The Richard and Hinda Rosenthal Lecture 2007: Transforming Today's Health Care Workforce to Meet Tomorrow's Demands

Institute of Medicine

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THE RICHARD & HINDA ROSENTHAL LECTURE 2007

Transforming Today's Health Care Workforce to Meet Tomorrow's Demands

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The serpent has been a symbol of long life, healing, and knowledge among almost all cultures and religions since the beginning of recorded history. The serpent adopted as a logotype by the Institute of Medicine is a relief carving from ancient Greece, now held by the Staatliche Museen in Berlin.

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"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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Foreword

In 1988, a new outreach program was launched at the Institute of Medicine. Through the generosity of the Richard and Hinda Rosenthal Foundation, a lecture series was established to bring to greater attention some of the critical health policy issues facing our nation today. Each year one or more experts present their views and insights on a major health topic, and the Institute of Medicine later publishes these lectures for the benefit of a wider audience.

The Rosenthal Lectures have attracted an enthusiastic following among health policy researchers and decision makers in Washington, D.C., and across the country. The lectures typically engender a lively and productive dialogue. In this volume, we are proud to present the remarks of the 2007 Rosenthal Lecturers—Drs. Kevin Grumbach, Fitzhugh Mullan, and Marla E. Salmon—who spoke on "Transforming Today's Health Workforce to Meet Tomorrow's Demands."

I would like to thank Lara Andersen, Clyde Behney, Bethany Hardy, Tracy Harris, Marie Michnich, Adam Rose, Autumn Rose, Sara Sairatupa, Andrea Schultz, Jovett Solomon, and Vilija Teel for ably handling the many details associated with the lecture program and the publication.

In their lifetimes, Richard and Hinda Rosenthal accomplished a great deal. The Rosenthal Lectures at the Institute of Medicine are among their enduring legacies, and we are privileged to be the steward of this important ongoing Series.

Harvey V. Fineberg, M.D., Ph.D.
President
Institute of Medicine

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Contents

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The Richard and Hinda Rosenthal Lecture 2007: Transforming Today's Health Care Workforce to Meet Tomorrow's Dem
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Welcome

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Harvey V. Fineberg, M.D., Ph.D.

DR. FINEBERG: Good evening, I'm Harvey Fineberg, the president of the Institute of Medicine, and it is my great honor tonight to welcome you to this evening's 2007 Rosenthal Lecture. The topic is "Transforming Today's Health Care Workforce to Meet Tomorrow's Demands."

We have a truly distinguished panel with us tonight, but before we get under way I'd like to say a word about the series that this occasion represents. The Rosenthal Lectures are named in honor of Richard Rosenthal, a corporate executive and private investor as well as a philanthropist with a wide range of interests, particularly in the intersection of the social sciences, medicine, and the humanities. After his death in 1998, his widow Hinda Rosenthal was instrumental in carrying on his work through the Rosenthal Foundation. This is a bittersweet occasion because it actually represents the first of the Rosenthal Lectures since Hinda's passing almost 1 year ago.

This is a time when we have an opportunity to remember and celebrate both of them, because together they represented the best in health and philanthropy in our country. They were particularly interested in ensuring that the Institute of Medicine would be a place where we would have a regular opportunity to put forward path-breaking ideas and innovative thinking about topics just emerging over the horizon—ideas and policies that matter. I think today's example on the workforce is a perfect illustration of what they had in mind when they asked us to undertake this series.

We are honored to hear from Kevin Grumbach, Marla Salmon, and Fitzhugh Mullan. Our first presenter is Kevin Grumbach, professor and

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chair of the Department of Family and Community Medicine at the University of California, San Francisco, and chief of Family and Community Medicine at San Francisco General Hospital. Among his many responsibilities, he directs the University of Southern California Center for California Health Workforce Studies. He has been particularly engaged in trying to improve the role of clinicians in health policy. Among his important works, for example, he has coauthored a very widely used textbook on health policy, *Understanding Health Policy: A Clinical Approach*. He has also written widely about the role of primary care, has been the recipient of many recognition awards from foundations and government, and is a member of the Institute of Medicine. He is going to address the workforce challenges, especially in connection with primary care; the changing roles of those involved in primary care, including medical assistants; and the importance of team-based care using recent information technology in delivering services to patients at the time and in the way they need that service.

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Keynote Presentations: Transforming Today's Health Care Workforce to Meet Tomorrow's Demands

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Kevin Grumbach, M.D.

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Professor and Chair
Department of Family and Community Medicine
University of California, San Francisco

DR. GRUMBACH: Thank you very much, Harvey. It is a great pleasure to be here. I am pleased that the Institute of Medicine (IOM) has decided to focus this year's Rosenthal Lecture on the health care workforce. Human resources, in my mind, are the single most critical ingredient in the health care system, yet health policy discussions often give short shrift to this issue. Those of us who do research and policy work in health workforce issues are partly to blame for this. We don't seem to do a very good job in answering such basic questions as whether we have a physician surplus or a physician shortage.

I remember a meeting a decade ago when Dr. Fineberg's predecessor, Ken Shine, was present for a session on the physician workforce. Dr. Shine told a story about riding a bus in Israel. A passenger dropped to the floor of the bus in cardiac arrest and three unemployed physicians jumped out of their seats and immediately started performing CPR. The driver of the bus slammed on the brakes, and the bus came to an abrupt halt. The driver stood up and announced, "My bus, my patient!"

In 2007 the pendulum has swung in the opposite direction, and now there is clamor about a possible shortage of physicians in the United States, with vocal proponents including Buz Cooper of the University of Pennsylvania and the Association of American Medical Colleges. The nation has actually increased the number of physicians per capita over the past 10 years, so if you are confused as to why we have a shortage in the face of this trend, I'm confused along with you.

What I'm not going to do in my presentation is to attempt to answer the question of how many physicians we need in the United States. I ac-

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tually don't consider that the most compelling question facing physician workforce policy or one that's likely to have a meaningful answer. Instead, what I want to address is the question of how we transform the physician workforce and other health care workers.

When I think about the issue of transforming the physician workforce and the health care workforce, I recall the comment that the Canadian health care economist Bob Evans once made about human resource planning. To paraphrase Evans, before adding more sugar to your cup of tea, make sure you stir the sugar already in the cup. This idea of stirring the sugar that is already in the cup—thinking about how to more effectively and productively deploy our existing workforce—is the theme I will focus on. I will specifically examine this issue in the context of primary care.

Let me begin with just a few introductory comments about primary care. It is now abundantly clear from accumulating research that a solid foundation of primary care is essential to a well-functioning health system. The IOM's Committee on the Future of Primary Care defined primary care as "the provision of integrated accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."

Primary care is provided by family physicians, general internists, general pediatricians, nurse practitioners, physician assistants, and others who work in the primary care sector. These clinicians are responsible for delivering accessible first-contact care; providing continuity of care through ongoing relationships; comprehensively addressing the majority of patient needs, whether they are urgent care problems, chronic care needs, preventive care needs, or psychosocial needs; and integrating specialty referrals and ancillary services to provide patient-centered, whole-person care.

Now here is problem: The evidence is clear that patients and populations benefit when they receive care in the primary care model. The problem is that the traditional practice model of delivering primary care is antiquated and completely ill-designed to deliver the goods.

The data are very telling. For example, a group of researchers in the Department of Family Medicine at Duke University calculated how much time it would take a family physician with a panel of 2,500 patients to deliver all the preventive and chronic care services needed by those patients, on the basis of evidence-based guidelines. This means ensuring that these patients get their Pap smears, colon cancer screenings, and immunizations, and that patients with diabetes get their lipids checked, their hemoglobin A1Cs measured regularly, and a pneumococcal vaccine. So what did the researchers conclude? They concluded that it would require 7.4 hours per day to deliver all the preventive services patients need in primary care. It

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would take an additional 10.6 hours per day to deliver all the evidence-based chronic care services that patients need.

Now the good news about this is that it means that there are still another 6 hours left in the day for a dedicated primary care physician to actually attend to all the symptoms that patients have that need medical attention. But this is a recipe for clinician burnout; often primary care physicians and other clinicians in the primary care sector feel overwhelmed by the daunting demands and expectations of primary care practice. It certainly is one of the factors turning students off from entering primary care careers. The other major issue is the widening gap in incomes between primary care physicians and specialists.

Over the past decades, the number of U.S. allopathic medical school graduates entering family medicine residencies has dropped by 50 percent. A decade ago, half of all residents in internal medicine residency programs planned to practice primary care general internal medicine, but today only 20 percent plan to go into primary care. The same trends are apparent when you look at the nurse practitioner workforce and the physician assistant workforce: Fewer and fewer graduates are going into primary care fields.

What are the policy options to respond to the apparent predicament of mismatch between demands for primary care services and the capacity of the primary care clinician workforce to respond to these demands? The traditional response would be to declare that there is a shortage of primary care physicians and that the nation needs a much greater number of primary care physicians in order to reduce the typical panel size to a level well below 2,000 patients per each primary care clinician.

