, accurate information — as essential to change. “Only then can organizations begin to understand what constitutes excellence,” says Blaszyk.

Better data also helped CHW shift responsibility to hospital executives, who know their markets best, and develop rewards that support positive results. CHW meanwhile put considerable effort into warming relations with its nurses, many of whom complained about burnout from long hours at less-than-competitive salaries. Changes have ranged from physical upgrades to better benefits and career development opportunities. CHW co-sponsors the California Nurse Mentor Project, which helps mentor and recruit in the critically understaffed field, helping reduce CHW’s 2004 turnover to below 10 percent. The company and its Northern California nurses recently agreed on mandatory overtime and a meaningful pay hike, a move also likely to pay off in better labor relations.

Among the results: four years of rising patient satisfaction, a 32 percent jump in employee confidence, and several hospitals that are top performers nationally – and/or considered the best places to work in their communities. In 2004, CHW completed a $1.4 billion bond issue, affirming investor confidence in its recovery. “We’re an organization based on accountability,” Blaszyk says, “and a culture with a bias for action.”

Toward A Healthier System

Blaszyk believes IT will be fundamental to helping healthcare, which has lagged other industries in productivity gains, catch up. In part, he says, the issue may be one of measurement, given that healthcare institutions have been unable to agree on what productivity metrics should be. But the discrepancy also can be traced to patients' rooms. Emerging systems promise to boost safety and quality by enabling nurses to chart patient records and perform other tasks as they administer care, rather than handwrite notes for later data entry – a time-consuming, error-prone process. Says Blaszyk, "The greatest productivity gains are going to made when we develop bedside solutions."

IT likewise may be vital for the nation to control healthcare costs, Blaszyk asserts.

"I think it's going to be incumbent on providers to do what's necessary to improve outcomes and safety," he says. As technology evolves, "it's going to cause us, as managers, to change – or we need to get out of our positions." Not surprisingly, he's a strong supporter of a national healthcare information network, including standardized records.

"The greater the emphasis on standardization, the lower the cost becomes," Blaszyk points out. "It's a good thing for the healthcare industry."

As to CHW's direction, it will be "more of the same," he says. That includes navigating in California, a state known for low public reimbursements, high wages, strict earthquake-construction standards – and a population base so diverse that CHW already operates a switchboard with operators who can translate in 144 languages. Existing internal programs and community planning efforts "position us to compete," says Blaszyk. Then, too, he's excited about the ongoing convergence of management and IT. Among the reasons: "Ultimately," he says, "the improvement of health."

Spoken like a former orderly, strong humanist – and new breed of healthcare CFO. ■

Carolyn Clancy, M.D.

U.S. Department of Health and Human Services

Leveraging Technology for Quality and Safety

The success of implementing healthcare information technology "…is about creating a system where the right thing to do is the easy thing to do."

Imagine your next visit to the doctor. Your doctor reviews your medical chart from a handheld electronic device. With the same device, the doctor accesses your medical history and reviews medications that have been prescribed for you by other specialists you have seen. Then, using a software program on the palm-sized computer, your doctor finds the best practices in the field based on your medical history and customizes health recommendations for you.

Dr. Carolyn Clancy envisions this scenario as the future of healthcare. As director of the Agency for Healthcare Research and Quality (AHRQ), she is working toward making this vision a reality. By funding research and information technology projects, AHRQ is striving to improve the quality and delivery of healthcare in America.

Leveraging Information Technology at the Point of Care

Part of the agency's $300 million budget is devoted to measuring the effectiveness of adopting information technology solutions at the point of care. Health Information Technology (HIT) is not new to the industry, says Clancy. "The billing enterprise has long been electronic for the most part. What's new is actually drawing on the power of this technology to influence the core clinical enterprise itself."

She explains, "Of all the people who are admitted to the hospital and have a heart attack, about 48 percent are given advice to quit smoking before they're discharged home." She admits that as a doctor herself, everyone assumes that this message is so self-evident that doctors often don't need to say it. One of the projects that AHRQ funded evaluated the use of reminders to improve the delivery of preventative care. She says that even though the reminders were fairly simple, the key new development is that they come up at the point of care and serve as reminders to physicians to discuss the recommended changes in behavior.

AHRQ also seeks to bridge the communication gap between internists, specialists, and patients through technology and education. Dr. Clancy says that patients "might see a specialist for their heart problem, have a primary care doctor, and then go to an orthopedist with an injury … none of whom have an easy way to share information with each other. They [doctors] tend to send each other letters. It's very common that one doctor makes a change in medication without talking to the others. You can see the potential for errors for adverse interactions from medications.…"

The agency has also "developed a campaign to help patients and their families understand what they can do right now to improve their healthcare." Called "Five Steps to Safer Health Care," the campaign asks patients to take low-tech and immediate steps, such as writing down the names of

"What's new is actually drawing on the power of this technology to influence the core clinical enterprise itself."

medications that they are taking and bringing them to the doctor. In the future, high-tech solutions will reside in the development and implementation of computerized physician order and electronic medical record systems.

Toward a National Information Infrastructure

During the coming year, the agency will make $50 million in grants to further the use of health information technology to improve quality and safety. For example, having full-blown electronic medical records will enable doctors to better diagnose ailments, prescribe treatment electronically, and communicate with patients. Since Dr. Clancy started her career as a general physician, she knows that it is rare to have the information you need at your fingertips. "What you've got at your fingertips is a chart," she says.

She looks forward to the time when doctors can turn to electronic medical records, read a patient's entire medical history, receive messages about best practices in care based on the content of their medical records. Dr. Clancy explains: "Some of us use Amazon.com ... you know that you can not only buy books there, but periodically they send you e-mails, so when you log on it says, 'Based on your prior purchases you might want this [new book].' " In the future, she envisions a smart system that knows the types of patients that a doctor sees and sends the physician prompts, including new information that is customized to the physician's practice.

To make such a system work, a national strategy for information technology infrastructure is needed. Department of Health and Human Services Secretary Tommy Thompson is very interested in and committed to this initiative, notes Clancy. For this reason, the agency will invest additional resources in making sure that information technology within all healthcare organizations, including physicians' offices, can actually be shared and connected across a community.

She envisions a smart system that knows the types of patients a doctor sees.

Otherwise, Dr. Clancy notes, the information problem that occurs when a patient sees multiple doctors still exists. "Each [doctor] may have a fabulous electronic medical record system, but if they can't talk to each other, you still have the same problem. Their offices are just neater, there's less paper around. The strategy of developing programs for sharing health information in a secure and confidential way within a community is something that we're going to be starting on this year, but will be amplified and expanded next year," she says.

Integrating Safety Improvement

Training is also a critical success factor in improving the quality and safety of healthcare. AHRQ's Patient Safety Improvement Corps trains healthcare professionals each year on how to implement new techniques and facilitate change management. As part of this program, the healthcare professionals spend four weeks onsite with AHRQ and the Department of Veterans Affairs. After the training, the professionals return to their home institutions to implement the new techniques to a heterogeneous and fragmented healthcare system. The desired outcome of this program,

says Dr. Clancy, is "to grow a cadre of professionals who will actually understand and be able to apply these new skills and techniques on the ground." The Patient Safety Improvement Corps provides hands-on practice for healthcare professionals to use new health information technology.

