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PRINCIPLES OF INTEGRATIVE HEALTH: A PATH TO HEALTHCARE REFORM

HEARING

OF THE

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

ON

EXAMINING PRINCIPLES OF INTEGRATIVE HEALTH, FOCUSING ON A PATH TO HEALTHCARE REFORM

FEBRUARY 23, 2009

Printed for the use of the Committee on Health, Education, Labor, and Pensions

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C O N T E N T S

STATEMENTS

MONDAY, FEBRUARY 23, 2009

ADDITIONAL MATERIAL

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PRINCIPLES OF INTEGRATIVE HEALTH: A PATH TO HEALTHCARE REFORM

MONDAY, FEBRUARY 23, 2009

U.S. SENATE,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Washington, DC.

The committee met, pursuant to notice, at 2:00 p.m. in room SD–430, Dirksen Senate Office Building, Hon. Barbara A. Mikulski presiding.

Present: Senator Mikulski.

OPENING STATEMENT OF SENATOR MIKULSKI

Senator MIKULSKI. The Committee on Health, Education, Labor, and Pensions will now come to order. Today, the Working Group on Quality, a path to saving lives and saving money, will come to order.

Today's hearing will examine the principles of integrative healthcare and discuss how to best include these principles into the design of what we hope will be a new healthcare format for the United States of America.

Discussing healthcare and healthcare changes is not simply about expanding access to acute care or even expanding access to physicians' care, though they will be a pillar to what Congress ultimately does.

Even with access to more doctors, if our food is sprayed with pesticides and comes from undisclosed origins—we could have every child in the District of Columbia see a doctor, but as long as there is lead in the water, the children will have severe consequences. We also need to be able to look at how, at the end of the day, our healthcare is not oriented to an insurance system, but oriented to a patient system.

Our goal in the healthcare reform debate is to focus on improving quality of care. That is the assignment that Senator Kennedy gave me. Our purpose is to see that people are healthier, diseases are prevented, chronic care conditions are appropriately managed, and we work with the private sector in a way where this, whatever we do, is affordable and sustainable.

Integrative healthcare is a key component to improving health quality. This hearing is designed to be part of the week-long discussion that is going on in Washington, DC. Starting on Wednesday, the Institute of Medicine will have its own 3-day summit on integrative medicine.

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Today, I am holding this hearing of distinguished practitioners and thinkers in the field to essentially kick off the national debate. We are actually going to be ahead of the Institute of Medicine. Then, on Thursday, Senator Harkin and I will also be chairing two additional panels to continue the discussion.

Senator Harkin and I, and other members of the committee, feel so strongly about this that we are devoting a week-long conversation to this topic. It is rare and unusual for any Senate committee, particularly in the area of domestic policy, to take a topic and really delve into it.

We feel so strongly about this because what we want to be able to do is not reform an existing insurance system, but to transform the delivery of healthcare. In order to do that, we want to be sure that we hear from the people who really have had the most experience. We know that many of you will be talking about lessons learned, principles to be recommended, and ideas that need to be incorporated in the healthcare debate. We are so excited to see you.

Because of the robust participation in the IOM study, we could have had a whole day just here. We are going to follow an unusual format today. What we are going to do is have really experienced people in the integrative healthcare field at the witness table. At the same time, we have also distinguished resource people that we are going to engage in the debate.

What I want to do now is introduce the people who are going to participate in the panel, and at the same time identify the wonderful resource people here.

First of all, I want to thank each and every one of you for coming. But most of all, I want to thank you for what you do every day.

Each and every one of you, who are both at the table and also as part of our resource people, make a difference. You make the difference in people's lives by the hands-on care that you deliver or the services that you administer or the research that you guide. Many of you have won national and even international awards. At the end of the day, people's lives have been better off because of what you do.

I can say this, as the U.S. Senator who will be working with Senator Kennedy and, hopefully, on a bipartisan basis to transform healthcare, that each and every one of you are making a difference. When we work together, we can make change.

That is what America is asking us to do. Not only to change an insurance system—to add one more preventive test, to fund one more access to a boutique program—but to really transform healthcare. But to be able to do it in a way that the business they work for can afford to provide it, and as families and individuals, they can afford to buy it. What they want to buy into is not the same old, same old, same old.

