The end of a calendar year always seems like the right time to look ahead. Rather than ask futurists to tell us what’s in store for health care, we decided to ask physicians what they see coming for their niche of medicine. We lobbed a bunch of questions their way: How will their specialty or practice or research institution change in 20 years? What scientific, economic or social forces will have the greatest impact on the health of their patients? What technology will be disruptive? What disease will be cured? How will the physicians’ role change? What problems will patients be facing? How will the health care delivery system work? Will your specialty still exist? Will your job exist?

A number took us up on our request and wrote down their thoughts about the future. Some see a bright one, others a dim one. We found their responses fascinating and think you will, too.
EMPHASIS OF BIOETHICS WILL SHIFT

I see bioethics expanding its scope beyond concern for patient autonomy. In recent decades, clinicians and bioethicists have concerned themselves primarily with identifying and honoring patients’ preferences for care. Even when the patient cannot participate, autonomy has been considered the dominant ethical principle, extended through advance directives and surrogate decision-makers. Informed consent has served as the *sine qua non* for clinical care, for participation in research studies and for staying out of malpractice court.

Respect for personal autonomy has been so overarching that physicians have sometimes felt that it’s displaced their professional judgment and that they have been reduced to providing patients with a menu of clinical options. No one questions whether patient autonomy should factor into decisions about aggressive and expensive medical care at the beginning and end of life. But some are now asking whether the principles of beneficence, nonmaleficence and justice should carry the same weight in other medical decision making.

In 20 years, patient preference will still factor strongly in decisions about whether to pursue aggressive care, but such decisions will also begin to reflect the very real fiduciary responsibilities of care providers. The provision of expensive but essentially futile care will be recognized as a violation of the principle of distributive justice and of good stewardship of health care resources. Achieving a new balance between autonomy and justice will challenge the next generation of clinicians, patients and health system leaders.

CHARLES E. GESSERT, M.D., M.P.H.
SENIOR RESEARCH SCIENTIST, EMERITUS
ESSENTIA INSTITUTE OF RURAL HEALTH

TECHNICIANS, NOT SURGEONS, WILL DO PROCEDURES

For the most part, surgery will be consumer-directed and performed by non-physician technicians who have received minimal training. Common problems will be easily detected by imaging modalities that will be in nearly every home and/or pharmacy, the way thermometers and blood pressure cuffs are now. Apps for mobile devices will enable consumers to simply book a hernia repair (done without incisions) similar to the way they book a hotel or flight.

Technicians will operate precision robotic machines capable of confirming most common surgical problems and planning and performing the needed repair/drainage/debridement with nearly 100 percent accuracy and minimal complications. Nonsurgeons and advanced practice nurses will manage most surgical patients. Physicians with classical surgical skills including cutting, dissecting and sewing, and the ability to override robotic moves will wear multiple supervisory hats.

The human body will not have evolved, per se, and thus people will continue to have problems related to chronic illness, infections and obesity. However, disease identification and decision making will have been pushed out to average consumers, who will be able to diagnose diseases of the breast, colon, prostate, heart, vasculature and bones with impressive accuracy using computers. Most emergency care will be provided at free-standing centers by non-physicians.

Consumers will use the competing interests of health care stakeholders (big pharma/tech, providers, organizations, insurers) to their advantage—demanding low-cost, high-quality care that is accessible and paid for by individuals rather than employers. As our population assumes responsibility for their health as well as their health care, we will gradually see enlightenment and thus reductions in heart disease, diabetes, smoking, hypertension and obesity along with an increase in exercise and eating of natural food diets.

As a culture, we will have better accepted the concept of the end of life and will include complex-decision specialists (formerly known as palliative care specialists) in assisting us with determining what is appropriate and realistic care. The focus of care will shift to optimizing quality of life, enjoying meaningful relationships and being comfortable—rather than maximal resource utilization.