Dr. Clancy believes that the success of implementing health information technology is "not about people getting smarter ... and not about telling healthcare professionals to read faster and pull their socks up, so to speak." Rather, it "is about creating a system where the right thing to do is the easy thing to do." ■

Career highlights

- **Director, Agency for Healthcare Research and Quality (AHRQ), Department of Health and Human Services, and Clinical Associate Professor, George Washington University**
- **Director, AHRQ's Center for Outcomes and Effectiveness Research**
- **Director, AHRQ's Center for Primary Care Research**
- **Assistant Professor, Department of Internal Medicine, Medical College of Virginia**

This article is based on an interview conducted by IBM in early 2004. Secretary Tommy Thompson since has been succeeded by Secretary Mike Leavitt.

Jeffrey Trent, Ph.D.

Translational Genomics Research Institute

Deciphering Genomics, Developing a Novel Organization

"Laboratory discoveries that stay in the laboratory ultimately help no patients."

Dr. Jeffrey Trent already has had, by any measure, at least two outstanding careers. As a world-renowned cancer researcher, he has located genes that predispose patients to melanoma, breast cancer, and prostate cancer. As an executive, he simultaneously has held multiple posts at the National Institutes of Health in Bethesda, Maryland. There he served as founding scientific director of the National Human Genome Research Institute (NHGRI), the entity that successfully decoded the human genome, and senior investigator and chief of its Cancer Genetics Branch.

Now 52, Trent has taken on another highly ambitious endeavor: heading the two-year-old Translational Genomics Research Institute (TGen) in Phoenix, Arizona. An unprecedented $150-million public-private partnership, TGen aims to convert groundbreaking genetic research into diagnoses and treatments quickly and effectively. Trent, who is president and scientific director, already has succeeded in attracting a world-class team to a city with little previous visibility in genetics. He now heads 170 scientists and support staff, more than 80 percent of whom have advanced degrees, and intends to double that number over the next three to five years.

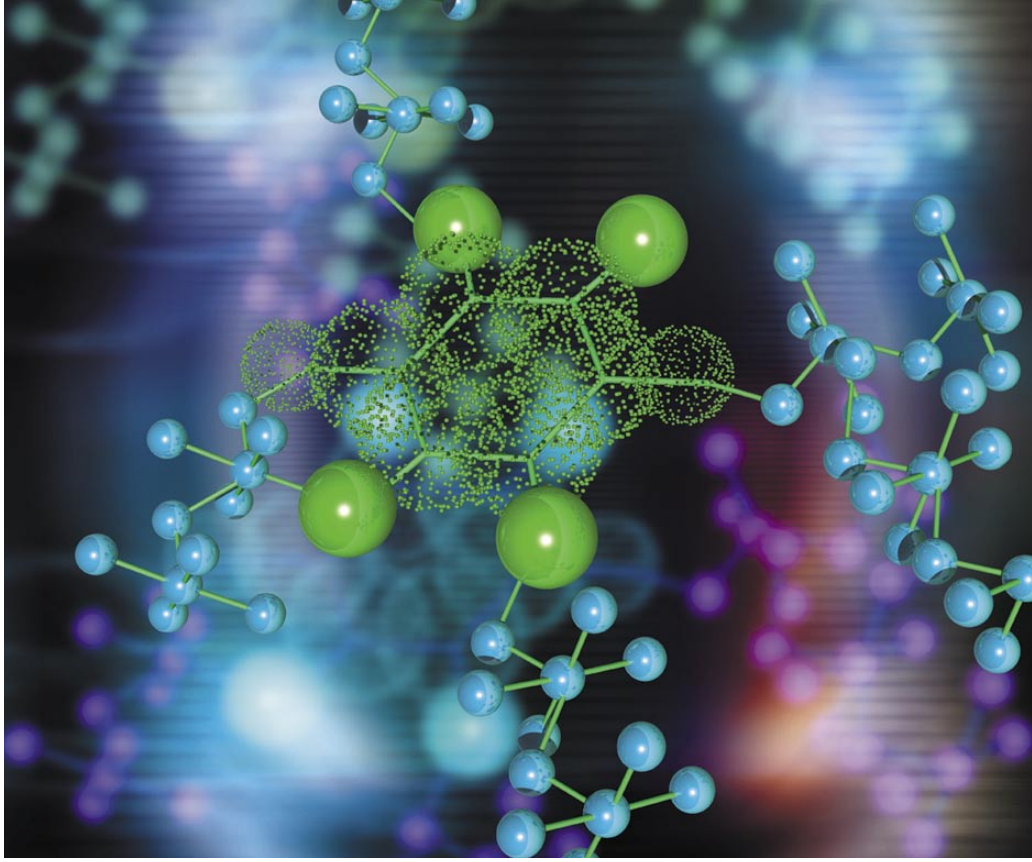
Unlike traditional, hands-on "wet labs," however, TGen also relies heavily on data-intensive, computer-based research. Says Trent, "Data-driven research is critical to the ability to be competitive today – and is absolutely the requirement for tomorrow."

At the same time, Trent is scientific advisor to the International Genomics Consortium (IGC), a nonprofit research organization established to generate large-scale, standardized healthcare databases that are released to the public domain for use by any interested researchers. These "gold standard sets," as Trent calls them, contain data that has been sampled, processed, modeled and otherwise treated consistently – a rarity in the young genomics discipline.

Between the two, Trent is very much the personal face of Arizona's burgeoning, high-profile genomics push. That effort includes drawing together its state universities' numerous healthcare programs and establishing a formal partnership with the esteemed Mayo Clinic. In healthcare terms, results ultimately could range from better, simpler genetic tests to highly complex, implanted devices that monitor, treat and wirelessly provide information on blood glucose, heart arrhythmias or other life-threatening conditions. Says Trent, "For such a young institute, we really have a remarkable opportunity to advance healthcare worldwide."

Translating TGen

In essence, TGen seeks to unravel the genetic components of common, often complex diseases. Its name reflects a relatively new field, translational research, which combines cutting-edge genomic advances with computational biology. TGen aims to create data and tools that help identify hereditary susceptibility to disease, genetic changes that enable diseases to take hold, and genetic factors that inhibit treatment efficacy. One of Trent's central aims is to move these discoveries to market swiftly. "Laboratory discoveries that stay in the



laboratory," he says, "ultimately help no patients."

TGen is focusing on common diseases such as cancer and autism, along with disorders that appear disproportionately in Arizona's unique setting. These include melanoma triggered by its sun-drenched climate, Alzheimer's and Parkinson's in its large elderly population, and diabetes in its Native American communities. TGen scientists also are exploring other, more rare genetic disorders that may hold keys to biochemical locks for more widespread diseases and conditions. The commonality lies in the reverse of traditional medical practice. Rather than focusing on the disease and giving all patients similar treatment, physicians will focus on an individual's genetics to find the most effective treatment for that person. For example, a pancreatic cancer patient with a genetic breast cancer marker might respond far better to a breast cancer drug — or vice-versa.

The institute was funded by what Trent calls a "remarkable consortium" of state, city, and county government entities, along with healthcare providers, nonprofit foundations, and the regional Salt River Pima-Maricopa Indian community. Nearly $100 million in coalition funds already has gone into TGen operations, while another $50 million has financed infrastructure and facilities. The latter includes a freshly completed, state-of-the-art headquarters where Trent's team moved in late 2004. Plans already underway include a medical school affiliated with the University of Arizona (UA) and Arizona State University (ASU), construction or renovation of over one million square feet of laboratory and office space, and a new hospital next door.