That is what we are here today to talk about. This is an official hearing and will be part of the official congressional record in which we invite all policy people to look at and to examine, just as they will be looking at the results of the Institute of Medicine's summit on integrative healthcare.

Today, when you sit at this table, you are helping make history. As our Presidents say, now that we are making history, let us

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change history. We want to now welcome to the table people who are quite experienced in the field.

The person who will kick off the hearing and give an overview is Sister Charlotte Rose Kerr, a Sister of Mercy, professor emeritus at the Tai Sophia Institute. She has also been an assistant professor at the University of Maryland School of Nursing and served on President Clinton's White House Commission on Complementary Medicine, and she has been a member of the NIH Advisory Council on Complementary Medicine.

We have Dr. Wayne Jonas, who is president and CEO of the Samueli Institute. Dr. Jonas is an assistant professor of family medicine at USUHS, our distinguished military medical school. He was a Walter Reed doctor and also was the first director of the Office of Complementary Medicine at NIH.

We have Mary Jo Kreitzer, the founder and director with the Center for Spirituality and Healing at the University of Minnesota. This center coordinates integrative health and medicine programs at the medical, nursing, and pharmacy school.

We also have Dr. Jim Gordon, who is a clinical professor at Georgetown School of Medicine. Dr. Gordon chaired the NIH Commission on Complementary Medicine. He also chaired President Clinton's White House Commission on Complementary Medicine. He has been active not only in the practice of integrative medicine, but also in taking these bold new ideas to the Middle East; where we need to do a lot of integration and a lot of healing.

We also have Bob Duggan from the Tai Sophia Institute. He is the founder of the Tai Sophia Institute, an academic center that trains people in acupuncture, herbal treatments, and botanical treatments; he has also been a leading educator in providing integrative healthcare and has a lot to share with us on health and wellness services. We listened to much of the thinking when we were in Howard County the other day, the whole idea of a health coach, which makes having the medical home worth living in.

Then we turn to Cathy Baase, who works for Dow Chemical. She is the global director—wow—the global director of health services. She is in charge, really, of ensuring that the Dow Chemical workers get the best healthcare available, but she also has a responsibility to shareholders that whatever is delivered must be affordable and sustainable.

We feel that we have so much to learn from our private sector, particularly those who have either been self-funded or self-initiated, because it sounds like you have created your own health reform over there at Dow. We are looking forward to hearing about your health reform because we can learn from and incorporate your lessons.

In our resource group, we have Cathy Kemper, a distinguished practitioner from the Department of Pediatrics at Wake Forest University; Mr. Ron Goetzel from Emory University who heads up the Thomson Reuters healthcare area; Drs. Brian Berman and Sue Berman. Dr. Berman heads up the complementary medicine practice at Kernan Hospital and has won many national and international prizes. He has been a lead collaborator with the NIH in that area.

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We regret that Dr. Herbert Benson, professor emeritus at Harvard, could not be with us, but he has submitted a paper, which we will include in the record, and also Mr. Simon Mills, who is a special advisor to the UK parliament on the concept of integrative medicine that is being done in the UK.

We believe that trans-Atlantic alliances should not only be for the defense of the homeland against predatory attacks. There are a lot of predatory attacks against our people. Mr. Mills is advising the parliament, and we want to benefit from his advice. His paper will be included in the record.

[The information previously referred to can be found in Additional Material.]

That is by way of background. We have quite a lot to listen to and to learn. To kick it off, I will now turn to Sister Charlotte Rose Kerr for her introductory remarks.

STATEMENT OF SISTER CHARLOTTE ROSE KERR, RSM, R.N., B.S.N., M.P.H., M.Ac. (UK), PRACTITIONER AND PROFESSOR EMERITUS, TAI SOPHIA INSTITUTE, LAUREL, MD

Sister KERR. Thank you, Senator. I think you can hear me now?

Senator MIKULSKI. Yes.

Sister KERR. Madam Chairwoman, before I begin, I would like to share with you the ground from which I speak, and I speak to you as a Sister of Mercy. I speak to you as an educator, as a nurse, as an acupuncturist, and, perhaps most importantly, I speak to you as a southern woman.

My task today is to set the stage for this hearing, entitled "Principles of Integrative Health: A Path to Healthcare Reform." Many of us here today share a sense that this time of crisis in national healthcare brings an opportunity for profound change in the structure and the content of healthcare.