This policy option is in fact being played out in a somewhat perverse way in the United States today by what is known as boutique primary care medical practices. In these practices physicians limit themselves to a panel of 500 patients or even fewer and require these patients to pay cash for services in addition to an annual retainer fee. In return, the patients receive highly personalized care, often with physicians providing patients direct access to their cell phone numbers to be available 24/7.

The problem with the boutique model is the other 1,500 patients who are left behind when a primary care physician limits his or her patients to 500 relatively affluent individuals who are willing to pay the premium for boutique care. What happens to them? To provide all Americans with this model of care would require a fourfold increase in the number of primary care clinicians in the United States, something that just doesn't sound feasible, at least in the short or even medium term in this country. Interestingly, there is a country that has adopted the boutique model as a general matter of national policy. That nation is Cuba, which has more

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than one family physician for every 500 Cubans. That's an institutionalized approach to boutique medicine.

The other policy response to this predicament of primary care is to stir the sugar that is in the cup, to make more productive use of our existing primary care physician supply. The approach to this policy option begins by asking a question: Are primary care physicians working to their maximum level of skill? Or are they doing tasks that don't require a medical degree to perform?

The answer is that primary care physicians are spending much of their time on tasks that someone with less training, or frankly even a computer, could do. By someone with less training, I'm including the patients themselves as a key part of the primary care team. Most of the activities that make up those 18 hours per day of preventive care and chronic care services that I mentioned are quite routine and can be driven by explicit protocols.

Let me give you an example of how health information technology could transform preventive service delivery in primary care and make better use of precious physician and other clinician time. Here is a typical visit with prevention content as it transpires in the traditional family care practice, which may be disturbingly like your experiences as patients or clinicians:

A patient schedules an appointment with a physician, nurse practitioner, or physician assistant. Two or 3 months later, the day of the appointment actually arrives. The patient shows up, and the primary care clinician flips through a paper chart trying to determine what preventive services the patient actually needs. When was her last mammogram, has she had a colon cancer screen, when was her last pneumococcal vaccine? The physician and the patient then make a decision about what services are to be provided. The services are ordered, the tests are performed. The physician or other clinician reviews the tests as they become available and then sends a notice to the patient about the results of each test. Sound like your world?

I don't want to say electronic medical records are a panacea for all that ails the health care system, but I do think an advanced electronic medical record (EMR), particularly when it empowers patients to have access to their own EMR through a patient portal, really could transform aspects of primary care and free up a lot of precious physician time. What would this model look like?

In this EMR-empowered model, patients would log on to their personal HIPAA-compliant EMR web page. That web page would tell them what preventive services they are due for, based on their age and various other factors that determine what is appropriate for them. They could hyperlink under each of those recommendations to read more about prostate cancer

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screening, colon cancer screening, and the risks and benefits of various other procedures. They could decide which ones they want to go ahead and obtain. They could potentially order those services directly online, go ahead and make an appointment to get a pneumococcal vaccine or a mammogram, and thus bypass the need to even have a visit with the primary care clinician. Patients could potentially e-mail questions about preventive care and could make an appointment to discuss particular questions after they had already been educated about recommended services. Once patients had the test, the results could be sent electronically to the primary care provider, who would review them and then authorize their release to the patients so that patients could log on and view the results of their tests. Think about how that alters the workload of the primary care clinician compared to the traditional model.

On the same theme of stirring the sugar in the cup, another approach is to create genuine team models in primary care that allow each team member to work to his or her full potential. In most primary care practices, other than physicians, nurse practitioners, and physician assistants, who's the most common staff person you will find? It is not going to be a registered nurse; it is going to be a medical assistant. Although medical assistants usually join a practice after having received only a rudimentary level of vocational training, they are the main staff members in most primary care practices. In most practices the role given to medical assistants is pretty basic. They check the patient in, take the blood pressure, room the patient, and wait for the patient to come out of the room after the visit with the physician. The medical assistant may then give the patient a shot or collect a urine specimen, and send the patient on his or her way.

How does a chronic care visit for a patient with diabetes play out in the traditional, antiquated primary care model? The patient is roomed by the medical assistant, and then the physician or clinician thumbs through the chart for the most recent hemoglobin A1C level, the LDL cholesterol level, and the urine albumin results. It takes about five minutes to find all that information in the paper chart. The physician then compares the bottles of medication brought by the patient with what the physician thinks he or she has actually prescribed for the patient. That takes another five minutes. The patient wasn't able to actually get that ophthalmology visit for a routine annual retinal screening, and the physician is so frustrated that he or she calls and makes the appointment for the patient. The clinician then asks the patient to remove his or her shoes to do a foot exam, and because the patient is rather corpulent and arthritic, it takes another 5 minutes just to get the shoes and socks off. The clinician then gives a well-rehearsed 3-minute monologue to the patient about the need to change his or her diet, exercise more, and check sugars regularly. The clinician asks the medical assistant to give the pneumococcal vaccine and the flu shot. The clinician

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is about 10 minutes behind in the day's schedule when the patient happens to mention the chest pain he or she gets when walking up a flight of stairs. That is a typical chronic care visit in primary care.

In the family medicine clinic at San Francisco General Hospital, where I work, my colleague Tom Bodenheimer is leading the implementation of a team innovation that he refers to as the "teamlet model." In essence, this model empowers medical assistants and health workers to become genuine partners with clinicians in delivering primary care services to patients, empowered with support by training and protocols. The patient encounter in the teamlet model begins with a pre-visit with the medical assistant. Using the clinic's EMR and guided by written protocols and standing orders, the medical assistant identifies the preventive and chronic care items for which the patient is due (e.g., a flu shot, a mammogram, a hemoglobin A1C blood test) and then proceeds to deliver or order those items. Patients are asked to bring their pill bottles with them, and the medical assistant goes over each of those medications, checks the EMR medication list to see what the patient has been prescribed, identifies discrepancies, and tries to identify issues of potential non-adherence. Then rather than simply rooming the patient, the medical assistant accompanies the patient into the actual visit with the clinician and remains present for that visit. The medical assistant fills out lab slips and referral forms as the clinician is working with the patient. The medical assistant helps with procedures, enters information in the EMR, and performs other tasks, which allows the physician to focus on the cognitive work of evaluation and management, such as evaluating new chest pain.

After the encounter is completed with the clinician, the patient then has a post-visit session with the medical assistant. The medical assistant closes the loop with the patient by checking that the patient has understood the clinical decisions made during the visit, such as a change in medication or scheduling a diagnostic test. And because the medical assistant is actually present during the encounter with the clinician, the medical assistant knows what decisions were made and what the action plans are.

It is remarkable how little attention is actually paid to developing teamwork in primary care practices. About 20 years ago, Harold Wise wrote a book called *Making Health Care Teams Work*, and he pointed out that football teams spend the whole week practicing for that 3-hour game. He observed that you are lucky to get teams in primary care to spend 2 hours a year practicing for something that they work on 40 hours a week. We don't build in the structure for developing teamwork by thinking through practice processes or investing in the teamwork building and on-the-job training to make teams happen.

Most of these models I am talking about are still in the experimental

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stage. I can't tell you that the teamlet model that we are piloting at my own clinic is actually going to be a success. There are real questions about these innovations. When you use more information technology (IT), when you use other team members, how does this play out for the patient experience in primary care? Is it okay for a physician to delegate more tasks to a medical assistant, or do patients actually value that time with a physician that appears wasteful from the health systems point of view (in other words, might this actually be valuable time for patients to build a relationship with their primary care clinicians)?

There are a lot of questions out there. What I can say is that most clinicians in primary care would agree that simply running faster on the treadmill of current practice models is simply not viable as a sustainable approach to primary care practice.

Let me end by summarizing the state of this cup of tea known as primary care. My first point is that the tea right now tastes bitter. Patients are not getting the primary care they need, primary care clinicians are overwhelmed, and there is decreasing interest in primary care among recently graduated clinicians. The question is then, do we need to add more sugar to the tea in order to substantially increase the supply of primary care clinicians? Or do we need to stir the tea more vigorously and more creatively by being more innovative in the deployment of the existing primary care workforce so as to make the existing capacity more productive to improve patient care and make primary care careers more viable?

I think both are needed to some degree. It may be that we need to stir better, and also add another dollop of primary care workforce to the mix. But I think that simply seeing this as a problem of numbers fails to appreciate the most important challenge for workforce policy, which is the theme of this session: namely, how to transform and rethink our practice models to create a much more efficient, productive, and effective model of health care. While we need some additional investment in the educational pipeline to produce an adequate supply of primary care physicians, perhaps even more compelling is the need for payers and purchasers to invest in innovative practice models that can deploy primary care clinicians more productively. Such investment will require dedicated resources for implementing and maintaining health IT systems in primary care, for hiring and training non-clinician staff for new team models, and for other similar types of infrastructure needs in primary care.

Thank you.

DR. FINEBERG: Thank you very much for that fresh perspective on what is needed in primary care. Our next presentation is by Marla Salmon.