Into the Gene Pool

Just as distinctive as TGen's backing is the time frame in which it was created. Within five months of an initial meeting at Arizona Governor Jane Dee Hull's office in early 2002, the founders had succeeded in raising $90 million. Trent came aboard less than six months later, and TGen was operational within one year of its conception. Arizona voters since have approved a half-cent sales tax that will provide $1 billion for biomedical research across its universities over the next two decades. Last year, the Arizona state legislature added nearly $500 million to the effort despite a budget deficit at the time. The Salt River Pima-Maricopa contribution meanwhile is the first by a Native American community to a genomics research institute, in part reflecting concern over high diabetes rates among its members. Clearly, TGen has found a warm welcome for genomic research.

Dr. Trent has succeeded in attracting a world-class team to a city with little previous visibility in genetics.

Numerous players have a deep economic stake in TGen's success. The nation's fifth-largest metropolitan area, Phoenix has suffered from reliance on the tourism and semiconductor industries. Local news coverage predicted that TGen ultimately could spur as many as 25,000 new life sciences jobs over the coming decades. Says Trent, "Genetics is an area where Arizona's leaders feel even a small group can make a big difference."

TGen's founders enthusiastically recruited Trent from the outset. Along with his high administrative visibility at the National Institutes of Health (NIH), Trent is considered a premier researcher for his work on genetic changes implicated in cancer development. He coincidentally attended high school in Phoenix. Following an undergraduate stint at Indiana University, Trent returned to the University of Arizona (UA) for his master's degree, followed by a doctorate in genetics. He joined the UA faculty in 1980 and 10 years later, accepted an endowed professorship in oncology at the University of Michigan in Ann Arbor. There he joined friend and renowned gene-hunter Francis Collins, Ph.D., and both later moved together to the NIH.

Leaving the NIH, Trent quickly became pivotal in creating the vision for TGen, and actively worked to develop the scientific focus and economic rationale that transformed the founders' ideals into hard reality.

Building World-Class Capability

What constituted the best organizational structure, however, was a very open question. One possibility was to follow the NIH model, which revolves around diseases and organs, such as the Eye Institute and Arthritis Institute. Another was to focus on a single disease such as diabetes. Trent and his NIH colleagues had faced similar questions in conceiving the NHGRI. At the time, "We really thought about what we were going to develop in the way of underlying, core technologies," he says. The result was an institute focused on cutting-edge technologies that could apply to multiple disciplines and diseases – essentially a horizontal, rather than vertical, perspective on medical research. "That's the model we picked up at TGen," Trent says.

But to generate rapid results, TGen focused on diseases most prevalent to Arizonans due in part to its unique locale. Arizonans of non-Hispanic origin are six times more likely than the native Arizonans to contract melanoma, the most deadly form of skin cancer, than Americans in any other state. The Sun City retirement community located northwest of Phoenix, which houses 600,000 residents, already operated a highly successful brain bank, providing a rich resource for Alzheimer's and Parkinson's disease research. And Native Americans, particularly the Pima, suffer the highest incidence of diabetes of any ethnic group worldwide. "We looked for regional relevance," says Trent, "and for areas where we might, quite literally, have a geographic advantage in terms of patient access."

"We can see more clearly with the lens of information technology than we ever could through the lens of a microscope."

At the same time, TGen was designed to operate on a partnership model organization-wide. Trent quickly entered partnerships with IBM and ASU for high-performance computing; market leaders Affymetrix, Inc. and Agilent Technologies, Inc. for gene-expression technology; Sequenome Inc. and Applied Biosystems, Inc., for various genetic technology; and the Mayo Clinic for clinical access and collaboration. The TGen-ASU-IBM project will make ASU's supercomputer one of the fastest among universities worldwide.

In addition, TGen has paired with the newest institute of the Mexican NIH, the Institute of Genomic Medicine in Mexico City, to study diseases affecting Hispanics, another prominent Arizona constituency. "By sharing expertise, we hope to make significant strides in addressing health issues faced by both countries," says Trent, "while recognizing that from a genomic standpoint, both populations are unique."

Trent's responsibilities now expand on those of his NIH role. As he did at NHGRI, where Trent maintained his own lab while monitoring the work of 500 fellow scientists, he continues his own research. As scientific director, he oversees the recruiting and managing of technical staff. And as president, Trent is the most senior executive in an organization structured without a CEO. Holding three distinct roles requires "a broad enough perspective to be able to work with everyone from computational biologists to those who are actually treating patients," Trent says.

DNA meets IT

Where genetic research typically relies about 60 percent on lab work and 40 percent on IT, TGen does the reverse. "The bulk of the science we do here couldn't be done without IT to generate, interpret and mine data," Trent says. He estimates that, in three to five years, 90 percent of TGen's work will revolve around IT. Prior to the integration of research genetics, genomics and IT, "describing a complex beast like cancer was the equivalent of the blind man and the elephant," says Trent. "We can see more clearly with the lens of information technology than we ever could through the lens of a microscope."

Moreover, IT is crucial to TGen's mission. "Our whole aim is to move things out of the laboratory," Trent says. "Computer-based research is key to that acceleration." For example, during TGen's recruitment of an academician eager to do a massive genetic study, he estimated it would require his university computers four years to complete. The TGen-ASU supercomputer handled the study overnight. In fact, over 20 percent of TGen's technical budget is devoted to computational science – far more than the 12 percent Trent was able to commit at NHGRI. Even that figure was double the average 6 percent other NIH Institutes devoted to IT-driven research at the time. Intensive IT

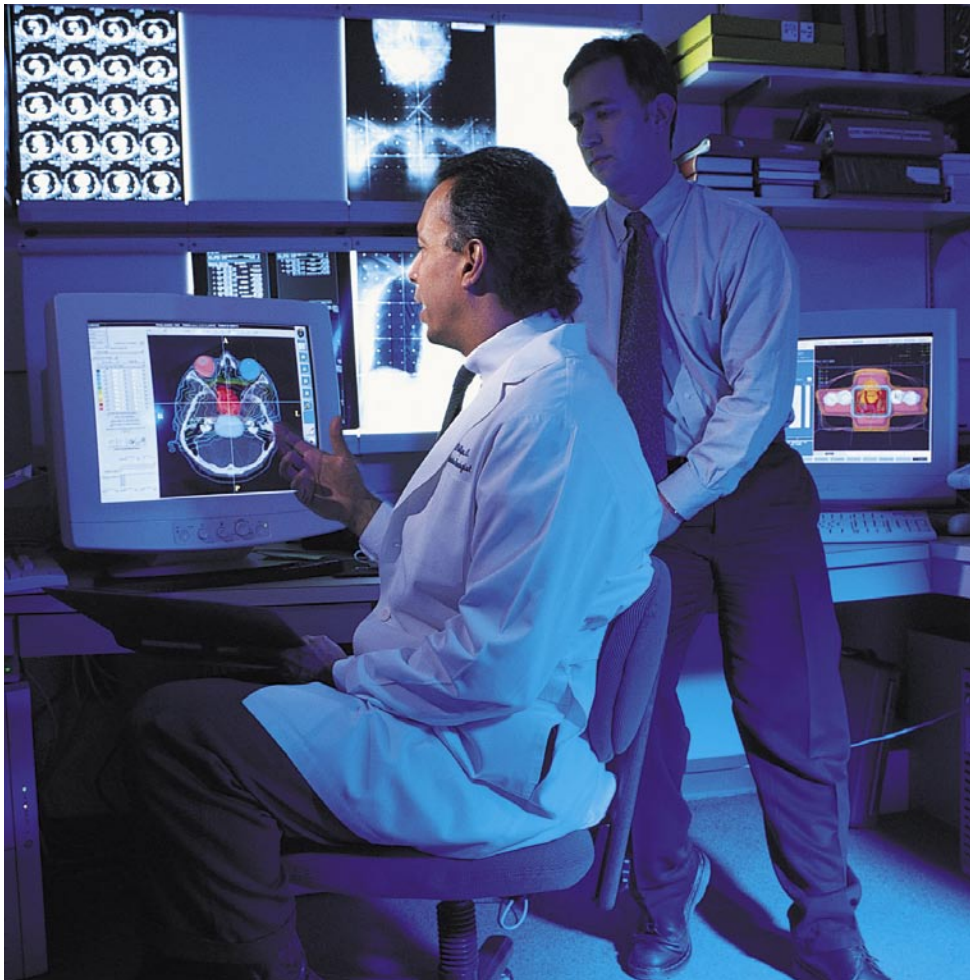
"allows us to dream about where we're going to be in 10 years," he says, "but work on it starting today."