Today, we will talk about just what is an integrative approach to healthcare. Who are we? Who are the people involved in integrative healthcare? What do we feel is necessary to create our healthcare system and restore the vitality to America?

What we mean by integrative healthcare is expressed so well by my colleague Jim Gordon, who will speak shortly, and I agree with his description. It is an approach to healthcare that includes those forms of helping and healing—whether previously described as conventional, complementary, or alternative—which have proven to be most effective and makes them available to all Americans in comprehensive and individualized programs.

We need to include in our healthcare system surely medication, but also meditation. We need acupuncture, and we need surgery. We need group support in sustaining programs of self-care as well as individual diagnosis and consultation in designing these programs.

Of course, at the core of all health is the quality of our community health, or our public health. There isn't one of us in this room today who could create a blade of grass this spring, and there isn't one of us in this room who would have cured a cough this winter. All of us in healthcare are only assisting nature to do what it can do.

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Not one of us could provide a nutritious diet to our families if the land has lost its nutrients and its spirit or if the water is tainted or toxic. No healthcare system, no matter how integrated, can support the body politic without the health of the planet. This is primary and foundational to all health.

Again, Jim's clarity can't be beat here. He says that we need to recover the perspective in which the highest quality of healthcare is seen as promoting personal, emotional, social, and spiritual fulfillment. We must develop educational systems and programs that manifest this perspective. For all of us serving in healthcare, we need to re-dedicate ourselves to the vocation to which we have been called—to heal and to serve.

Who are we, in integrative healthcare? Well, we are people serving in healthcare, people who saw a deficiency in the present healthcare model and began the journey to claim an ecological model of health and healing. This is an approach that recognizes the interrelationship of the health of the individual, the environment, the community, the wider community, on to the cosmos.

Many of these people hold credentials in traditional Western medicine as well as other licensed healthcare modalities, for example, naturopaths and chiropractors and neuromuscular therapists, acupuncturists, and so many more.

I will give you a cameo of my own healthcare credentials, which reflects the kind of experience many people bring to this growing movement. I have experienced working in a leprosy hospital as a registered nurse, managing patient care in the diabetes clinic at the University of Maryland, clinical experience in geriatrics and pediatrics and community health.

I have a master's in public health and served as assistant professor at the University of Maryland School of Nursing. I have a master's degree in traditional acupuncture and for 32 years have served as practitioner and faculty at Tai Sophia Institute in Maryland.

What brings us here today began as a quiet revolution by patients and practitioners, and now it is a social movement. At the beginning, many people viewed elements of this new paradigm as exotic—acupuncture, for example, and herbal medicine and bioenergy. Today, many of these aspects are mainstreamed. They are even common sense.

Nixon's trip to China in 1972 exposed millions of citizens to other modalities of healthcare, and we went from the Nixon trip to the Eisenberg study, which showed that, in 1997, 42 percent of Americans were using alternative therapies.

Then we moved on to the White House Commission on Complementary and Alternative Medicine in 2002, and what is called complementary and alternative and integrative medicine has gone from exotic to mainstream. Some researchers estimate that 70 percent of Americans currently use a form of complementary therapy.

This committee, under the direction of Senator Kennedy, has done pioneering work. Then there is Senator Harkin's faithful work at the NIH and the Office of Complementary and Alternative Medicine. Senator Mikulski, your work to get women included in research protocol at NIH and an establishment of Offices of Women's Health at NIH and FDA has led to really amazing results.

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As this committee deliberates on healthcare reform, I would recommend that it truly focus on, first, reformation and transformation of our system. Essentially, bringing new thinking that is better for people and has better outcomes, outcomes that can be sustained through practices of self-care.

Our current system is not producing health, and it costs too much. All Americans need a healthcare safety net for their ease of the mind and the heart. The resulting stress due to this unmet need is as huge a contributing health risk factor for many, many people.

Second, health promotion and prevention, we need to have a system that regards health promotion and prevention as important as treatment.

Third, we need a renewal of the education of healthcare professionals, and this is as challenging a task as our challenge of changing the healthcare system. My colleagues are going to elaborate on this need.

These points and so many others, such as care for the healers and body/mind/spirit care, will be stated, validated, and further explored today as we discuss integrative healthcare. Finally, I offer one more point, and that is the establishment of an Office of Health and Wellness.