Marla Salmon is dean of the Nell Hodgson Woodruff School of Nursing at Emory University and a professor of medicine as well as public

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health. Her special interests cover a wide range and have included national and international health policy, administration, public health, and workforce development. She has held a number of leadership positions in government as director of the Division of Nursing and as the chief nurse in the U.S. Department of Health and Human Services. She has been an adviser to our government at many levels in agencies and the White House. She has advised other governments in Caribbean countries and elsewhere in the world, and she has also served as an adviser to the World Health Organization and as a member of a number of IOM panels. She is a prolific writer and serves on the editorial boards of the *Journal of Nursing Scholarship* and *Nursing and Health Policy Review*. She is a member of the IOM and the American Academy of Nursing.

Marla, the floor is yours. Let me mention that because Marla will have to leave shortly after the conclusion of her remarks, please have in mind any questions you would like to pose to her specifically, and we will take a few minutes for those at the conclusion of her remarks.

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Marla E. Salmon, Sc.D., R.N., FAAN

Dean and Professor
Nell Hodgson Woodruff School of Nursing
Director
Lillian Carter Center for International Nursing
Emory University

DR. SALMON: It is very much a pleasure to be here this evening. It is also great to see people I know here who don't look much older than they looked when worked together on workforce issues about ten years ago. I think it is telling that we didn't solve those problems then and we still haven't yet today.

My purpose this evening is twofold. I would like to revisit the numbers because that seems to be one of the things that people talk about most in terms of the nursing shortage. I will present this from a nursing perspective. I also want to reframe the shortage problem and propose some possible alternatives to addressing this challenge. I would like for you to listen to these alternatives with respect to where policy is and where policy needs to go.

So, let's talk about the shortage. Essentially, the shortage numbers reflect four things: First, we have a failing demographic equation in nursing, and it is substantial. Second, the increasing demand for nursing is protracted, will continue, and will continue to increase. Third, we have a compromised production function, so the supply will continue not to be adequate. And fourth, we have an unstable national nursing workforce. That's the good news.

Actually I do think, in some ways, that it is the good news. In short, in terms of our failing demographics, our workforce is fundamentally out of alignment with who we are as a country, who we are as a people, and who we are as a world. Nurses are basically white, middle-class women. The overall representation of minorities in nursing in the United States is about 10 percent, which is significantly less than the overall composition of

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our U.S. population. And hovering at around 10 percent of the workforce, men are simply not well represented at all in nursing. This makes no sense given the economic opportunities nursing offers now and in the future.

The overall aging of the workforce is also a very serious demographic issue. The average age of nurses is now more than 27 years old. And nursing faculties are even older, with 72 percent of nursing faculties over age 45. The fact that we have fewer young nurses than ever is of great concern, as are the major changes in the work styles and work support needs of our existing nursing workforce. For example, older nurses experience age-related changes that necessitate workplace changes ranging from mechanical patient lifts to large-print monitor displays.

There are two particular things that I want to draw to your attention to bring the aging issues into sharper focus. The first relates specifically to the decline in numbers of younger nurses. In 1980, nurses under 30 made up more than 25 percent of the workforce. By 2004, they represented less than 10 percent. Also in 1980, the majority of nurses were under 40 years old. By 2004, almost three-quarters of the workforce was over 40. We are looking at a supply of nurses that is fundamentally older than the overall population, making them demographically non-representative.

While the demographics of the overall nursing population are of great concern, the situation in the academic setting is even more compromised. In about 8 years we will have half as many nursing faculty as we now have. There is no obvious source for replacements on the horizon. This has critical implications for the future production of nurses.

Another dimension of our demographics relates to our increasing dependence on foreign-educated nurses. Between 1998 and 2004, we tripled the number of nurses coming to the United States to work (in total, about 60,000). This is the steepest increase we have ever experienced. While these numbers have important implications with respect to the United States, they also represent an enormous drain of capacity in some of the most resource-poor countries in the world. I know that Fitz is going to say some things about this in his presentation this evening.

And, of course, the numbers: Projections of the nursing shortage continue to be called into question. Rather than picking these apart, I think we can simply look at the range of estimates and get a feel for the grave challenges ahead. Our most conservative estimates say that by 2020 we will be short about 340,000 nurses. The Bureau of Labor Statistics thinks that the number will be as large as 1.4 million. But even if it is 340,000, that shortage number is three times greater than what we have experienced to date.

The demand for nurses continues to expand, as do the variety of opportunities that are available to them. Yet we still lose somewhere around a quarter of new nurses within their first few years of practice. So, from

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a purely numeric perspective, this is not a picture that is very promising. Add to this the growth in the number of elderly and chronically ill people, which Kevin spoke about in his comments. Suffice it to say that for both populations, the need for nursing care is particularly intense.

So also is the need for nurses by people who receive their care in the community, which will only continue to increase over time. At this point about 60 percent of people receive long-term care in their homes, generally by informal providers who have no professional preparation. About 36 percent receive services from a mixture of types of providers. Only about 7 percent receive care exclusively from formal care providers. Think about that in terms of the magnitude of the older population and the decline of a younger population to provide care in the home.

I don't think we are going to be able to meet our care needs just by trying to ramp up the numbers. While I'm not going to propose that we stop trying to produce nurses, I do think that we are focusing on the wrong things. We need to come to grips with the fact that numbers alone are not an answer. We've got to change the discourse that, at least in the mainstream, seems to be focused on quantity.

How do we refocus our lens and look for fundamentally different ways of providing nursing services in the future? I think you have all heard that phrase about thinking outside the box. In this case, neither thinking outside nor inside has worked. Maybe the box is defective!

I think that probably the first thing we need to do is re-look at nursing (and perhaps every other major type of health worker). The starting point needs to focus on preserving only those things that are nursing's key roles and contributions. In doing this, we also need to identify what can be jettisoned, reengineered, or handed off.

There are so many things that nurses do—and are relied on to do over and over again. And there are so many other things that nurses end up doing that keep them from doing the things that both matter to the patient and are rewarding to the nurse. I want to point out two of the really important things that nurses do. One of them is that they serve as the gasket of the health care system. Nurses do what needs to be done to fill the gaps, which is critical to keeping things going despite what is often significant system dysfunction. We want to preserve this ability of nursing to expand and constrict its functions in times of need. If we look at the historical shortage of primary care providers and the development of the nurse practitioner role many years ago in response to that shortage, we can see the utility of this professional elasticity.

Another important role relates to the involvement of nurses in health services innovation. Nurses have historically patched together care in innovative ways that have eventually become formalized. While nurses

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are well positioned to find answers to care problems, they are also not yet optimally utilized in finding system-level solutions.

There is no question that our current contexts for care are not well thought out. We need to redesign virtually all of our care environments. I think that we also need to expand the definition of care environments. We focus a lot right now on the hospital care environment as the place that we need to redesign nursing care. Yet only about half of nurses work in hospitals. So when we think about where they are working, and the ways in which people are going to be cared for in the future, we know that people will not always be cared for in hospitals.

What about the home as a care setting? We already know that people needing care in their homes are facing major challenges. How can we redesign both home care and the home environment to support and recapture wasted time for all providers, not just nurses? How can we also design that environment to support as much independence as possible for those aging in their own homes?

We also need to engage patients and families productively in the care processes. Nurses have spent a long time in a state of ambivalence about wanting to encourage families to be involved in the care of patients and at the same time wanting to keep them as far away from patient care as possible. Families now, with patients, receive care out of self-defense many times, rather than out of support. So how can we prepare family members to be effective in care and engage nurses in redesign? I will just mention T-CAB (Transforming Care at the Bedside), an exciting example in the set of initiatives sponsored by the Robert Wood Johnson Foundation, that relates to creating supportive care environments. When you involve nurses in redesigning care, you can actually achieve success in terms of both outcomes for patients and the capturing of time that is so often wasted. Think about it: Somewhere between 25 percent and 50 percent of nurses' time in hospitals is spent on things that are not nursing care. If we could only recapture that time, we would also retain nurses who leave the field because of the frustration that this causes.

We also need to think about and actually create interdisciplinary teams. This does not mean that "interdisciplinary" in and of itself is the goal; it is actually just a part of the strategy for creating effective care teams. Not everybody needs to work together all of the time. We have to figure out when people need to work together and why they need to work together, educate them to do that, and actually use these teams in practice.

We also look at another dimension of effective teams, one that we in nursing have had a problem with over the years. Claiming all of those who provide and support nursing is fundamentally important to truly effective nursing care teams. We need to think seriously about how we involve ourselves in educating, and truly working with, those who are not nurses but who are involved in nursing care if we are to have optimally effec-

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tive care teams. I think part of our socialization and professionalization as nurses has, at times, encouraged us to distance ourselves from nursing assistants, technicians, and others who are part of the teams for which we actually have responsibility. So when we think about care teams, it is both across disciplines and within them that we should focus on the delivery of nursing care. Within teams, we need to make sure that we include those informal care providers, such as family members, who are so important to patient care.

We also need to focus on technology that supports patients' independence. Who are the best people to involve in the development of this technology? Probably the patients themselves . . . and those who help support their self-care (the nurses and others). Technology is important in supporting nurses as well. When it expands nursing capacity and moves nursing from being viewed as a cost to being an investment, there is a payoff for nurses as well as patients. Part of the reason we lose so many nurses in their first three years is that there is such a great need for evidence of their value, including (though not limited to) the technology that allows them to care in safe and high-quality ways. In terms of the technology that supports independence of individuals, there is already a lot out there (though some is of questionable value). Having had an elderly father who looked for every possible gimmick to keep himself in his own home, I have seen that there is a great need for truly assistive and supportive technology that is of real value to elderly people.