Trent also believes IT will be absolutely critical in enabling physicians to embrace genetic medicine. According to a survey of physicians' knowledge of genetics by a major market researcher, only a fraction consider themselves very well informed about the genetic basis of disease. Fewer than one in 10 physicians currently say they have confidence in their ability to provide genetic counseling. By merging medical and scientific literature, knowledge retrieval and other processes, "we can put the full dimensionality of research into a package that physicians can use," says Trent. "It has to be distilled down in a way that lets them make educated judgments and fairly quickly."

As for the current public-private effort to standardize patient information for use across institutions, "I hope TGen will be a useful demonstration site for something like the National Healthcare Information Infrastructure," he says. "I think ultimately it's an excellent idea."

Looking Forward

What role does Trent think TGen will play on the world stage a decade from now? "I've always believed a small group can make a big difference," Trent says. In keeping with its mandate to deliver next-generation healthcare, he sees TGen continuing to push the edges of science and IT. "I think we'll be one of those groups that pokes the system to implement novel technologies sooner, rather than later," he says. And where are the converging genetics, genomics and IT realms heading? "Into a cultural sea change," says Trent, "to provide innovative medicine, globally, wherever people have the need." ■



William Winkenwerder Jr., M.D.

United States Department of Defense

Delivering Medical Care on the Battlefield and at Home

"We see the challenge as being how to protect all of America. Not just for us, the military, or not just for them, the civilian population. But how do we work together?"

With thousands of troops deployed around the world, and 9 million service men and women and their families relying on coverage provided by the military's medical health care system, Dr. William Winkenwerder has responsibility for delivering medical care on two fronts. The Assistant Secretary of Defense for Health Affairs describes the role of his office this way: "Our mission is to provide for all of our military commands and for all the missions of the Department of Defense their medical support, and to ensure that our troops are medically ready, and that when we have operations, we have the ability, worldwide, to care for them. That's what we call our readiness mission."

"We have another mission," he adds, "and that is to take care of the everyday healthcare needs of those same service members as well as their families and dependents, and also military retirees who have at least 20 years of experience and then have a lifetime benefit. So we have a dual mission, an unusual type of arrangement, for any organization." Being responsible for the military health system is no small task. The annual budget is approximately $28 billion, and there are over 130,000 healthcare professionals that include military uniformed members, reservists, guardsmen, and civilians.

Dr. Winkenwerder's background has well prepared him for this challenge. He has advance degrees in medicine and business and has practiced medicine as a primary care physician. His prior work experience ranges from a public sector role at the Centers for Medicare and Medicaid Services to a private sector role with Blue Cross Blue Shield.

Improving Readiness: Institutional Partnerships, Innovative Care

To meet the readiness mission, Dr. Winkenwerder works to translate Secretary of Defense Donald Rumsfeld's goals of transforming the military into a faster, more flexible, more mobile, and more interoperable operation into strategic goals for the military health system. To do so, he has encouraged partnerships with other federal agencies and the private sector to share technology and medical treatments as well as to develop new treatments and techniques to be used in the war against terrorism as needed. In Iraq, surgeons are being positioned close to where the action is, so that they may perform more lifesaving surgery in the field. One innovation being used in Iraq is a medical treatment called Quick Clot, which stops bleeding rapidly.

The Department of Defense is also working with agencies from the Department of Health and Human Services—including the Food and

Drug Administration, the Centers for Disease Control and Prevention, and the National Institutes of Health—in a collaborative effort known as Bioshield, to procure medical countermeasures to protect against attacks from biological agents, such as anthrax and smallpox.

Meeting Ongoing Healthcare Needs

The TRICARE Management Activity is the "operating division" of the Office of Health Affairs within the Office of the Secretary of Defense. TRICARE is charged with meeting the second part of the agency's mission—that is, to provide for the everyday healthcare needs of the military populations. It oversees the provision of health coverage plans for the roughly 9 million beneficiaries, which include active military service men and women, reservists, retirees, and their families. TRICARE manages 75 hospitals and 460 clinics that are staffed by military personnel, either uniformed or civilians, and contracts with four private managed health plans that enable many of the military beneficiaries to receive medical attention in their communities.

"We are embarking on what may be one of the most significant and comprehensive efforts ever undertaken [to develop and implement] an electronic medical record system."

One of the initiatives of the TRICARE division is the implementation of electronic medical records. "We are embarking on what may be one of the most significant and comprehensive efforts ever undertaken with respect to the development and implementation of an electronic medical record system. There are really only a very few organizations that, because of the complexity involved in doing this, are attempting this," says Dr. Winkenwerder. Electronic medical records will do away with paper records, and the data will be kept on computers. The system, which has taken over a half decade to develop, with much collaboration from experts in the private sector, will be implemented for the military health system over the next two years.

Advancing Electronic Records

As a leader in implementing electronic medical records, TRICARE is setting precedents for the way business transactions are being conducted with the medical care side and the insurance side that may lay the groundwork for electronic records in the civilian setting. For example, business transactions relating to medical must be standardized so that claims can be transmitted electronically and billing can be done electronically.

The use of electronic medical records is also impacting the way that the military armed service branches track and monitor potential medical hazards in the field. In Iraq, the Army, Navy, and Air Force collect and maintain data about certain ailments across the forces that are now deployed into a single database. "We were sensitive obviously at that time about the possibility of use of chemical or biological weapons," Dr. Winkenwerder explains, "and this type of surveillance system is one capability that could give an early warning, and

we were glad to be able to implement the database on a limited basis."

Protecting Patient Privacy

TRICARE is now undertaking activities to mitigate the risks involved with patient privacy and medical records. First: "We've added a privacy officer for TRICARE, elevating the importance of that whole issue, and we've obviously had to conduct a considerable amount of training in education for our staff, both with TRICARE and within the direct care system of the Army, Navy, Air Force, and Marines," he says. Second, TRICARE follows the standards from the Health Insurance Portability and Accountability Act of 1996 (HIPAA) legislation, which guarantees protection of personal medical information including expensive procedures to encrypt records and apply both administrative and technical safeguards to keep the information private.