At this time, it seems clear and necessary that in order to forward this transformation in healthcare, an Office of Wellness and Health should be established at the White House under the new health czar. This office would guide policy and legislation focused on creating a wellness culture and industry.

Hope is the action we take right now for our future. Even though we stand in unknowing about that future, we trust ourselves to find a new way to heal and to serve. As we go through this evolving cultural transformation, we know that new structures do need to be born, and we cannot be stopped by circumstances. We will concentrate on the rightness of this vision of integrated healthcare and trust we are working for the common good of the people of the United States of America.

President Obama, in his inaugural address, said, "Starting today, we have to pick ourselves up, dust ourselves off, and begin again the work of remaking America. Everywhere we look, there is work to be done."

We are ready and willing and expect to be surprised by the transformed healthcare system that will manifest.

Thank you for your attention.

Senator MIKULSKI. Thank you very much, Sister.

Each and every one of you submitted extensive testimony, and I am going to ask unanimous consent that your full remarks be included in the testimony.

Now, I am going to turn to Dr. Jonas and then to Dr. Gordon, who also, in addition to their practice, their thinking, etc, have already also worked with large government organizations—whether it has been our State Department, whether it has been the Department of Defense—to get their perspective on what needs to be done and how that worked.

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Then I would like to go to the educational aspects and turn to Dr. Kreitzer and Mr. Duggan and then really wrap up with the private sector's insights and recommendations.

Dr. Jonas.

STATEMENT OF WAYNE B. JONAS, M.D., PRESIDENT, SAMUELI INSTITUTE, ALEXANDRIA, VA

Dr. JONAS. Thank you, Senator Mikulski and members of the committee, for this invitation to testify, to talk about how integrative healthcare and the perspective on wellness can address some of the ills that our healthcare system has today, and to present a roadmap for integrative healthcare's inclusion in national healthcare reform.

Senator, you have already mentioned my credentials. I won't go over that. I will mention one thing. I still practice and see patients up at the National Naval Medical Center—our soldiers, our warriors, and families—on a weekly basis. And I can tell you, if our national healthcare system is on a slow burn, the Department of Defense's is on a rapid burn.

They are looking for things out of the box, innovative new programs. You will see a number of things that we can learn from in those areas.

I will mention briefly about the Samueli Institute. We are a nonprofit medical research organization that investigates healing, the application of health and wellness, and prevention in disease. We are one of the few organizations that has a track record in research on complementary and alternative medicine and healing relationships, optimal healing environments, and military medicine.

I am convinced that applying some of the principles of wellness and integrative healthcare can ensure lasting effect, lasting reform, reduce costs, stimulate investment, enhance productivity, improve the health of our Nation, and, importantly and often not mentioned, reduce suffering.

Sister Kerr mentioned that we do not have a healthcare system in this country, and that is true. We have a very impressive medical treatment system, especially for acute illnesses, but we do not have a healthcare system.

A few facts. We spend almost twice as much as any other country in healthcare, and yet we are 37th on the health indicators within this country. At current cost rates, healthcare will make up 25 percent of our GNP by 2025. If that were to continue, by 2082, it would make up almost half of our GNP, obviously an untenable situation.

The first of the baby boomers will begin to turn 65 starting next year, creating an avalanche of aging care needs that will bury our medical care and our Medicare system. We cannot expect to improve the health of our citizens simply through more and better access. You have made this point. We need a new vision for creating health in the country.

The ironic thing is we actually know how to do this. Science has shown us the roadmap. We have good evidence for it.

Over 70 percent of chronic illnesses are due primarily to lifestyle and environmental conditions, including substance use, smoking, diet, alcohol, the environment, inadequate sleep and exercise,

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stress management and resilience production, social integrations and support, and selective disease screening and immunizations. These are all modifiable behavioral conditions.

A Milken report recently showed that we would be able to save in the neighborhood of hundreds of billions of dollars in treatment costs if we took a proactive preventive approach in these areas, and trillions of dollars in productivity would be added to our economy.

We also know that health and disease are not a threshold. They are a continuum. We can now see—with technologies, imaging, genomics, proteomics, we can see diseases evolving. We can see the risk factors. We know they are there. We can see them coming down the track, so to speak. We know when the train is coming down the track.