We need to think about technology that expands care capacity as well; robotics is one very promising avenue. In Japan, for example, in some of the settings where care is being provided for people with dementia, robotic puppies are being given to patients. These furry, active, tiny robots provide a source of comfort and entertainment. And the puppies themselves don't require a lot of support except for being plugged in.

We also need to attend to our educational capacity. Again, this is not just about turning out numbers of nurses. What I am talking about is being extremely targeted in how we develop and use our educational resources in the future. There are two examples I'd like to highlight in this regard. One is that we need to share our existing and future faculty. It is ridiculous how many institutions we have with people teaching redundant content—over and over again—things that could be shared across faculties. There are a variety of ways to do this, but it won't happen without significant planning and lowering of barriers. The second example is that we must expand our nursing faculty to more extensively include people who aren't nurses. (This would apply to other health professions' education as well.) This requires planning and real attention to the barriers that prevent this from happening.

Educational technology is probably obvious in enabling educational capacity. Less obvious, however, is our need to invest in shared educa-

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tional technology. For example, in the area of simulation, institutions often have multiple simulation laboratories rather than a shared facility for multiple programs. Simulation is incredibly expensive and requires the attention of real experts in simulated learning.

Another area of great need is educational research and innovation. Since the federal government has pretty much ceased to fund educational research, there is not nearly enough educational innovation and development under way. I think that this is an area of policy that is extremely important if we are to actually figure out what works. Currently it is not funded, and the outcome of that is very apparent.

Earlier I talked about the role of nurses as being somewhat fungible, expanding and contracting to fill gaps in our health care system. The nurse who enables this to take place both in the immediate and longer terms is the nurse who has received a university education (a bachelor of science in nursing). The national pool of baccalaureate-prepared nurses is the source of those who go on to earn graduate degrees and become advanced practice nurses, assume faculty positions, and—on a daily basis—serve in supervisory and leadership roles all across the health systems. We need to make sure that their education continues to be for the purpose of their elasticity; we need their generalist preparation and their broad perspective. And we need a greater proportion of these nurses in the overall workforce if we are going to expand our supply of nurses.

I want to turn to what I see as the frontiers of innovation for nursing and patient care. I think that the triad of quality–technology–touch is where the most opportunities for real innovations lie for patients and for nurses. And I think that preparing nurses to be involved in process and systems innovation is extremely important in the same kinds of ways that Kevin was talking about with primary care physicians. Development of technology, not just working with it, is the key to enabling nurses to engage in the management of care quality and improvement. This clearly has implications for both the education and socialization of nurses and care teams. Another very promising area for future innovation relates to hybridizing the discipline in some key areas. I mentioned that nurses are being asked to do roles that far exceed—or are expanded beyond—what they have done traditionally. That is because there is a need, and nurses can certainly at least partially fill this need. I think that we ought to think about hybridizing education in the same way that we are hybridizing research. It is at the boundary of disciplines that we will find some of the most promising answers to the greatest challenges in health care and nursing. This is also true in the educational arena. We have seen some very promising successes for nurses who have moved into engineering design informatics, architecture, and community design and planning. They think about care, redoing and reclaiming those care environments that

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are not thought of as care environments. Nurses who have the knowledge and skills to engage in the neurosciences, genetics, and other predictive health fields may become nurses who will help to create a better future for patients, families, and providers. The field of rehabilitation sciences is another promising area where nurses should connect and engage; it is an area that is going to need to expand. In addition, as the many policy fellows here in the audience already know, health policy is a key area in which nursing needs to be involved.

I have three final thoughts. The first is that our nursing shortage problem has become the world's problem. Not having enough nurses is not only deleterious to our health; it is also a disaster for the health of people around the world. We owe ourselves and the rest of the world our best efforts to find real solutions to the future of caring. The second thought is that real solutions will require significant investment, but perhaps more importantly, they will also require letting go and walking away from a lot of traditions that are embedded in the health professions and in nursing. And, lastly, policy is the key to developing the solutions and figuring out what really does work.

My final comment is that having the opportunity to be with you this evening has been a great honor. Thank you very much for being here.

DR. FINEBERG: Thank you very much, Marla. If we could have the lights up for a moment, we could ask for questions while we still have her with us. The floor is open for questions.

QUESTION about whether, and to what extent, the Title VIII programs have helped.

DR. SALMON: Title VIII programs have been incredibly important and also incredibly underfunded. I am going to give you an example. The benefits of Title VIII are most obvious when they are not there. One of the big contributors to the creation of this nursing shortage is the loss of Title VIII funding over a long period of time. We actually saw a 14-fold reduction in funding for scholarships over the period from about 1980 through 2000. As a result, we saw a tremendous decrease in the number of people who were able to afford to go to nursing school. When Title VIII hasn't been there, the public and nursing have suffered. When it *has* been there, Title VIII has been an important contributor.

Also, because of the loss of Title VIII funding over this long period, we now have to reinvest in educational infrastructure. I think a number of people know that in the 1970s there were funds available for building schools, educational technology, and so on. Those funds have ceased to exist, and we now have to do what everybody is thinking about. The prob-

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lems with bridges in Minnesota and elsewhere are essentially the same problems with education. We are so far behind in educational infrastructure that it is ultimately having a huge impact on the health of people.

Most people think that the $150 million to $200 million budget for nursing in Title VIII is a very small amount. I would agree; however, it is remarkable what is done with that amount when you think of the Carl Perkins money for example, when the Department of Education was at $2.1 billion or something like that for technical education. I think Title VIII is a little engine that could be incredibly important not only in terms of the impact it has had, but also in terms of the innovations that have come out of those dollars. I see that as the place where we need to think about really shaping the workforce in what we do in the future.

I do have to say that I am really sad about Title VII, which has focused on other health disciplines and care for elderly people. It doesn't make sense to me that Title VII has been so deeply eroded.

QUESTION about what is the impact on the health of people in other countries due to our importation of nurses from abroad.

DR. SALMON: I am going to defer to my colleague, Fitz Mullan, but I think that my biggest issue with this is that we are the largest consumer of human resources for health around the world, and we are probably the most stingy in terms of any reciprocity or any kind of capacity building for human resources in the countries that we import from. I think it is a human rights issue in terms of people having the choice to migrate, but I also think it is a global well-being issue. It is a humanitarian issue in terms of how we benefit from the resources of others but are not replenishing those resources or working to replenish them.

QUESTION about what should be done to disinvest some of the entrenched ways of doing things.

DR. SALMON: This question is probably shared across all health professions: What kinds of things might be done to encourage disinvestment or to actually embed it in a systematic fashion?

I believe that we need to rethink the ways in which health profession education takes place, but I also believe that we probably need to think even more about how pre-health professions' education takes place. There has been, in my opinion, an erosion of what would be called "liberal learning" or "basic liberal arts" as a foundation. I believe we need to think about that because there is this interest in specializing so early in the undergraduate experience. I would much rather see people specializing in societal issues and then thinking about health professions as ways of really aiming at those issues and making a difference in them.

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QUESTION about how we should use technology and interdisciplinary cooperation in light of the faculty and professional shortage.

DR. SALMON: How should we use technology in the face of this incredible and growing shortage of faculty and the need to work across health disciplines to develop a new generation of professionals? I think that the answer lies in three areas. We need educational technology to expand educational capacities. One possibility is distance learning—the notion of opening up campuses as places where any degree might be offered. There is this conflict between community college systems and other systems of higher learning. I think that is really a shame because anybody should have access to those degrees that they are qualified for. We need to mix up higher education. I think the second thing is making the technology that is actually in practice available. Most nursing students do not experience electronic medical records as part of their experience. I think that is incredibly important. The third thing relates to the interface between the design of technology and preparing health professionals to be involved in developing its design. I do not think that technology is truly effective if it is not user friendly. There is an enormous amount of time spent by nurses and others taking care of technology. Ultimately technology should support the work of providers, not detract from it or waste their time.

QUESTION about what the problems are related to viewing nurses and others as costs and rather than investments.

DR. SALMON: I think this is a fairly pervasive issue in the health care arena, and it is at a systems level. There is a real lack of understanding that health care needs to invest in human resources in the way that any other enterprise invests. We have a lot to learn from the long history of investment in human resources in other sectors. It would have an enormous impact.

When you look at why young nurses leave, it is often because they are thrown to the wolves in many settings. Because of staffing needs, inexperienced nurses are being placed into situations that they are not able to safely manage. This is a disaster for patients and, often, a life-changing experience for nurses. I saw this first hand with my own daughter, who is a nurse. She started out her career in an internship program at a major teaching hospital. She ended up quitting after six weeks because her mentor quit, she was left without supervision, and she was scheduled randomly for all shifts, which made her one of the only nurses on some shifts. She was being put in situations in which she was not a safe practitioner and was terrified that she would cause terrible harm to another. Also, the fact that she was a single mother was completely overlooked. So, despite her love for the area of nursing that she had started in, she ended up leaving.