Third: "There are rules as to who can have access to the system," observes Dr. Winkenwerder, "and there is constant oversight with respect to actual physical security and other things, and we really watch all this very carefully." Fourth, healthcare professionals must increase patient awareness about the process and the type of data that is being stored in computers, so that the patient can provide "informed consent" to participate in the TRICARE electronic medical records initiative.

With the nation's role in the war against terror, rising costs in the healthcare industry, and the challenge of attracting and retaining quality healthcare professionals, the responsibilities of Dr. Winkenwerder and his team of healthcare professionals remain great. He looks to partner with organizations that share the same goals to address these challenges: "We see the challenge as being how to protect all of America, not just for us, the military, or not just for them, the civilian population, but how do we work together."

This article is based on an interview conducted by IBM in 2004.

Career highlights

- **Assistant Secretary of Defense for Health Affairs, Department of Defense**
- **Vice Chairman, Office of the Chief Executive, and Executive Vice President of Healthcare Services, Blue Cross Blue Shield of Massachusetts**
- **Associate Vice President, Health Affairs, and Vice President, Emory Healthcare, Emory University**
- **Vice President and Chief Medical Officer, Southern Operations, Prudential Healthcare**
- **Associate Medical Director, Southeast Permanente Medical Group, Kaiser Permanente**

The agency has undertaken a three-pronged effort to protect patient privacy.

Mark Barnard

National Account Service Company LLC

Injecting Excitement into Insurance Claims Processing

"How people's claims are handled really makes a difference to their overall healthcare experience."

Not every healthcare challenge involves cutting-edge research, novel treatment protocols, grand-scale legislative reform or vast, complex organizational management. Quieter, less visible and less glamorous entities also are contributing to the burgeoning healthcare revolution – often in meaningful, if seemingly more mundane, ways.

One such entity is National Account Service Company LLC, among the nation's largest providers of claims-related services to Blue Cross and Blue Shield Plans. A technology leader in what is often viewed as the somewhat sleepy world of back-office processing, Atlanta-based National Account Service Company (NASCO) makes up in dynamism what it lacks in subject-matter allure. Currently serving 13 different Blue Cross and Blue Shield Plans in 26 states, NASCO processes 120 million claims annually – triple its volume seven years ago. "I'm very proud to say that by virtually every measure, we're performing better with 120 million claims than we ever performed at 45 million claims," says chief executive officer Mark Barnard, 47. What's more, despite well-documented, spiraling costs across the healthcare continuum, NASCO actually has succeeded in reducing fees to its customer Blue Plans every year for the past seven years.

NASCO's structure is equally unusual. Founded in 1987 by a group of Blue Plans intent on serving large corporate accounts, NASCO is owned by four entities: Anthem Blue Cross Blue Shield (which, following a merger with Blue Cross of California late last year, became Wellpoint, Inc.), Blue Cross Blue Shield of Michigan, Horizon Blue Cross Blue Shield of New Jersey, and the Blue Cross Blue Shield Association. (The latter is the trade association for the 41 independent, locally owned and operated Blue Plans.) While not incorporated as a nonprofit , NASCO is essentially a cooperative whose primary mission is providing efficient, value-added insurance services and products for its customer Blue Plans. "As long as we wind up in the black and are able to accomplish other goals," says Barnard cheerfully, "our customer base would be happy."

Toward a More Perfect Union

Soliciting large corporate accounts, which almost invariably operate in multiple states, puts Blue Plans in direct competition with major national insurers. Unlike those insurers, however, Blue Plans are governed by Blue Cross Blue Shield Association guidelines that limit their operations to the state in which each originally was chartered. Blue Plans can cover multistate employers, but only by relying on the inter-Plan system, known as BlueCard, or on NASCO's national clearinghouse to facilitate settlements. In addition, major national insurers can implement guidelines to settle specific claim types in specific ways, regardless of where the claims are filed. Blue Plans can provide the same service nationally through NASCO, assuring customers that claims are being paid consistently and fairly outside their home states.

Despite spiraling healthcare costs, NASCO has succeeded in* reducing *fees to its customer Blue Plans every year for the past seven years.

NASCO helps Blue Plans bridge state lines by handling both claim types — those it processes directly and those that go through the BlueCard system – efficiently. Its single-system approach essentially masks settlement complexity for Blue Plans by delivering fully adjudicated claims through a single process. Claims can be settled rapidly, accurately and cost-effectively, regardless of where employers are based or where employees happen to be. "NASCO has the ability to adjudicate a claim in Michigan the same way that we handle it in California," says Barnard. The same is true across multiple products and lines of business, including preferred-provider (PPO), point-of-service (POS) and supplemental Medicare.

NASCO also offers its customer Blue Plans a "total solution" that includes training for their associates, business process consulting and end-user support. For example, an interactive Web portal – with an interface visually tailored to each Blue Plan's unique identity – provides for claims inquiries, tracking and other information for individual subscribers. Other products target Blue Plan-centric concerns such as federal HIPAA privacy-legislation compliance and interstate labor-association marketing. And when BlueCard rules change, NASCO can simultaneously implement those changes for all the Blue Plans it serves.

In total, NASCO supports about 12,000 Blue Plan associates, who in turn handle claims for 1,300 corporate customers nationwide. Among them: auto heavyweights General Motors Corporation, Ford Motor Company and DaimlerChrysler AG's Chrysler Group, in addition to national grocer Kroger Co. (NASCO handles the back-office component, while the actual Blue Plan deals directly with providers and subscribers.) Its largest direct customers include WellPoint, Blue Cross Blue Shield of Michigan, Horizon Blue Cross Blue Shield of New Jersey, Blue Cross and Blue Shield of Massachusetts, Blue Shield of California, and CareFirst Blue Cross Blue Shield in Maryland.

Interestingly, NASCO not only serves as an outsourcer to Blue Plans, but relies on IBM for many of its claims processing solutions. The outsourcing-within-outsourcing business model has enabled the company to stay ahead on the technology curve – and lower rates accordingly. "This is a unique value proposition, allowing us to focus on the needs of our Blue Plan customers," says Barnard. "It's very different than selling your basic widget."

The Customized Career

While appointed CEO just a few months ago, Barnard has one of those careers that seems couture-tailored to his current role. After beginning as a Texas math teacher, Barnard joined Electronic Data Systems (EDS) in 1980 as a system analyst. In 1987, as an EDS account executive, he helped launch NASCO, which was structured to capitalize on EDS' outsourcing capabilities. In 1995, Barnard

moved to Medstat, a Thomson Corp. subsidiary in Ann Arbor, Michigan, that provides healthcare information and consulting services. Barnard re-joined EDS four years later, and in 2001, was invited to become NASCO's chief information officer – a role he held for three years. Despite his technical orientation, he chose healthcare "because it mattered," says Barnard. "How people's claims are handled really makes a difference to their overall healthcare experience."

As CEO, Barnard already sees his focus shifting. Where he previously sought to use technology to achieve business aims, he now concentrates more on business strategy – in conjunction with technological support. His technical bent, however, has come in handy for improving NASCO's performance. Barnard and his predecessor implemented about 25 key performance indicators, among them a crucial measurement known as "first-pass rates." Essentially, the term refers to the number of claims handled automatically by NASCO's systems. Industry first-pass rates are generally about 75 percent, which means the remaining 25 percent must be adjudicated manually. NASCO puts as high a priority on increasing its first-pass rate, which has jumped 15 percent in the past two years, as it does on delivering near-perfect uptime and continually squeezing costs.