It is no longer rational or scientifically sound to wait until disease reaches an advanced diagnostic threshold and then throw at it late and expensive interventions. It makes no sense to do this. Self-care and integrative healthcare practices that address these behaviors and processes can address these issues to reduce pain, improve quality of life, and enhance well-being.

This body, the Congress, and the President recently signed a stimulation bill of several billion dollars. One billion of that was for comparative effectiveness research. Some of this money could test the ability of lifestyle change and integrative approaches to prevent disease, enhance productivity, and reduce patient suffering.

Let me give you one example of that. There have been several direct comparative studies of the use of acupuncture in common pain syndromes, comparing it to the best conventional care that we currently have—things like headache, chronic back pain, arthritis. Most of these studies have shown that acupuncture produces about twice the effect of our best conventional when looked at head-to-head.

Similar studies are needed with mind-body approaches to induce the relaxation response. My colleague Herb Benson, who couldn't be here, is a champion of that and has demonstrated that. Massage, natural drugs, behavioral medicine, and other healthcare approaches.

With the input of many, the institute has developed something we are calling the Wellness Initiative for the Nation, or WIN, that provides specific recommendations to——

Senator MIKULSKI. Excuse me?

Dr. JONAS. WIN.

Senator MIKULSKI. Because for a minute, it sounded like "wimp." I don't think that is where you were headed.

[Laughter.]

That is not a word associated with you, Dr. Jonas.

Dr. JONAS. WIN, WIN, WIN.

[Laughter.]

Senator MIKULSKI. OK. W-I-N.

Dr. JONAS. W-I-N. A Wellness Initiative for the Nation. A copy of this document will be provided to the written testimony and be included in the record.

[Editor's Note: Due to the high cost of printing, previously published materials are not reprinted in the hearing record. Please see http://www.siib.org/news/news-home/WIN-Home.html.]

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The policies and principles of this approach are grounded in the continuity of healthcare and the prevention of illness, and you will hear testimony to many of those approaches today.

WIN would provide leadership to develop a health system in the United States; produce a workforce such as the HealthCorps, which you will hear in Senator Harkin's and your testimony coming on Thursday; produce information technology that supports prevention and wellness; and the incentives for producing a culture and an industry of wellness.

The program describes several phases as to how that approach would be produced in a step-wise manner. Those are in the record. I won't go over all of those. However, I do want to point a couple out that are consistent with some of the other things that have been said here.

First, we need leadership, and the leadership needs to come from an executive or congressional effort to focus specifically on developing a wellness industry. We have a medical industry. We have a medical culture. We need a wellness culture.

We also then, second, need to coordinate and align current health promotion and prevention policies. There are a number of them, such as that put forward by the Partnership for Prevention and Healthy People 2010.

We then need to establish models, demonstration models throughout the lifecycle as to how those wellness approaches can be done. I mentioned that the DOD is on a rapid burn. Our healthcare system in the DOD is not working very well because of the high stresses—the post traumatic stress syndrome, the chronic disease that is being produced by the wars.

They are moving ahead and rapidly developing new and innovative areas, including integrative practices, for our service members and families. We should take those lessons learned and bring them into the national area.

In conclusion, if these recommendations are applied in a coordinated fashion, this will be not just a triple multiplier, but a quadruple multiplier, enhancing education, health, productivity, and an economic stimulus for the Nation.

I appreciate the opportunity to appear before the committee and look forward to any questions. Thank you.

[The prepared statement of Dr. Jonas follows:]

PREPARED STATEMENT OF WAYNE B. JONAS, M.D.

Thank you, Senator Mikulski, and members of the committee for the invitation to testify about the potential of integrated health care to address many of the ills of today's health care delivery system; and present a roadmap to ensure integrated health care's inclusion in the national health care reform debate. My name is Wayne Jonas. I am a retired Army family physician; I see patients weekly at a Military Medical Center; and am President and CEO of the Samueli Institute of Alexandria, VA, and Corona Del Mar, CA. I have formerly served as Director of the Office of Alternative Medicine at the National Institutes of Health, the Director of the Medical Research Fellowship at the Walter Reed Army Institute of Research, a Director of a WHO Collaborating Center of Traditional Medicine and a member of the White House Commission on Complementary and Alternative Medicine Policy.

The Samueli Institute, a 501(c)(3) non-profit scientific research organization, investigates healing processes and their application in promoting health and wellness, preventing illness and treating disease. The Institute is one the few organizations in the Nation with a track record in complementary and integrative medicine, healing relationships and military medical research.