GARY B. COLLINS, M.D., M.B.A., FACS
HEAD, SURGERY DEPARTMENT
REGIONS HOSPITAL
Medicine Education Will Be More Efficient

Because of cost concerns, undergraduate medical education will have to become more efficient. The most drastic changes, I think, will come in the preclinical years. In the future, lectures will be preprogrammed and delivered via whatever progeny of the iPad comes to dominate the tech scene, rather than given in person through the current tried-and-true, calendar-based didactic system. The possibilities of such a system boggle the mind: Could students learn about global health from a lecturer in Kenya? Could they take courses from their home institution while abroad? Could universities realize further savings by sharing lectures among disciplines?

Eliminating live lectures will reduce the need for lecture hall space and the number of man-hours needed to coordinate guest lecturers, both of which will be a boon for budgets.

Separating preclinical coursework from the almighty calendar also will allow for more academic flexibility. Students will be able to concurrently work toward additional advanced degrees, complete research, participate in advocacy and/or complete coursework at the speed necessary for them to master the material. Medical education will be more about becoming competent than following a schedule.

Aaron Crosby
Medical Student
University of Minnesota

Patients Will Have More Power

Psychiatrists will have a sophisticated understanding of the root causes of the “diseases” their patients have and be wiser about how and when to apply patient-centered or population-based approaches. The potential for personalized care will be greatly augmented by emerging genetic, biological and cybernetic knowledge. These factors will be considered in a bio-psycho-social model of medical practice.

Regarding the future of U.S. health care provision and funding: I think Medicaid and Medicare will be altered so that consumers (patients) have much more control over their care choices and insurance arrangements. Patients (consumers) will demand to be treated as adults rather than ciphers in a population or capitation demographic. Greater economic power will go to patients, who will determine who their caregivers will be and what their health insurance protections encompass. As patients realize these powers, they will actively participate and collaborate in their plans of care, especially when it comes to what we now call “primary care.”

Lee Beecher, M.D.
Psychiatrist
Private Practice

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ON THE COVER

HIV as a specialty will atrophy

The future of HIV specialists like me is uncertain. Treatment for HIV will improve greatly, and most regimens will either be one pill once a day or monthly intramuscular injections. As HIV treatment advances and we come close to a cure, the need for HIV specialists will diminish altogether. I predict that eventually my job will not exist.

The future of clinical researchers like me also is uncertain in the United States, as it takes a high level of support, patience and sophistication to conduct research in a hostile funding and regulatory environment. The fate of public institutions such as Hennepin County Medical Center also is unknown. Safety-net hospitals will need more support from the state and federal government to survive. Wealth disparity and the state of the social contract between citizens and government are the socioeconomic factors that will have the most impact on the future of medicine.

Keith Henry, M.D.
HIV Program
Hennepin County Medical Center

Post-acute care will expand

Given our changing demographics and the economics of health care, post-acute care, which already makes up nearly 25 percent of total Medicare spending (according to 2012 MedPAC data) will grow tremendously. As I see it, post-acute care includes long-term acute care, home health care, hospice, palliative care, community case management and many other areas. It is provided in transitional care units, skilled nursing facilities, assisted living facilities, group homes, adult day care centers, community centers and other places where people gather.

The workforce providing post-acute care will be trained in geriatrics and to function in cohesive teams. And during their training, students of medicine, nursing, social work, pharmacy, therapy, epidemiology and case management and many others will be exposed to the venues, beyond hospitals and clinics, where such care is offered. We will be using technologies such as home telemonitoring, smart phones and smart houses in providing this care and improving the health of communities.

Post-acute care will be integrated with traditional care to create more holistic and well-rounded care plans. We will have courageous conversations about the goals of care and end-of-life care and death itself with our patients and their families. We will have created new ways to promote health such as using nurses from faith communities to coach elders on how to avoid falls. We will uncover disparities in health and address them in ways that honor the diverse backgrounds of our neighbors. Post-acute care and services will concentrate on the social determinants of health and less on the delivery of health care itself.