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She also ended up leaving hospital nursing and is now doing a great job as a school nurse in another county. It is really unfortunate. She loved that job but she knew that she was beyond her capacity to do it in a safe fashion.

QUESTION about how the connections between practice and education have weakened over time in many places and about our need to look to nurses in practice for strengthening education.

DR. SALMON: I think that this is a really important and promising area for improving the education and practice of nursing. In our own setting we are actually reclaiming our close connections with practice and commitment to clinical education. What we have said is that clinical education is extremely important, and there are ways that we can develop clinical partnerships in which practicing nurses can serve in mentoring and educational roles. As we look to practice for nurses to help us in our educational mission, we are also conscious that we want to make sure that they are prepared for this important role. We want to be sure they have the information that they need to do this and that it is enjoyable and rewarding to them.

The other piece is that we somehow need to stop assuming that education ends at the time that a person completes his or her educational program. I think we are now entering a time in which education simply should always be a part of one's life.

QUESTION about why nurses aren't seen as an investment.

DR. SALMON: I think if you look at the mind-set relative to workforce, this is a global problem. Nurses are often seen as the easiest place to cut the budget during hard times. This nearsighted perspective precludes looking at the cost of losing a nurse and sees the loss of a nurse as a gain. The reality is that it costs an enormous amount when you lose a nurse. If we were more invested in developing that nurse in the first place and in helping him/her to be successful, and ultimately retained him/her, we would save a great deal more money and lives than when that investment does not take place.

Those places that have really invested in their nurses have saved an enormous amount of money because they have retained them and because those nurses do a better job in caring for patients. The math works—but only when you think of nurses as an investment.

DR. FINEBERG: Okay. Marla, thank you very much for being with us. We enjoyed both the comments and the question and answers. Thank you.

We have already heard something about anticipating our third speaker

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tonight, Fitzhugh Mullan. Fitz is the Murdock Head Professor of Medicine and Health Policy at George Washington (GW) University School of Public Health and also professor of pediatrics at the GW University School of Medicine. What is interesting is that Fitz simultaneously serves at the Upper Cardozo Community Health Center here in Washington. He was commissioner in the Public Health Service in 1972 and was among the first to serve in the U.S. National Health Service Corp. Five years later he was tapped to serve as director of the U.S. National Health Service Corp here in Washington. He served for a time here at the IOM as a scholar in residence. He then went back to New Mexico, where he had started his career, to serve as the secretary of health and environment. He came back to Washington again and was on the Johns Hopkins faculty for a while as well as being appointed as director of the Bureau of Health Professions in the Health Resources and Services Administration.

Subsequently, he has continued to be a leader in both thinking and action for health workforce issues. He currently serves on the editorial board of the *Journal of Health Affairs*, as a contributing editor and also as editor of the narrative matters section of that wonderful journal. He is the founding president of the National Coalition for Cancer Survivorship. He serves as the vice chair of the Board of Trustees of the National Health Museum and is a member of the IOM.

Please join me in welcoming Dr. Fitz Mullan.

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Fitzhugh Mullan, M.D.

Murdock Head Professor of Medicine and Health Policy
The George Washington University

DR. MULLAN: Thank you, Harvey, and I thank the Institute of Medicine (IOM) and the Rosenthal family for hosting this evening. I very much appreciate being included. I want to particularly welcome the members of the Health Policy Workforce class from GW, which happens to meet on Tuesday evenings from 6:00 p.m. to 8:00 p.m. We know you planned the Rosenthal Lecture around that. We just moved the class over here so welcome to all of you who are here.

What I want to do is talk about what I call the "hinged" world. I have spent a long time pondering and puzzling, as Kevin Grumbach has outlined and as Marla Salmon has reflected, on the U.S. workforce. I want to talk about the U.S. workforce in the context of the world. I am going to start with the global workforce.

The issues that drive both disease and migrants around the world are powerful, and they are much amongst us all the time. They are familiar to you, but it is interesting and a bit ironic that health professionals move, as do diseases, quite quickly. This has always been the case, but in this day and age—with modern travel and communications—it is especially true.

Of course, in terms of the economists and students of labor, there are push and pull factors affecting the opportunities that drive people to move. I suspect they are obvious and well appreciated by this audience. The pull factors that draw people to the north and the push factors that tend to drive them to the south are like reciprocals. I am going to talk more about these. I use here the shorthand that is used in global health constantly today—the north being the developed world and the south being the developing world.

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While it is not entirely precise in geographic terms, it is a little less judgmental than some of the other frequently used terms.

For many years, the concern with health workforce on a global scene was very limited. Of course, there were issues around technologies, drugs, and systems development, as well as a lot around disease-specific efforts. The most popular one involved smallpox, but others included malaria and tuberculosis (TB), polio, and other diseases.

However, it wasn't until the acquired immune deficiency syndrome (AIDS) epidemic that workforce was brought to the fore. As antiretroviral drugs were developed and moved into price ranges that allowed all countries to begin to embark on programs, it turned out that there was a new, emerging problem, which was different from smallpox and TB. Smallpox takes one shot once and TB takes directly observed therapy, short course (DOTS) treatment with observation. In contrast, antiretrovirals, which must continue for a lifetime once they are started, require treatment and management that includes the whole chain of clinical decisions, delivery, and follow-up. It is very human resource intensive, and no one was there. Metaphorically, we had the drugs on the loading dock, and literally, we had very few people to see that they were distributed, delivered, and managed appropriately over time.

This problem brought the world's attention to this question of global human resources. Two reports brought this issue "out of the shadows": The Joint Learning Initiative, which was sponsored largely by the Rockefeller Foundation in the field between 2004 and 2005, produced the first clever and evidence-based report, which highlighted the issue. In 2006, a second report followed, by the World Health Report, which was dedicated to human resources in health.

You can fully appreciate the extent of the problem by looking at the statistics. For example, the United States has about 280 physicians per 100,000 people, while Cuba and North Korea have many more. I have seen estimates that North Korea has 600-plus physicians per 100,000 people. I have no idea about their quality or functionality. Cuban physicians are pretty good and quite functional, but it ranges. European countries have more physicians than we do. Some other anglophone countries have fewer, on down to the lesser developed countries, which have in the case of India, 60; Ghana, 13; and Mozambique, 2. Obviously, when you are down in these ranges, your physician density is quite limited in terms of its ability to have much impact on the population.

The evidence is very good that human resources at least correlate with good health. Obviously, economics correlates with human resources as well. If you take these three standard markers of human well-being and increase the number of health workers per population (including physicians, nurses, midwives, and birth attendants), all of these indicators

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improve. The correlation with wealth is not surprising: more wealth, more workers. It is a fairly linear relationship as you move up the intensity of workers and the wealth of the various countries.

Migration plays an important role here. Anglophone northern countries import about a quarter of their physicians. That is, approximately one-quarter of their physicians went to medical school elsewhere. They do not come from the developing world entirely, but if you look at the percentage of international medical graduates from nations designated by the World Bank as low- or lower income countries, in the United States 60 percent come from those; in the United Kingdom, 75 percent; and in other countries it is somewhat less. So this movement is heavily from lesser developed countries.

If you look at this from a different perspective and pause for a moment, the largest volume of physicians in this country and other developed countries would tend to correlate somewhat with the size of those countries. But if you are a small, poor country and you are not producing a lot of physicians, it won't take too many moving to practice in New York or London to deplete your workforce very substantially.

When you look at this on a continental or global basis, it doesn't seem like there are a lot of African physicians in the United States or the United Kingdom, but it is the sub-continent in Africa that is chronically the most affected, followed by the Indian sub-continent and the Caribbean. These are prime areas for migration or recruitment to the developed world. If you look within the countries you will see very high figures. Let me pause also on this for a moment. These figures are very conservative because I counted only individuals who showed up in the licensed workforce in the recipient country.

When I talked to people in Ghana about 30 percent of their workforce having left, they laughed at me and said that it was much higher than that. I puzzled over this for a while. There are some explanations. One is that if you didn't go to one of the four countries I measured, you were not counted. If you went to Germany or if you went to the Gulf or if you went to Nigeria, you were not counted. Second is that if you come to the United States and you are sitting for or attempting to pass the Educational Commission for Foreign Medical Graduates (ECFMG), you don't count. If you have received a residency pass to ECFMG or gotten a residency but have not yet been licensed, you don't count. If you went to the United States and did not pass or did not get a residency and are in business, it doesn't show either. Many more have left than I was able to calculate, but even in my conservative estimates the numbers are quite substantial. Four out of 10 positions in Jamaica have left. Sri Lanka is actually a bigger donor than India, which is of course the largest in terms of numbers—as a whole, migration from the Indian sub-continent is substantial.

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The specifics of nursing migration are different: The issues are parallel except that in nursing the ability of hospitals and other organized recruiters to strip nurses out of countries is far more developed. Doctors typically go on their own along well-grooved paths, but there are not recruiting firms by and large, which bring in jumbo jets for the nurses. Granted, this is a bit of an overstatement, but not a huge one in the north in regard to nurses. As Marla Salmon described, we are extremely vulnerable. We would have to take every nurse trained in the developing world for the next two decades to fill our nursing shortage. It is a very substantial threat in terms of what is at stake.