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I am convinced of the importance of applying integrative health care principles to the health reform process to ensure lasting reform, to reduce costs and to improve the health of our Nation. The United States does not have an effective health care system. We are first in health care spending but 37th in health of the industrialized nations. At current cost rates, health care will make up 25 percent of the GNP by 2025 and 49 percent by 2082. The first of the "baby boomers" will turn 65 in 2011 creating an avalanche of aging care needs that will bury the current Medicare system. We cannot expect to improve the health of our citizens through more or better access to the current system. We need a new vision and approach to creating health.

Science has clearly demonstrated that 70 percent of chronic illness is due primarily to lifestyle and environmental issues, including proper substance use (smoking, alcohol, drugs, diet, and environmental chemicals), adequate exercise and sleep, stress and resilience management, social integration and support, and selective disease screening and immunization. We know that health and illness are a continuum. It is unreasonable to wait until disease reaches an advanced diagnostic threshold, and then provide expensive late-stage interventions. We must pursue prevention, health promotion, chronic disease management and healing—a new vision of health and disease based on self-care and lifestyle management. Self-care and integrative health care practices can reduce pain, improve quality of life and enhance well-being.

The recent stimulus package passed by Congress has set aside $1 billion for comparative effectiveness research. Some of this money should test the ability of lifestyle change and integrative practices to reduce patient suffering and prevent disease. For example, several recent studies have directly compared the effect of acupuncture to the best conventional therapies in the treatment of common and costly pain problems, such as headache, neck and back pain, and arthritis. These studies have shown that acupuncture is often twice as effective as what we do now. Similar studies are needed with the relaxation response, massage, behavioral medicine, and other self-care approaches.

With the input of many, the Institute has developed A Wellness Initiative for the Nation document which provides specific recommendations to proactively prevent disease and illness, promote health and productivity, and create well-being and flourishing for the people of America. A copy of the document is provided to accompany my written testimony for inclusion as part of the hearing record. The policies and principles of the approach are grounded in the continuity of health and the prevention of illness throughout the human lifecycle by applying comprehensive lifestyle and integrative health care approaches that have demonstrated effectiveness.

The Wellness Initiative for the Nation approach is multi-faceted with the following recommended reform steps to be pursued in a phased manner.

- Phase 1: Create a working group and coordinating office at the Executive or Congressional level. This office would focus specifically on creating policies and programs for lifestyle-based chronic disease prevention and management, integrative health care practices, and health promotion.
- Phase 2: Establish a lead systems wellness advancement team (SWAT) of national leaders to guide the office.
- Phase 3: Define the "new paradigm" that is the focus of the wellness initiative for the Nation, to include the key vision, strategies, and tactics as well as the effective elements and metrics of comprehensive lifestyle and integrative health care practices.
- Phase 4: Collate, coordinate and align current health promotion and prevention policy efforts.
- Phase 5: Establish models for delivery of national wellness initiatives and acknowledge the lessons-learned by the Departments of Defense and Veterans Affairs.
- Phase 6: Create and evaluate new wellness demonstration projects across the human lifecycle and in various different settings, for example with children, worksites, military veterans and aging.
- Phase 7: Create parallel legislative tracks to support and incentivize effective public and private wellness initiatives throughout the Nation.

In conclusion, if these recommendations are applied in a coordinated fashion, a "triple multiplier" of health, productivity and economic stimulus would result for the Nation.

I appreciate the opportunity to appear before this committee and I look forward to any questions. Thank you.

ATTACHMENT.—A WELLNESS INITIATIVE FOR THE NATION

A WELLNESS INITIATIVE FOR THE NATION (WIN)—SUMMARY DOCUMENT

PURPOSE

The purpose of the Wellness Initiative for the Nation (WIN) is to **proactively prevent disease and illness, promote health and productivity, and create well-being and flourishing for the people of America.** WIN can also prevent the looming fiscal disaster in our health care system. In fact, effectively addressing preventable chronic illness and creating a productive, self-care society is our only long-term hope for changing a system that costs too much and is delivering less health and little care to fewer people.[1 3]

OVERVIEW AND RECOMMENDATIONS

• The overarching recommendation is to **create a Wellness Initiative for the Nation focused on promotion of health through lifestyle change and integrative health practices.** WIN would be overseen by the White House, with a Director and staff to guide relevant aspects of health reform, as described in the recent report, *The Health Care Delivery System: A Blueprint for Reform (the "Blueprint")*.[4]

• WIN will focus primarily on **accomplishing goal three of the Obama/Biden Health Reform Plan**—"improve prevention and public health"—and support development of an educational workforce and informational toolkit for delivery of this goal in local populations. WIN leadership will provide program analysis, develop policies, guide curriculum and evidence standards, and establish incentives and mechanisms that support these efforts in national health care reform.