Rahul Koranne, M.D., M.B.A., FACP
Vice President and Executive Medical Director
HealthEast Care System
Community and Post-Acute Care Services

HIV as a specialty will atrophy

The future of HIV specialists like me is uncertain. Treatment for HIV will improve greatly, and most regimens will either be one pill once a day or monthly intramuscular injections. As HIV treatment advances and we come close to a cure, the need for HIV specialists will diminish altogether. I predict that eventually my job will not exist.

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Keith Henry, M.D.
HIV Program
Hennepin County Medical Center
**CARDIOLOGY WILL STILL HAVE A ROLE**

As a physician leader of the Minneapolis Heart Institute and Allina Health, I couldn’t be more excited about the future. I see us improving care models, reducing variation and standardizing processes that save lives, and enhancing the experience of patients. Preventing cardiovascular disease rather than treating it will become an ever-increasing portion of the work we do. Already in Minnesota, cardiovascular disease has lost its place as the No. 1 killer. No other state can make this claim.

Yet cardiology will still have a role in 20 years. While the focus will be on preventing disease, there will remain a need to treat the devastating effects of coronary artery disease brought on by smoking and diabetes. And as we live longer, the incidence of heart rhythm disorders and valvular heart disease will become more prevalent. Fortunately, new technologies will lead to less invasive, more effective modalities of care.

Over the next 20 years, I expect to see us extending physicians’ reach beyond the bedside or exam table by making better use of advanced practitioners and technology while providing better care. I expect technology will not only connect us to patients in their homes but also allow them to communicate directly with members of their care team. Imagine virtual clinics and specialty care centers where specialists are only a click or screen touch away from the patient. Physicians will have expertise, beyond that needed for the one-on-one patient encounter, in managing a community or population of people.

The cost of providing care will continue to challenge us personally and as a nation; we simply cannot afford to continue on our current spending trajectory. Recent bends in the cost curve have given me some optimism that we will curb our spending and realize that better care is less costly care.

**DAVID G. HURRELL, M.D.**

CHAIR OF CARDIOLOGY

MINNEAPOLIS HEART INSTITUTE

ABBOTT NORTHWESTERN HOSPITAL

ALLINA HEALTH

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**ANTIBIOTICS WILL HAVE NO EFFECT**

Microbes have the upper hand over humans. They vastly outnumber us, are more prolific and mutate rapidly to thwart every blockade we throw in their path. Over the next 20 years, we can expect the problem of antibiotic resistance to further exacerbate unless scientific research can uncover new drugs to stay ahead of microbes’ canny ability to adapt. Currently, there are a finite number of known pathways to kill microbes. Unless new ones are found, we may soon fall behind the march of the microbes. No doubt this will greatly affect my job as an infectious disease specialist. I will be busier than ever but have little to offer patients other than palliative measures. This is how infectious diseases were treated prior to the miracle of antibiotics, and that is why we stress antibiotic stewardship today—to preserve the miracle of antibiotics into the future.

**GARY R. KRAVITZ, M.D., FACP, FIDSA, FSHEA**

INFECTIOUS DISEASES SPECIALIST,

ST. PAUL INFECTIOUS DISEASE ASSOCIATES

EPIDEMIOLOGIST, UNITED HOSPITAL

CHAIR, INFECTION PREVENTION AND CONTROL COMMITTEE,

ALLINA HEALTH

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Care will be more team-based

Team-based care will expand to most parts of medicine, thus increasing significantly the number of patients each physician can manage responsibly. Everyone on these teams—from medical assistants to primary care physicians—will have an expanded role. Physicians will be members and clinical leaders of the teams; they will not be doing everything themselves.

Highly specialized physicians will “refer back” their stable patients to primary care teams, providing “concrete triggers” for specialty reassessment. The specialists and the teams in health care homes will share in both the care and the reward for care.