In the four years since Barnard's arrival, NASCO has invested more than $100 million in system and application upgrades, primarily to develop its single, unified data source and a hybrid, mainframe- and UNIX®-based architecture. Claims now can be processed in a single day, subscriber data altered in realtime, and new healthcare products implemented quickly and uniformly across customer Blue Plans. Processing certain claims by midnight, which previously hovered below 50 percent, now occurs more than 98 percent of the time. Blue Plan associates and individual subscribers can check on claims status, deductible balances, coverage guidelines and related information via the Web. NASCO meanwhile has expanded value-added services, such as helping Blue Plans prevent identity theft. And all changes have been implemented to meet or exceed HIPAA privacy requirements.

Bolstering the Blues

Part of Barnard's strategy involves providing a continual flow of new services and products, bundled or sold separately, to enable the Blue Plans to continue landing major accounts. Current initiatives include an agreement that would provide ad hoc medical cost reporting directly to Blue Plans or their customers. For instance, a customer might ask to see all the Caesarian sections performed on its policyholders in a particular region, and then ask to compare that information against other regions. Such queries would be conducted only within HIPAA guidelines, of course, but on a much more sophisticated level than most Plans could achieve alone.

NASCO also is rolling out a new product aimed at helping customer Blue Plans win labor union contracts. The jointly-administered product, in which a Blue Plan, a third-party administrator (TPA) and NASCO will each handle different portions of claims administration, will enable Blue Plans to offer unions the same cross-state benefits their corporate customers receive. "If we can find ways to allow Blue Cross and Blue Shield Plans to take advantage of NASCO's breadth, it becomes the best

of both worlds for NASCO and its customers," Barnard says.

Meanwhile, Barnard is watching the Blue Plans' response to the concept of a national healthcare information infrastructure closely. "I applaud the idea of what's happening to make patient information available across institutions of all types, " he says. At the same time, "It becomes less clear how you create a central repository." His concerns are privacy, cost and obstacles to standardizing data across hospitals and physicians' offices. "I don't believe I've ever been to a doctor who didn't have paper records," Barnard points out. "How do you move a discipline that's still largely paper-based into an extremely large, extremely costly database?" he asks. "It has to be underwritten somewhere."

In the interim, Barnard intends to focus on making NASCO offerings "better, faster, cheaper." By that, he means better in terms of providing high-caliber services and products; faster in terms of delivering those features to market, enrolling a new group or paying claims; and cheaper in terms of delivering ongoing cost reductions. "I look at those as three legs of a triangular stool," he says. "If you take one leg away, the stool falls."

Not a glamorous mandate, perhaps. But to the GM employee covered by a corporate plan — which is in turn handled by Blue Plan, and from there is outsourced to NASCO — it's vital stuff indeed. ■

Barnard's strategy includes providing a continual flow of new services and products that enable Blue Plans to continue landing major accounts.

Clinical Transformation: Fusing Processes with Technology

by Carol Belmont
IBM Corporation

It's no secret that American healthcare is in a state of dramatic change. Hospitals, ambulatory care centers, clinics and other providers in particular find themselves struggling with operating inefficiencies, overwhelming costs, burdensome processes and intensified competition. Yet pressure to improve quality and patient safety is also acute. The upshot is that organizations are being forced to reduce costs and seek new revenue sources – all while delivering higher-caliber care.

In the next two to three years, more than 60 percent of American hospitals intend to tackle those issues head-on by implementing new clinical information systems. Healthcare providers cumulatively will spend billions of dollars to automate a plethora of labor-intensive, manual procedures that now mire organizations in paperwork and redundant procedures. Their admirable goals: enhancing quality and customer service while generating the operating efficiencies that improve financial performance.

But if history is any indication, many of those attempts will fail. Technology upgrades alone rarely save time or money – and automating outdated processes can worsen issues by generating additional work for already over-stressed staff. The healthcare industry so far has been unable to generate significant value from technology investments because companies generally have avoided the real issue: redesigning core business processes.

Rather, sustainable performance improvement occurs only when process management is fused with technology organizationwide. Such an approach requires that executives take a broad view of their businesses, apply tools and technologies already proven in other industries, and develop optimization strategies. It also means leveraging information technology to help deliver the greatest benefits from performance optimization.

Successful strategies are likely to include:

- Integrating systems and capabilities cross-enterprise
- Improving data accuracy, communications processes and workflow speed
- Incorporating business strategy and technology links in fact, not just language
- Implementing automated measurement, assessment and reporting capabilities for regulatory compliance and internal intelligence.

Among the possible clinical outcomes:

- Optimized emergency room procedures that enable physicians and staff to reduce delays and diversions, upgrade patient care and satisfaction, and improve revenue
- Fail-safe-oriented medication procedures that redesign vulnerable processes and integrate technologies to reduce or eliminate errors
- On-time ambulatory services that enable administrators to design more flexible, cost-effective workflow and patient-flow solutions
- Operating room scheduling that optimizes patient flow, tightens turnaround time between cases and supports management of supply costs
- Capacity management that improves patient care access, ease and time of throughput, and discharge procedures.

In the view of IBM Business Consulting Services, achieving dramatic improvement requires five methodologies. Modeling and simulation employs optimization, simulation and data mining to generate and integrate reliable data with process and technology changes. Technology fusion joins process management with technology; Lean/Sigma reduces waste and errors, boosts quality and improves patient throughput by streamlining processes and by deploying rigorous statistical approaches, respectively; financial modeling balances costs and impacts of specific business practices; and workforce transformation creates processes sensitive to cultures, organizations and individuals.

Only by fusing advanced clinical systems with redesign of business and core clinical processes can healthcare entities achieve desired benefits. But the results can be dramatic: higher quality, safety, and satisfaction among employees, physicians and patients, along with meaningful financial gains that fall to the bottom line.

Carol Belmont is National Practice Leader, Clinical Transformation, IBM Business Consulting Services.

Information-based Medicine: Enter the Revolution

by Michael Svinte
IBM Corporation

We are at the start of a revolution — one whose impact will be just as great as the Industrial Age or emergence of the Internet. This time, the revolution concerns information-based medicine, or the ability to screen, diagnose and treat patients as unique individuals, not statistics. It holds the promise to change medicine, and therefore human health, dramatically and forever.

As its name implies, information-based medicine joins information technology with medical practice. Information technology (IT) can serve as an enabler, potentially translating research discoveries into pharmaceuticals and clinical care quickly, effectively and on a vast scale. The discipline seeks to give physicians far more complete, precise information — and better ways to manage that information — about individuals and entire populations than previously possible. By integrating knowledge such as genetic profiles into medical records, it is anticipated that doctors will be able to diagnose more accurately, more often, and make more consistently effective treatment decisions.

For example, physicians may be able to advocate preventative care based on quantifiable genetic risk before a patient ever manifests symptoms. Doctors may be able to select the most effective drugs, with the lowest risk of adverse side effects, through simple molecular diagnostic tests. They'll be able to supplement traditional diagnostic procedures with new knowledge, such as known treatment outcomes from patient populations with very similar characteristics.