• **WIN will align with overarching goals** of the "Blueprint" and Healthy People 2010 (Increasing Quality and Years of Healthy Life and Eliminating Health Disparities)[5] and link to recommendations such as the "Wellness Trust,"[6] a "Federal Health Reserve,"[7] the Institute of Medicine's reports on health care quality,[8] transformation,[9] integrative medicine,[10] and the White House Commission on Complementary and Alternative Medicine Policy.[11]

• The initial step of WIN is to **create a White House office**, with a Director and staff, specifically focused on developing policies and programs for lifestyle-based chronic disease prevention and management, integrative health care practices and health promotion.

• The policies and programs of WIN would be grounded in the **continuity of health and the prevention of illness throughout the human lifecycle** and would approach this continuity through comprehensive lifestyle and integrative health care approaches that have demonstrated effectiveness.

Other specific recommendations are as follows:

1. Systems Wellness Advancement Teams Network ("The Innovators")

• Establish a network of Systems Wellness Advancement Teams (SWAT) with national and then local leaders in health promotion/disease prevention and integrative practices to maintain the wellness vision and guide the White House in the implementation of this new paradigm.

• Empower the SWAT network to continuously evaluate and translate effective prevention and health promotion practices into local delivery tools and policy changes.

• Create learning communities that evaluate and translate innovations in lifestyle and integrative health practices into new settings and populations across the network.

2. Health and Wellness Professional Coach Training ("The Advocates")

• Establish educational and practice standards in delivery of effective, comprehensive lifestyle and integrative health care approaches, and train individuals qualified to focus full-time on prevention, creating health and healing, and enhancing productivity and flourishing.

• Facilitate any qualified and State-licensed health care practitioner or educator to gain specialist certification in prevention, health and wellness delivery, or attain sub-specialist status for integrative health care delivery in specific settings and populations—for example, schools, worksites, health care settings, and long-term care facilities.

• Create a Health Corps to provide an army of young and older people that would learn and model wellness behavior and support delivery of wellness education and training by the coaches.

3. Health and Wellness Information Technology Toolkit ("The Avatars")

• Create an advanced information tracking and feedback system (an applied health promotion technology toolkit) for delivery of personalized wellness education, customized to each person's level of readiness, IT capabilities and stage of life.

• Interface this applied wellness toolkit with electronic health records for use by the public, the health and wellness coaches, the Health Corps, and the medical and health care delivery systems.

• Coalesce current health promotion/prevention knowledge into a science-based Health Quotient Index (HQI) for personalized delivery of information to individuals and communities through multiple interface.

4. Economic and Social Incentives ("The Industry")

• Create economic incentives (through bundling, capitation, premium reductions, tax reductions and other methods) for individuals, communities, and public and private sector institutions to create and deliver self-care training, wellness products and preventive health care practices.

• Establish intellectual property protection policies that reward wellness innovations, using the latest technologies with evidence-based and comparative cost-value determinations.

• Establish incentives for both personal and community activities that establish social and cultural change, which creates public wellness values and a flourishing society.

These recommendations are designed to work in a coordinated fashion on the specific leverage points of cultural and institutional change. If applied in concert, these recommendations are a "triple multiplier" of health, productivity and economic stimulus for the country by: (1) creating new jobs in the educational, health and technology sectors; (2) increasing health and productivity across the population in both the short- and long-run; and, (3) stimulating innovation and investment by the private sector into the creation of a health and wellness industry and society.

The United States is first in spending for health care but 37th in health status among industrialized nations. If applied in concert, these recommendations are a "triple multiplier" of health, productivity and economic stimulus for our Nation.