Frail elderly and complex patients will receive a substantially increased percentage of their care from home-visiting teams made up of pharmacists, community health workers, social workers, nurses, nurse practitioners and physicians. Physicians will be more actively involved in end-of-life care. Options will be openly discussed and more widely accepted. A body of ethical principles and practices will emerge as a necessary part of this.

Physicians and other team members will more often interact with patients via the Internet, phone and video rather than in the office. Physicians not only will need to work closely with other team members, but also will need to assure patients that a knowledgeable and caring physician is coordinating their care.

Much routine follow-up, patient education and lifestyle change management will be accomplished through online coaching and web-based education. Most preventive care will be done by non-physicians following standing orders. And many more patients will be monitoring themselves at home. Office visits will be for moderately acute care, pulling together information and creating a coherent treatment plan, interpreting confusing data and reassuring patients who are concerned about information gleaned from tests or learned online.

Consolidation of health delivery systems will continue to the point where a small number (perhaps less than one per state) of highly integrated delivery systems will deliver the majority of highly complex tertiary care.

Macaran A. Baird, M.D., M.S.
Professor and Head, Department of Family Medicine and Community Health
University of Minnesota Medical School

The health care industry will fail us

In 20 years, we will look back at the second decade of this century as the Decade of Decline of the Health Care Industry and the Decade of the Patient Revolution. The health care industry will decline because in pursuing profits, it will fail to meet the needs of all people desiring to maintain and recover their health. People will revolt as they learn the research evidence that should guide their care is tainted by intents other than clarity and accuracy. People will revolt as they see the sick get sicker from too much health care. People will revolt as hospitals and clinics build bigger facilities in response to the rising demand for their services and they realize the health care industry does not help people avoid getting sicker. And people will revolt as this industry almost renders the healthy person extinct. From birth, everyone will either be sick or at risk of being sick, and both groups will be required to consume health care until or even after their last breath.

The patient revolutionaries will demand and achieve health care for all, delivered parsimoniously and with respect and competence by professionals who care. This care will be delivered in a way that fits the patient’s informed preferences and specific situation. The research informing that care will be sufficiently independent and rigorous, and studies will be large enough to answer the questions that matter to patients.

Health care will leave the smallest possible footprint on people’s lives. Few people will need it because the patient revolution will focus on health, on the ability of people to fulfill their roles and pursue their hopes and dreams. They will pursue this goal by working to improve environments, enhance the meaning of work, strengthen relationships, and reduce poverty, insecurity and inequality.

The patient revolution’s success will become evident and gain momentum when hospitals and clinics become repurposed as recreation and sports centers, schools, museums and areas of social engagement and participation in community life. Then, and for the first time, they will become the cathedrals of health.

Victor Montori, M.D.
Director, Health Care Delivery Research Program
Mayo Clinic
Health Care Will Heal Itself

When asked if I’m optimistic about the future of medicine, my answer is an unqualified yes. Here’s what I envision:

In 20 years, our profession will have become unrecognizably collaborative; with connections among clinicians of different kinds, among different care systems, among payers and caregivers—all to benefit the patient.

Information technology will reach full flower. This is one of the things that excites me as a doctor. Our ability to deeply know and understand our patients and populations, to synthesize the relevant science for that patient and have it at our fingertips, to act much further upstream in the prevention of disease and to customize treatment—all of these things will progress vastly beyond where we are now. Today, we’re only scratching the surface.

I’m optimistic about getting costs under control and payment reform sorted out long before 2033. I see us lowering our medical spend in the United States to about 12 to 14 percent of GDP, where it needs to be, with reinvestment of the savings in necessary social supports that address factors contributing to health outside of clinical settings such as housing, poverty, education and disparities.

It’s tempting to view our current challenges around cost, coordination of care and communication as obstacles and to think we’re not progressing fast enough. I prefer to believe, however, that future generations will view 2013 as a hinge between the traditional, broken system we’re now exiting and the one we’re already entering—one that works much better for us, our patients, our communities and our society.