Advanced information technology can help pharmaceutical companies rapidly identify and characterize novel therapeutic candidates and improve efficiency throughout the drug discovery process. It can also help automate testing and reporting to the U.S. Food and Drug Administration during clinical trials, and save lives and costs by identifying drug failures faster.

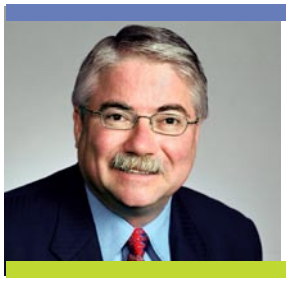
The best news may be that information-based medicine is already here. For example, Mayo Clinic and IBM have combined 5 million records from consenting patients into a single clinical database that will enable physicians and medical researchers to access comprehensive, integrated patient information. (For more on that effort, see the interview with Dr. Denis Cortese beginning on page 15.) Eventually, Mayo aims to provide physicians with patient-specific recommendations during the medical decision-making process, among many other benefits.

Biobanks also are increasingly critical to information-based medicine. Sometimes called tissue banks or biorepositories, biobanks collect both physical data, such as tissue and serum, and large amounts of clinical data from the individuals who offer these samples. As a result, biobanks make information-based research possible on an unprecedented scale. The Nobel-prize-awarding Karolinska Institutet and IBM, for example, are collaborating on Sweden's first IT-enabled biobank to advance understanding of links between genetics, environment and disease.

Another effort involves The National Digital Mammography Archive (NDMA) in North America. The University of Pennsylvania and IBM jointly developed an IT infrastructure to support the largest digital mammography archive in existence worldwide. Physicians now have electronic access to over 500,000 digital mammography images and associated medical record data from consenting patients. Through a complex grid computing system, researchers are identifying and targeting potential breast cancer links that may improve treatment and accelerate cures.

Clearly, information-based medicine is giving us a great deal to look forward to — including longer, healthier lives — at lower healthcare costs. And the revolution has only just begun.

Michael Svinte is Public Sector Vice President, Information-Based Medicine emerging business unit, IBM Sales and Distribution. ■



Clinical Systems Implementation: Thinking Beyond IT

by Ivo Nelson
Healthlink, Inc.

Organizationwide clinical systems have become *the* focus for American hospitals for the foreseeable future. And no wonder: Clinical systems dangle the promise of increased safety and quality of patient care, better cost control and reduced administrative headaches, among many other gains. For hospitals currently deluged with duplicative processes and inefficiencies, the pull is strongly magnetic.

Unfortunately, many healthcare organizations are discovering that implementing clinical systems alone doesn't solve operational issues. A primary reason is that such projects generally are considered the domain of hospital information technology (IT) departments. *But clinical computing isn't an IT project.* Instead, it's fundamentally a strategic business effort. Only by viewing and treating clinical computing from the outset for what it is – *organizational reinvention at the deepest level* – can hospitals succeed.

That's because clinical systems implementations are exceedingly complex, time-intensive and pervasive. They require introducing new technologies into existing, often fragmented IT environments and new processes to everyone who works in the hospital – including physicians, nurses and administrative staff. Clinical systems implementations also are long-term efforts, introduced in phases, some of which may require several years.

In short, information systems alone can't address business goals. Hospitals must clearly define business and clinical excellence priorities first, then determine how technology can support those goals best. Innovative redesign of clinical processes, beginning with existing care models and staff, should be supported by current and fresh IT capabilities.

As a result, I recommend that hospitals ask themselves two crucial questions up front:

- What IT changes, including new systems, are necessary to support our business requirements?
- What business changes are necessary to enable us to fully capitalize on IT?

To ensure that clinical computing generates business value:

- **Treat the effort as everyone's job**. Investments must be grounded in sound business strategy, with business unit ownership and accountability hospital-wide.
- **Eliminate the IT focus**. Each IT project should be considered just one aspect of overall business transformation, not an end in itself.
- **Measure before and after**. Metrics may range from financial items, such as scheduling cost per transaction, to softer items such as average patient wait times.
- **Fixate on business value**. Hospitals are highly complex organizations, operationally and culturally. Staying focused is vital for efforts of this magnitude.

Focus, of course, is far more easily stated than achieved. To that end, I recommend:

- **Commit to strategic decision-making**. Hospitals should make hard decisions up front: what can and should be changed, how much change and expense are tolerable, and who is responsible for what. These decisions help make the clinical computing shift more efficient, generate IT priorities and determine roadmaps.
- **Create functional governance**. Projects of this magnitude must be guided, supported, understood – and sometimes fought for – throughout an organization. They require sophisticated, multitiered governance and physician participation, with active accountability from the smallest project team to the corporate board.
- **Plan for sound technology**. A holistic approach should include existing systems, new clinical systems and supporting infrastructure. Technology robustness is vital, since even the best-designed software will fail on weak infrastructure.
- **Actively manage change**. Change management that fosters collaboration, communication, knowledge and training is as crucial as technical infrastructure.

In essence, clinical computing can and does fulfill its promises – but only when carefully formulated, and only with extraordinary leadership that spurs commitment hospital-wide.

Ivo Nelson is chief executive officer of Healthlink, Inc., a leading healthcare clinical and financial consulting services company that was acquired by IBM Corporation in April, 2005. ■

Healthcare Innovation: At the Tipping Point

by Caroline Kovac, Ph.D.
IBM Corporation

Let's talk about change. Not incremental, creeping, few-percentage-points-a-year change, but sweeping, fundamental reform that causes us to reexamine everything we believe about healthcare and build new models of value capture that take us forward in quantum leaps, not baby steps. The kind of change that will be good for patients, employers, providers and taxpayers, and that can make better medicine available to more people.

What makes change on that scale happen? Only a convergence of very powerful driving forces which are aligned now — in the first decade of the 21st century — to drive a "perfect storm" that will profoundly alter healthcare and medicine. Some of these driving forces are quite daunting — enormous and rising healthcare costs, the increasing number of the uninsured, the aging population. All these add up to an impending crisis in healthcare.

But there are also positive forces. Innovation — both technological and business innovation — will drive new medicines, diagnostics, medical approaches, and business models that will reshape healthcare. As legendary management expert Peter Drucker says, innovation is "the act that endows resources with a new capacity to create wealth."

Consider information and communications technologies. From the birth of the first integrated circuit more than 30 years ago, technology capability has grown exponentially while cost per function has declined steadily. This extraordinary growth curve is at the core of the information revolution that has touched all aspects of our lives — how we work, how we communicate, how we live. Just 10 years ago, it wasn't clear the Internet could be used for commercial purposes — today we use it for everything from stock transactions to eBay, the world's largest garage sale! We cannot imagine life without it, or without the pervasive communication and messaging technologies that allow us to stay in touch with our families and friends, our business and our information — 24-by-7.

The convergence of information and communications technologies with medicine and lifesciences can transform healthcare in similar ways. Take medical imaging, where doctors once were limited to a few x-rays or scans for each patient. They can now capture, store and analyze hundreds of images inexpensively to diagnose and deliver better care. Doctors in remote rural areas can use telemedicine solutions to consult with world-leading specialists who may be hundreds or thousands of miles away.