A quick primer on the U.S. physician workforce: The physician-to-population ratio has climbed roughly from 150 physicians per 100,000 people in the 1960s to almost 300 per 100,000 people today. We have effectively doubled the density of physicians over this period. We could spend the rest of the evening on why this is happening and what will happen, but one of the very important points is that this way of measuring physicians and probably other health workers—while being the best method we have—is not great. We are not counting automobile tires or widgets. What physicians do and what bearing they have on population health are quite different. What a family physician does and what a neurosurgeon does are quite different.

One factor is that there are many specialties today that did not exist in 1960. You did not have sports medicine or interventional radiology, et cetera, et cetera. However you put the value on these disciplines, the fact is that they are out there occupying physician time, energy, brain power, and a portion of budget, and they were not before. While this seems quite clean, it is much more complicated than that, but on the other hand it is a point of departure for understanding what has happened and where we are going.

Our training patterns have remained fairly stable, though. As you know, in order to get a license and be counted in the active workforce in this country, you have to have a residency. It doesn't matter where you went to medical school; you must have a residency in the United States. Thus, looking at the graduate medical education component of our medical system is where we can make the best projections about what the future of the workforce is going to be like. Frankly, by engineering what goes on at graduate medical education, one can have a significant—but not necessarily definitive—impact on what happens later.

The number of medical residents in the country has remained fairly constant—around 100,000 for more than a decade—although it is trending up a little bit in spite of a cap on Medicare payments for graduate medical education. This is a story unto itself: I am sure you are aware of it in general, but Medicare pays an average of $80,000 a year per resident

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in the United States. The amount was capped in 1997, but there has been some trending upward and a lot of discussion about what this means. A lot of evidence points to there being more fellows—that is, folks in essentially their second residency, sub-specialty residency, or prolongation of residency—and a diminution in primary care slots. This is the entry point for those "postgraduate year one" (PGY-1) folks who will be doctors in the system, numbering about 24,000 per year.

If you look at the origin of physicians in terms of education, there are three major components: U.S. medical graduates, international graduates, and graduates of osteopathic schools (these being allopathic schools). U.S. medical graduates have been fairly steady, with a slight down trending in terms of total numbers, and international medical graduates have trended upward slightly. The osteopathic line has trended upward, and though the number of osteopaths is small, it has doubled over this period. Osteopathic education is growing rapidly, and the majority of osteopaths are now taking residencies in allopathic hospitals.

This is the work of Dr. Richard Cooper—Buz Cooper—who is well known in the workforce research field. Cooper has been the primary clarion call for the concern that we are going to have too few physicians. A crisis is at hand. He has been persuasive and certainly persistent in making these arguments. This is the essence of it: He argues that the demand for physician services is inexorably linked to our wealth as a nation. If you follow our fortune as a linear upward line in terms of our per capita income, compared to the curve of physician-to-population numbers, he projects that the demand is going to go on like this and be much higher in a decade or two than it is today. The workforce is "flattening out," and Cooper factors a couple of things into this. One is the diminishing impact of physicians in terms of shorter work weeks, shorter work hours, shorter work lives, different lifestyles, and an increasing gender change in medicine (half of all physicians will soon be women, and it is well demonstrated that they work fewer years—about three less in a career). So these are downward pressures. The upward pressures of adding non-physician clinicians to the mix are a factor as well. In this case too, Cooper still anticipates a growing gap between the population demand and the number of physicians available. He says we are going to have a huge crisis and we need to start cranking out more physicians into the workforce as soon as possible. There are some who argue with him, but there is concern.

You need to distinguish between more medical school slots and more graduate medical education slots, which is not done in the popular press and is rarely done among academics and medical educators. But this is a key question. The work of Dr. John Wenneberg's Dartmouth Group shows the vast differences in many hospital referral regions for Medicare payments in the last 6 months of life: The numbers range from less than

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$4,000 to up toward $10,000 or $11,000 at the highest end of the range. Wenneberg's work essentially shows the huge variation in the culture of medical practice in different areas. The areas that are most expensive correlate with more specialists and more hospital beds. The areas that are less expensive correlate with fewer beds and, effectively, more primary care. Adding to the evidence that well-balanced communities are a good primary care base and cost less, this was adjusted for age, socioeconomic status, et cetera.

This is very powerful evidence that we have some major disparities and some major opportunities for recalibrating our system. It also suggests that we shouldn't recalibrate with more sub-specialists, which is what our current system trains and what the Cooper line would bring into play. So you have Cooper on the one hand saying, "We need more." On the other hand, you have Wenneberg saying, "If we are going to have more, it is going to make this worse." This is a problem, so we better stop here and fix it before we put more sugar in our tea as it were.

There has been a response on the part of medical schools. The Association of American Medical Colleges predicts a 17 percent increase in the number of physicians through both expansion and new schools in the next 6 to 8 years. For the osteopathic community, the number is higher at about 25 percent. Put these figures together and you are talking about a 20 percent response. It is pretty much in the pipeline, which is good. This means 20 percent more U.S.-trained physicians (not 20 percent more residencies at the moment).

When you consider the actual 2007 numbers, we are graduating (in rounded figures) about 18,000 osteopathic and allopathic graduates each year into the ranks of residency. We have about 24,000 PGY-1 internship slots. The delta is 6,000, and those are international graduates. That is a version of what has happened every year for the past half-century really, but it's been at about this level for the past 10 years. About 6,000 international graduates arrive to join the 18,000 U.S. graduates and make the 24,000 that go on through residency. Virtually all of them go into practice (although, of course, a few of the international graduates do go home, and a few of the U.S. graduates don't go into medicine or don't stay on). That is basically your workforce, your input.

Now if we continue with this 20 percent increase over the next 6 to 8 years, and we don't increase graduate medical education, you close the gap. On the presumption that most residency directors choose U.S. graduates over international graduates, you can decrease the brain drain and diminish the vacuum that is pulling people into the country. Put aside for a moment what people think about that; you are not messing with immigration law, you are not putting restrictive anything on anybody, you are

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simply saying it is a market, and the market has changed because we are moving toward self-sufficiency. This is a good principle.

If you take the lid off graduate medical education or you increase it by the same factor, you are now producing 27,000 if you have kept your role vis-à-vis the rest of the world the same—a very appreciable pull. If you believe what Cooper and others have suggested—that we need 30,000 graduates a year—you will increase the pull to almost 9,000 a year (or 400,000 physicians over the period). So you make the brain drain worse.

This is what is out in front of us, and it is largely determined by what happens in graduate medical education. Currently, hospitals with Accreditation Council for Graduate Medical Education approval can create new residencies. As we have seen, what is going on is a little unclear. The new residencies tend to be on the specialty side. They go to teaching hospitals (as our workforce has done generally), since teaching hospitals have governed and are essentially that keyhole through which all must go in order to enter practice. It may not be the best mix, but at least there is not further federal support going into building a workforce that in the eyes of many is not in the best interest of the country.

My own preference comes from the policy perspective that this represents good domestic policy. We are giving more opportunities, we are moving toward self-sufficiency, and it is good global policy because we are beginning to be a good global citizen and not under-training and relying on our economic prowess to help ourselves to doctors from around the world. I think much the same could be said in nursing. In nursing, the educational ramp-up has many more challenges than in medicine. You have people being turned away in medicine who are eager to go to medical school. You have the capacity in U.S. medical schools to expand, which is happening, and it could happen even more robustly with better support on a federal level. For example, there is no new support for undergraduate funding. Title VII funds, which have been a historical vessel for funding, are diminished—almost eliminated now—and there is no movement as yet on those. More could be done, clearly.

What to do? As I've said, lean is better. People will say there will be shortages, and there will be. There are evaluative clinical sciences, and a lot of the work being done on quality in outcomes will help us answer the questions of what works and what doesn't. They need to help us develop better guidelines and better practice norms, so that those huge gaps in differential payments and differential cultures can be brought closer together. We are way ahead of the world in the use of non-physician clinicians: There are between 150,000 and 200,000 nurse practitioners and physician assistants practicing today among those 800,000 physicians. Non-physician clinicians are already a major component of our workforce, and I think the various strategies that Marla Salmon talked about—team

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building, medical homes, the use of an integrated workforce like this—will help us face the challenge of building a workforce that will meet an aging population's needs. And, by the way, the non-physician clinicians are moving briskly into specialties. It is not just a primary care phenomenon. They work well across-the-board. Indeed, as was suggested, we ought to move toward self-sufficiency and keep the cap on graduate medical education. There are fiscal reasons, which Medicare experts and those who are concerned with policy will argue, but from a workforce perspective keeping the caps on is an important thing to do.

What to do abroad? There is already support through the President's Emergency Plan for AIDS Relief (PEPFAR) and other initiatives for capacity development. We ought to promote what is called reverse flows. We need a U.S. Global Health Service Corps, and we have talked about it. An IOM-sponsored committee, which I was fortunate to chair a few years ago, recommended such a program and laid out a blueprint of how that would work. We should send more folks back to developing countries.