Brian H. Rank, M.D.
Medical Director
HealthPartners Medical Group

Education Will Evolve, Outcomes Will Rule

I see the future changing significantly in two areas:

1. In medical education, the flipped classroom will become the norm. Students will not assemble to hear a local expert lecture on a given topic. Instead, they will view the best lectures on core topics online (similar to TED Talks or Kahn Academy courses) and come to class to discuss the context, meaning and application of what they heard. It only makes sense that valuable in-person class time be reserved for more interactive experiences. Corsera has, in part, already launched this trend by providing Ivy League lectures online, but the real innovation will be integrating the online and classroom experience.

2. In primary care, quality improvement will no longer be the work of a few interested academics and health systems experts. The clinical work around chronic disease and health screening will largely be population management. Health systems will require physicians to produce good outcomes, not just doctor-patient interactions. That said, the job of the primary care physician will be to manage systems of care for populations and intervene with individual patients as needed.

David J. Satin, M.D.
Assistant Professor, Family Medicine and Community Health
University of Minnesota

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PSYCHIATRY WILL SEE THE REVIVAL OF PSYCHOTHERAPY

I envision a resurgence of interest in psychotherapy. In the United States, psychoanalysis was once the leading domain in psychiatry departments in medical schools, especially those such as the University of Minnesota’s that were started after World War II. For a decade, the focus of research and, perhaps even more so, of textbooks and teaching, was on psychotherapies.

That began to change with the discovery of antipsychotic and antidepressant medications in the 1950s. Researchers, usually working at state hospitals, attempted to determine the efficacy of such drugs as chlorpromazine. The research focus then shifted to examination of neurotransmitters, and we began to understand the biochemistry of the brain. That led to achievements such as that by Nobel Laureate, Arvid Carlson, Ph.D., who discovered how dopamine acted in the brain. Since discovery of medications such as clozapine, the first atypical antipsychotic, and fluoxetine, the first serotonin re-uptake inhibitor (SSRI), the focus in psychiatry has essentially remained on use of these and other pharmaceutical agents.

But that is shifting. More recently, brain imaging has revealed that brain structure and function are affected not only by drugs but by various nonpharmaceutical therapies. For example, University of Minnesota’s Angus MacDonald and his colleagues have demonstrated that patients with schizophrenia increased their frontal lobe functioning after receiving neurocognitive remediation—a new computerized therapy for seriously ill patients. A very interesting study from Columbia University demonstrated that the amygdala returned to normal activity after talk therapy. This is spawning new interest in nonpharmaceutical therapies.

I envision research leading to exciting new fields such as neurocognitive remediation and eventually to changes in practice. As we offer these therapies to patients, we will find that psychiatrists will need to have more time with them than is currently allowed in many settings. And payers will need to reimburse them for the time they spend.

CHARLES SCHULZ, M.D.
HEAD, DEPARTMENT OF PSYCHIATRY
UNIVERSITY OF MINNESOTA

THE PHYSICIAN’S ROLE WILL CHANGE

Health care in the United States is undergoing a massive transformation. Insurance market-places are revolutionizing the way individuals, families and small businesses access health coverage. Millions of Americans will gain access to health insurance because of Medicaid expansion, tax subsidies and a host of additional measures. And innovations in quality metrics and payment structures are aiming to decrease costs while improving quality. These are important reforms. But I hope there is an even larger paradigm shift in medicine—that physicians will play a more active role in improving our health system and the health of populations.

The predominant focus of the 20th century physician was the health of the individual patient. While individual patient care will remain paramount, the 21st century physician will be prepared to improve the overall health of society and ensure that the services and resources they provide are distributed justly and equitably. The 21st century physician will recognize that the care of one patient has an impact on the care of another. And the 21st century physician will understand the impact of poverty and income inequality on population health. For this to occur, medical schools must begin teaching about health systems, quality improvement and health policy.

Medical societies have called on physicians to advocate on behalf of their patients for decades. The 21st century will witness physicians being trained as advocates and capable of confronting the many challenges affecting the health of our state and nation.