In biotechnology and pharmaceuticals, computational technologies are accelerating drug discovery and speeding time to market. The use of "information-based medicine" will spark personalized, targeted treatments that help ensure the right drug is prescribed for the right patient in the right dose. Simulation technologies will allow us to look at computer models of cells and organs of the body, and ultimately may replace traditional, costly animal and human trials. Just as aircraft makers use advanced technology to model new planes before they're built, scientists are likely to be able to predict the behavior of human physiological systems in response to proposed medicines and therapies.

Of course, technology innovation alone can't solve all healthcare industry problems. Innovation in business models will be critical to solve the issue of the care for the elderly and the uninsured. New forms of health insurance; new delivery methods which utilize computer-assisted diagnostics for routine care; better ways to practice disease management to monitor chronic care patients and prevent acute episodes before they occur — all these will be explored in the coming decade to find new ways to deliver high-quality healthcare for a lower cost.

As we look ahead, there will be no shortage of challenges. But the marriage of technology and innovative business models offers tremendous hope – and the tipping point is here!

Caroline Kovak is General Manager, Public Sector Healthcare and Life Sciences Industry, IBM Corporation. ■

The IBM Center for Healthcare Management

IBM is committed to helping healthcare entities improve organization-wide performance, patient safety and caliber of care. We believe that novel — and even revolutionary — approaches are vital to upgrading medical delivery and payment systems worldwide.

The Center for Healthcare Management (CHM) operates in three principal ways:

- *Awards stipends* to researchers exploring healthcare management, leadership and information technology challenges
- *Publishes research* reports, case studies and white papers, and
- *Hosts discussion* forums for university faculty, healthcare organization executives and others to explore and devise responses to issues and opportunities.

The CHM encourages cross-disciplinary exchange — between management and information technology strategists, healthcare payers and providers, diverse academic specialties and disparate geographies. In particular, we seek to understand how the fusion of business insight and technology innovation can create new, effective healthcare solutions.

By supporting fresh approaches and shared vision, the CHM seeks to catalyze ongoing dialogue and management innovation in response to urgent need. Such processes can yield viable, balanced solutions that advance both the quality and cost-effectiveness.

2005 Research Agenda

In 2005, the CHM is focused on:

- Healthcare quality and patient safety
- Optimizing clinical, administrative and financial processes
- Connectivity and healthcare standards
- Human capital
- Innovation and transformation.

Research is funded through $15,000 stipends, which are awarded to individuals on a competitive basis. Recipients may be involved in healthcare research, education, practice or management at universities and nonprofit organizations, or in healthcare journalism.

For more information on the CHM, its research sponsorship and other programs, please consult our Web site at www.ibm.com/bcs/healthcaremanagement.

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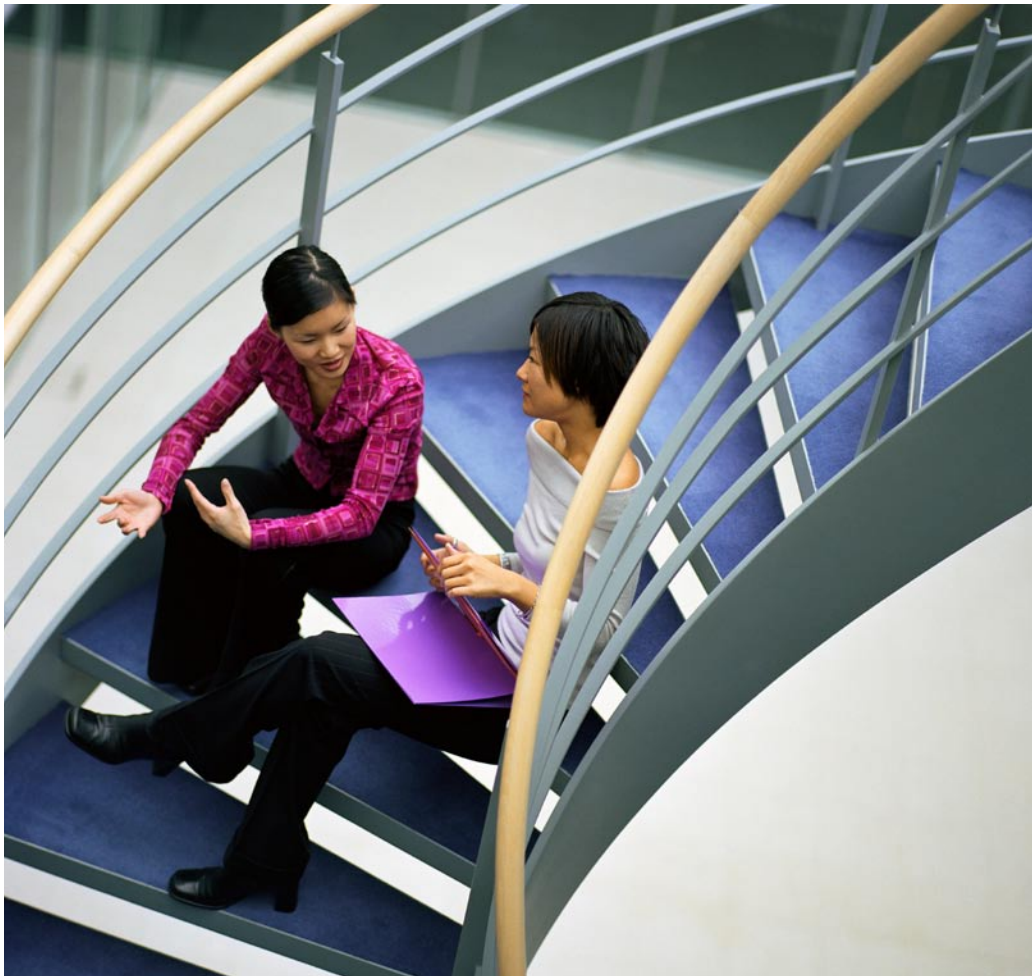

On the Charts: Trends to Watch

1. **Patient safety**. Hospitals continue to be under strong pressure to increase patient safety following well-publicized, serious errors over the past decade.

2. **Healthcare professional shortages**. Nurse/patient ratios remain strained, while physician shortages may grow as doctors face rising demands on limited salaries.

3. **Cost containment**. Ongoing, intense competition is forcing businesses across the healthcare spectrum to rethink processes, operating models and cost structures.

4. **Industry consolidation**. Providers and payers are continuing to merge within their respective segments as each seeks greater leverage with the other.

5. **Biotech breakout**. As biotech firms begin delivering on their potential, large pharmaceutical makers are seeking to partner with them earlier and more often.

6. **Electronic medical records**. Hospitals are seeking to develop electronic medical records that can be used across networks to improve safety, boost treatment efficacy and reduce costs.

7. **Regulatory, legal and public pressure**. Corporate mergers, scandals and conflicts of interest are prompting more scrutiny. Cost increases may spur greater regulation. The Social Security debate is likely to spill into Medicare.

8. **Information-based medicine**. Technology is a major driver, from facilitating complex research to supporting personalized care by delivering information when and where it's needed most.

9. **Consumer-driven healthcare**. Savvier consumers are pressing for more information, higher-quality hospital services and negotiable physician and hospital rates.

10. **Uneven pace of change**. Healthcare traditionally has been resistant to change. Progress is rapid and accelerating in some areas, but remains halting in others.

The IBM Center for Healthcare Management thanks the distinguished individuals profiled here, and their staffs, for their generous participation.

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U.S.A.

Produced in the United States of America
05-05

G510-6132-00