There is one last idea I want to leave with you: We should track immigration and set benchmarks for good practice. In the policy community we don't talk about what our level of citizenship is in the world, particularly in regard to medicine and nursing. But these are items that people have talked about, and I would like to promote them. They come down to a question of an equity index. Codes of conduct have been proposed, particularly by some in the United Kingdom. I am not a great fan, but within these our country would say that we will not recruit in countries that do not invite us in. Particularly for nursing that works. In medicine, though, the movement is usually spontaneous so there is less applicability. But putting something on the books that says we wish to be good global citizens would be an important act of any country.

We ought to know how many newly licensed physicians in the United States each year come from developing countries. That could be done, but we don't track it. Are we taking more? Are we taking less? What are the trends? Also, how much capacity development funding do we do abroad? People talk about reparations—we will never do that, I don't think it's politically viable. But through PEPFAR and others we are investing abroad. What is that level? Is it growing? At what magnitude? How many of our folks are working abroad? The last study of this was done in 1984, and it was not a terribly good study. The data were not very good. We are in the process of designing a study, but we need funding for it if anybody has good ideas. We would look at the sectors of people abroad—government, nongovernmental organizations, both faith-based and secular organizations, corporations, and universities. It would be a difficult study to do, but set a floor and look 5 years, 2 years, 10 years: How many are going and

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how do we compare to other countries? Finally, roll those all into an index and we could talk about various countries and how well they are doing.

We have domestic issues, yes. But our domestic issues, as Marla Salmon has suggested, really have enormous import for the rest of the world. We need better metrics and a better sense of an ethical role for us as a country, which ought to be quantified in a way that we can talk about it explicitly. I think this is a challenge for the upcoming two years as we try to get it right with our workforce as well as workforces in the rest of the world. Thank you.

DR. FINEBERG: Thank you very much. Kevin, welcome back up to the front of the room. The floor is now open for your questions and comments.

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Discussion*

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QUESTION about involving patients in their care.

DR. GRUMBACH: Certainly self-management of chronic illness is the sine qua non for making progress in this area to empower and activate patients.

QUESTION about whether doctors are doing much work with patient self-management?

DR. GRUMBACH: Not as much as we would like. Some programs in medical education are taking Kate Lorig's work with patient empowerment, group visit models, and the chronic care model and incorporating those concepts and skills in the training of health professionals.

It requires health professionals to get out of the mindset that you are just imparting knowledge—what you are trying to do is to activate the patient. And that is a big mind shift, away from the idea that you have information, you are going to tell this information, and the patient is going to leave and somehow do better. The key is much less about information than about how somebody can gain self-efficacy. Helping patients with self-directed action plans is where a lot of the thinking is now. Instead of telling the patient, "Yes, you have a lousy diet, eat better," the approach is, "Okay, yes, you eat those four pan dulces every morning. What if you could just eat three?" What is doable? What is a place to start so that

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people can gain some sense of efficacy, some mastery, and begin to make a difference?

We actually have forms in our clinic now to help work with a patient to identify the self-management activity they want to work on and to help them build the confidence to take these small steps. It turns out that most doctors are not very good at this approach. Medical assistants and nurses are frankly are much better at it, probably because they are not so control oriented.

So we keep trying with physicians in training, but I think lay educators and health workers are also going to be some of the key folks to work on this approach. I see it happening. I am not so skeptical; I do see some of this stuff happening.

The other question, which is a more threatening question for primary care, is, "Who needs a primary care doctor or nurse practitioner anyway? I will just go on the Internet and find something when I need it, and I will decide if I need to go to the specialist." But I think even the most empowered and educated person needs help integrating all of this information. I think there is still a need, even for an educated, empowered patient, for a primary care medical home that is responsive to their needs and that can work with an activated patient to get them what they need.

QUESTION about educating and training physicians in different types of settings.

DR. GRUMBACH: Maybe Fitz Mullan has some ideas on the international issues. At the residency training level for physicians, it was a brilliant idea to link payment for medical education to hospitals. That was a very forward and progressive way to do it. Sarcasm aside, we are stuck with this model where all the money, the federal funds that support training at the residency level, go to the hospital, not to the training program per se. And then it is actually up to the hospital how they allocate the funds for educational purposes. I think you have to uncouple training funds from hospitals. Now you can get out of that model and get waivers so that a community health center can actually get the Medicare graduate medical education money, but it is a fairly cumbersome process. You would need much more flexibility from the Centers for Medicare and Medicaid Services to unlink Medicare graduate medical education payments from hospitals. Fitz Mullan was leading that charge in the Clinton administration, thinking about regional consortia for graduate medical education. The consortia would have received the money and then would have distributed it with a regional plan for workforce development. That is probably the type of model you have to get to. You know who the opposition is to that; I don't have to tell you. It is every leader of an academic health

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center. So it is a huge challenge. There would have to be the political will to take those interests on.

Now at the medical school level or the nursing school level, a related question is whether it really helps to train people in rural settings. How effective is that in getting people to stay in those areas after they are trained? I think there is still a little debate on that. It is probably somewhat effective, but unless you have the incentives and other support there for rural practice, you can train somebody in a rural community only to have them say, well, there is no infrastructure here and no job for my spouse, so I'm heading for the city. I think it always has to be coupled with looking at the broader picture. There are people who have developed rural training tracks, at the University of New Mexico, for example. Australia has built a whole new rural-based medical school. Canada also has developed a decentralized medical school for rural training. I think it will be really interesting to see whether they retain students when they graduate in those areas or not. I think it is a bit of an open question.

DR. MULLAN: Just to follow up on that, clearly the Medicare graduate medical education payments are a huge barrier to innovation of any support. As you know, the hospitals don't get paid if the individual is not working in a sanctioned hospital or hospital-owned facility. This inhibits all kinds of off-site training—short term, long term, et cetera. There are waivers, but it takes a month of Sundays to get them. We must take off the lock that hospitals have on both the graduate medical education money and the entire support that comes with direct and indirect subsidies. There should be a whole subsidy system, but hospitals are invested in keeping it the way it is. I think this problem is due to hospitals more than medical schools. Some deans would happily see it go in the other directions, but they are locked into the hospitals.

There are some interesting innovations taking place, though. There is a new osteopathic school just opened in Phoenix whose model will be totally community health center training. And there are a number of osteopathic schools located in rural areas like Paint Branch, Kentucky—and there is one now open in Harlem. So they are trying, but there has been more innovation in the osteopathic community.

There are also some very interesting offshore innovations. The University of Negev in Israel has a medical school that is an international school of medicine affiliated with Columbia and that is populated mostly by Americans. They are trained in Israel. They do three months of clerkship—I think it is three months in their senior year—in one of five universities in developing countries. They go to work as medical students on the wards in South Africa, Nigeria, and elsewhere. They are certified by the Education Commission for Foreign Medical Graduates, and they come back to the

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States. But they are, in theory, designated as international health experts. We will see how that all plays out.

But I think the interesting thing is that these are all occurring outside the traditional allopathic model, which is still very locked in on the academic health center and a very traditional approach to training. We need to let a thousand flowers bloom, and we certainly need to open up support systems.

QUESTION about whether part of the problem is payment and regulations, where non-physicians can't bill for services.

DR. GRUMBACH: That is a great question. Money drives a lot of this, right? For independent clinicians such as advanced practice nurses and physician assistants, Medicare will reimburse their services. There is the ability for these clinicians to bill independently for Medicare and Medicaid payment in many states as well as in some private plans. I think it is very interesting to look at the politics around non-physicians billing third-party payers. There is the perception that physicians are always resistant to expanded scope of practice and independent billing for nurse practitioners, but it is really the professional societies that are worked up about it. We surveyed a random sample of physicians in California, and we found out that to them it was not that big an issue, partly because all the primary care physicians are so overworked. You can't on the one hand say, "I am overworked, I have all this demand I can't cope with," and on the other say, "Don't let the nurse practitioner move into my neighborhood and start practicing." There is a little bit of intellectual inconsistency there. Not that that has stopped people before from making those arguments.

The place where I think the policy needs to go with more traction is actually in regard to the non-professional staff in primary care. The problem is that whether you are a nurse practitioner or a physician, if a patient comes into your practice or clinic and sees only the medical assistant and not you, it is not a billable visit. That is where there has to be much more flexibility, whether it is getting back partly to the old model of capitation or some new payment arrangement. Bob Berenson has proposed some innovative payment models for primary care. That is where the real critical reforms have to happen in Medicare and in private plans. The reform probably needs to be some amalgam that is a little bit capitation and a little bit fee for service to enable billing for non-direct encounters, whether it is e-mail encounters, virtual visits, or group visits. I think that is where there has been a lot of slowness in reforming payment policies. Payment is so locked into the notion that if a physician, or frankly, a nurse practitioner or clinical pharmacist, doesn't see the patient, it is not a billable service. That is a huge hang-up right now, I would say. I don't know

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if that resonates with what you said, but I think that is the fundamental problem right now.

QUESTION about what the trends are in first year family medicine residency positions.

DR. MULLAN: Kevin can probably answer better than I. In family medicine the trends have collapsed. The fill rate for PGY-1 positions is down to 50 percent U.S. graduates.