TYLER WINKELMAN, M.D.
RESIDENT, INTERNAL MEDICINE AND PEDIATRICS
UNIVERSITY OF MINNESOTA
**ON THE COVER**

**WE WILL HAVE A DEARTH OF CLINICAL RESEARCHERS**

I believe my job will no longer exist the day I retire, and that in the future we will have a dearth of active clinical researchers. I especially doubt that we will have many groups of family physicians doing federally funded research—currently my niche. Funding is difficult to get, and it's difficult for young researchers to develop the portfolio of work needed to obtain new grants. As family physicians are replaced by nurse practitioners and physician assistants, fewer will be able to do this kind of research because these other providers seldom have the training, interest or ability to develop large research projects.

Consequently, the data available to patients will be less relevant to them because most research will be done in large academic centers that do not provide care for the majority of patients.

**BARBARA YAWN, M.D.**
DIRECTOR OF CLINICAL RESEARCH
OLMSTED MEDICAL CENTER

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**NEW TOOLS WILL HELP US TREAT HEART DISEASE**

Today, heart disease is the No. 1 killer of women and men in the United States, and while it may have fallen in rank in the last 20 years, there will still be a high demand for cardiologists because so much of heart disease is related to lifestyle and aging. However, our doctor’s bag will be filled with many new tools, and the focus of our efforts will change. The science of individualized medicine will provide technology that will not only predict an individual’s onset of heart disease but also allow the promise of primordial prevention to be realized. Currently, we treat risk factors such as diabetes, elevated cholesterol and high blood pressure once they occur. By 2024, I believe we will be able to prevent their development.

For patients for whom these preventive efforts have come too late, regenerative medicine will provide new options for renewed heart health. Today, we are very close to routine regeneration of myocardium from adult stem cells. In 20 years, we will be regenerating heart valves and whole hearts, dramatically reducing the need for donor hearts and mechanical valve implantation.

**SHARONNE N. HAYES, M.D., FACC, FAHA**
PROFESSOR OF MEDICINE
WOMEN’S HEART CLINIC
MAYO CLINIC

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**DRUGS WILL PREVENT ALZHEIMER’S DISEASE**

Within the next 20 years, we will see the development of drugs that prevent Alzheimer’s disease. As a physician, I am most interested in preventing the disease or halting its progress before it disrupts people’s lives. As a research scientist, I recognize that a strong basic science foundation is essential to achieve this goal. My laboratory’s focus is on discovery of the molecules and chemical pathways in the brain that cause neuron loss. We and many others believe that the disease is triggered by small assemblies of the β-amyloid protein, the main protein component of amyloid plaques, and have identified a specific β-amyloid assembly that correlates markers of synaptic dysfunction in the human brain with memory dysfunction in mouse models of Alzheimer’s disease. We also believe that these pathogenic forms of β-amyloid somehow lead to abnormal processing of the tau protein—the protein that forms neurofibrillary tangles—and that it is some form of abnormal tau that causes neuron death. Identification of the toxic form(s) of tau and of the pathways connecting β-amyloid to tau are my major goals and the goals of many other Alzheimer’s researchers. The role of inflammatory processes in the brain is another area of research that shows much promise.

If we can identify these molecular villains, we will be able to detect Alzheimer’s disease before clinical symptoms are present and develop drugs that prevent their formation, destroy them or interfere with their actions in the brain, and thus prevent symptomatic disease. We are making good progress, and I am confident that we will start to reap the benefits of this progress and develop drugs that can prevent a disease that now affects 5 million people in the United States.

**KAREN H. ASHE, M.D., PH.D.**
DIRECTOR, N. BUD GROSSMAN CENTER FOR MEMORY RESEARCH AND CARE
EDMUND WALLACE AND ANNE MARIE TULLOCH CHAIRS IN NEUROLOGY AND NEUROSCIENCE
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