DR. GRUMBACH: But graduates of U.S. osteopathic schools fill another 15 percent of first-year family medicine residency positions. So it is about 35 percent to 40 percent international medical graduates.

DR. MULLAN: U.S. allopathic graduates' interest in family medicine has decreased a lot. The overall interest and the overall slots filled by U.S. graduates in internal medicine have remained high, but the sub-specialization rates have increased a lot. Whereas you had many people previously going in to be general internists, up to 80 percent are now specializing and going on for fellowships. These trends are being backfilled to some extent by international graduates and osteopathic graduates, which are holding the line for the moment. But there has also been some falloff in the number of family practice positions offered, has there not?

DR. GRUMBACH: A little bit, about 10 percent fewer positions annually compared with 10 years ago.

DR. MULLAN: At some point the family practice community begins to pull back. In terms of canaries in the mine shaft, these are not good omens for the future of primary care.

QUESTION about whether, if the numbers of graduates coming out of allopathic schools increases quickly, there will be more competition for internship slots among osteopathic graduates, Caribbean medical school graduates, and international medical graduates for residency positions.

DR. MULLAN: Yes, access to graduate medical education (internship slots) will become more competitive. It is competitive right now. The ECFMG certifies probably about 8,000 international medical graduates every year (although the number does vary from year to year), and there are only about 6,000 slots. So a lot of international graduates are not getting positions. There is already very hot competition, and it will get hotter. The question I am often asked is, "Will U.S. graduates not get a position?"

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Surely at some point, if that gets closer, there will be some smart residency director who says, "This graduate from here or there is a more attractive candidate than somebody coming from a U.S. school." It will ultimately become an issue that will have political legs of its own. But I think we need to take that on, and the only way to get to a higher level of self-sufficiency is to move closer to training the number of folks that we have residency slots for, and that will make it a hotter competition.

DR. GRUMBACH: You include the osteopathic grads in your numbers, right?

DR. MULLAN: They are not included in the 6,000—they are included in the 18,000. So they are already included.

DR. FINEBERG: This is obviously a rich and very, very complicated topic. We have touched the surface in a number of areas and probed deeply in a few. I do want to mention that there is an IOM report that will be forthcoming early next year, which will be particularly directed at workforce related to the growing needs of an aging population. There is more information, if you would like it, at the desk as we go out tonight. Please join me in thanking our panelists again for a wonderful presentation. Thank you both.

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Biosketches

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Kevin Grumbach, M.D., is professor and chair of the Department of Family and Community Medicine at the University of California, San Francisco (UCSF), and chief of Family and Community Medicine at San Francisco General Hospital. He is the director of the UCSF Center for California Health Workforce Studies, co-director of the UCSF Center for Excellence in Primary Care, and co-director of the Community Engagement Program for the UCSF Clinical Translational Science Institute. His research on topics such as primary care physician supply and access to care, racial and ethnic diversity in the health professions, and the impact of managed care on physicians has been published in major medical journals such as the *New England Journal of Medicine* and *JAMA* and has been cited widely in both health policy forums and the general media. With Tom Bodenheimer, he coauthored what has become the best-selling textbook on health policy, *Understanding Health Policy: A Clinical Approach*, and the recent book *Improving Primary Care: Strategies and Tools for a Better Practice*, both published by McGraw Hill-Lange. He received a Generalist Physician Faculty Scholar award from the Robert Wood Johnson Foundation, the Health Resources and Services Administration Award for Health Workforce Research on Diversity, and in 1997 was elected a member of the Institute of Medicine, National Academy of Sciences. Dr. Grumbach is co-chair of the UCSF University–Community Partnership Council and a founding member of the California Physicians' Alliance, the California chapter of Physicians for a National Health Program. He practices family medicine at the Family Health Center at San Francisco General Hospital.

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Fitzhugh Mullan, M.D., is the Murdock Head Professor of Medicine and Health Policy at the George Washington University School of Public Health and a Professor of Pediatrics at the George Washington University School of Medicine. He is also a member of the medical staff at the Upper Cardozo Community Health Center in Washington, D.C. Dr. Mullan graduated cum laude from Harvard University in 1964 with a degree in history and from the University of Chicago Medical School in 1968. He trained in pediatrics at the Jacobi and Lincoln Hospitals in the Bronx, New York. In 1972 he was commissioned in the United States Public Health Service and practiced in New Mexico as one of the first physicians in the National Health Service Corps. From 1977 through 1981, he served as director of the National Health Service Corps in Washington, D.C., followed by tours as a scholar-in-residence at the Institute of Medicine (IOM), as a senior medical officer at the National Institutes of Health, and from 1984 to 1985 as the secretary of the Health and Environment Department for the state of New Mexico. From 1986 to 1988 he was on faculty in the Department of Health Policy and Management at the Johns Hopkins School of Hygiene and Public Health, followed by 2 years on the staff of the Surgeon General, directing the Office of Public Health History. He was appointed director of the Bureau of Health Professions in the Health Resources and Services Administration in 1990 and to the rank of assistant surgeon general (rear admiral) in 1991. In subsequent years he served on both the President's Task Force on Health Care Reform and the Council on Graduate Medical Education. In 1996 he retired from the Public Health Service and joined the staff of the journal *Health Affairs* as a contributing editor and the editor of the Narrative Matters section, positions he continues to hold. In recent years his research and policy work have focused on the United States and international health workforce issues, with particular emphasis on capacity building in Africa. He has written widely for both professional and general audiences on medical and health policy topics. His books include *White Coat, Clenched Fist: The Political Education of an American Physician* (Macmillan, 1977), *Vital Signs: A Young Doctor's Struggle with Cancer* (Farrar, Straus, and Giroux, 1983), *Plagues and Politics: The Story of the United States Public Health Service* (Basic Books, 1989), and *Big Doctoring in America: Profiles in Primary Care* (University of California Press/Milbank Fund, 2002). He was the senior editor of *Healers Abroad: Americans Responding to Human Resource Crisis in HIV/AIDS* (The National Academies Press, 2005) and *Narrative Matters: The Power of the Personal Essay in Health Policy* (Johns Hopkins Press, 2006). Dr. Mullan is the founding president of the National Coalition for Cancer Survivorship. He is the recipient of the American Cancer Society's 1988 Courage Award, the Society for Surgical Oncology's 1989 James Ewing medal, the Surgeon General's Medallion, and the United States Public Health Service's Distinguished Service Medal. He serves

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as vice-chair of the Board of Trustees of the National Health Museum. He is a member of the IOM of the National Academy of Sciences.

Marla E. Salmon, Sc.D., R.N., FAAN, is dean and professor at the Nell Hodgson Woodruff School of Nursing and Rollins School of Public Health as well as director of the Lillian Carter Center for International Nursing at Emory University. In addition to her work in academic and clinical nursing, Dr. Salmon has held senior leadership positions in professional and national government service. Her career focus has been on national and international health policy, administration, public health, and workforce development. As former Division of Nursing director and chief nursing officer of the U.S. Department of Health and Human Services, Dr. Salmon led key federal programs aimed at shaping the nation's nursing workforce. She continued this work when she chaired the National Advisory Committee on Nursing Education and Practice, and on an international level while serving as former chair of the Global Advisory Group on Nursing and Midwifery of the World Health Organization. Dr. Salmon has been called upon to play significant advisory roles nationally and internationally, including membership on the White House Task Force on Health Care Reform, the American Nurses Credentialing Center Magnet Think Tank, and more recently on several committees for the Institute of Medicine (IOM) of the National Academies, including the Committee on the Options for Overseas Placement of U.S. Health Professionals and the Nursing Panel Committee on Monitoring the Changing Needs for Biomedical and Behavioral Research Personnel Study. She has served as a consultant to the World Health Organization and has worked extensively with government and corporate partners in the Caribbean region and elsewhere. Dr. Salmon serves on a number of professional boards, including the Nursing Advisory Council of the Joint Commission on Accreditation of Healthcare Organizations, the Board of Directors of the National Council on Healthcare Leadership, and the Board of Trustees of the Robert Wood Johnson Foundation, including former membership on their National Advisory Committee for the Executive Nurse Fellows Program. She has published extensively and is a member of several editorial boards, including *Journal of Nursing Scholarship* and *Nursing and Health Policy Review*. Dr. Salmon has received prestigious awards and recognitions, including membership in the IOM and the American Academy of Nursing. Her federal leadership led to her receipt of the President's Meritorious Executive Award and both the U.S. Public Health Service's Chief Nurse Award and Special Recognition Award. Dr. Salmon has received the American Nurses Association Community Health Nurse of the Year Award and was recognized by the National Black Nurses' Foundation for her role in enhancing the ethnic and racial diversity of the nation's nursing workforce. She received her

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doctor of science from the Johns Hopkins University School of Hygiene and Public Health, holds degrees in nursing and political science from the University of Portland, is a Fulbright Scholar, and is the recipient of honorary degrees from the University of Portland and the University of Nebraska Medical Center. Dr. Salmon is a fellow with the W. K. Kellogg National Fellowship Program and the Hubert H. Humphrey Institute of Public Affairs.

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