A PHASED PROGRAM

The WIN will use a phased approach to assure that prevention and health promotion programs are rolled out in a coordinated, systematic, stepwise and effective manner with full input from the public and stakeholders involved in wellness delivery. **Recommended phases** include:

Phase 1: ***Create a working group and coordinating office within the White House*** that is specifically focused on creating policies and programs for lifestyle-based chronic disease prevention and management, integrative health care practices and health promotion;

Phase 2: ***Establish a lead Systems Wellness Advancement Team (SWAT)*** of national leaders in health promotion, disease prevention, and integrative practices to guide the office;

Phase 3: ***Define the "new paradigm"***—the key vision, strategies, and tactics and the effective elements and metrics of comprehensive lifestyle and integrative health care practices that will be the focus of WIN;

Phase 4: ***Collate, coordinate and align current health promotion and prevention policy efforts*** such as, House Concurrent Resolution 406, The Health Promotion First Act, the Healthy Workforce Act, The Health Project, the 1st Dollar Clinical Preventive Services Coverage, the Medicare Improvement Act, the Public Health Advisory Committee, and consensus statements by the Partnership for Prevention, the Prevention Institute, the American College of Occupational and Environmental Medicine, and other programs and recommendations [12];

Phase 5: Use and evaluate current Department of Defense, Veterans Health Affairs, Medicare and workforce health, performance enhancement and wellness initiatives to rapidly ***establish models for delivery of national WIN projects;***

Phase 6: ***Create and evaluate new demonstration projects*** in each of the WIN lifecycle populations (e.g., children, worksites and aging; see below for details) to improve the cost-value of national programs created by the WIN; set up selection, modeling and evaluation parameters using indices such as COMPARE and Health Impact Assessment (HIA) processes [13 14];

Phase 7: ***Create parallel legislative tracks*** to support and incentivize effective public and private wellness initiatives throughout the Nation.

BACKGROUND

In his book The Power of Progress, John Podesta summarizes the situation succinctly. "It is not enough to merely expand access to the current system. Americans must also secure better value for their health care dollars through improved health care quality, outcomes, and efficiency. First, we must create a national focus on disease prevention and health promotion. The United States is plagued by preventable diseases that have a devastating impact on personal health and contribute to the Nation's soaring health costs. Yet our current system focuses on treating these diseases after they occur, rather than promoting good health and reducing the incidence of disease in the first place."[2] (pg. 182)

Too many Americans go without high-value preventive services and health promotion practices.[5] As a result, they get sick and utilize expensive medical interventions.[1] Examples of underutilized preventive and health promotion practices include cancer screening to prevent advanced colon disease, immunizations to protect against flu or pneumonia, fitness and resilience training to enhance productivity and well-being, self-care and integrative health practices to treat chronic pain and enhance healing, and healthy lifestyle education to prevent diabetes, hypertension, stroke, cardiovascular disease and cancer.

The Nation (and increasingly the world) faces epidemics of obesity, mental illness and chronic disease, as well as new threats of pandemic flu and bioterrorism.[15] [16] Yet despite all of this, less than four cents of every health care dollar is spent on prevention and public health.[17] We are first in spending for health care and 37th in health of the industrialized nations.[18] At current cost rates, health care will make up 25 percent of the GNP by 2025 and 49 percent by 2082![19] The first of the "baby boomers" will turn 65 in 2011, creating an avalanche of aging care needs that will bury the current Medicare system. Our health care system is a broken disease treatment system, and the time for change is well overdue.

True prevention and health promotion requires something different than just access to current services. It requires a new vision of health and disease based on the primary components of human flourishing. Science has now clearly demonstrated a radically new view of chronic health and disease than the one developed over 100 years ago and currently in use. No longer is it reasonable to wait until disease reaches an advanced diagnostic threshold before our system provides expensive interventions.

The Cost of Avoidable Chronic Illness

• A recent Milken Institute report showed that the combined cost of the top seven modifiable chronic diseases (cancer, diabetes, hypertension, stroke, heart disease, pulmonary conditions, and mental disorders) exceeds $270 billion per year in direct care costs and, with the addition of lost productivity, reaches over $1 trillion annually.[20]

• These costs are largely avoidable by changes in behavior. A modest focus on prevention, early intervention and behavioral change could save annually in treatment and productivity loss costs an estimated $217 billion and $1.6 trillion, respectively. This could add over $6.9 trillion to the GDP between now and 2023—27 percent of the GDP's economic impact.

• Modest gains in just smoking and obesity control, for example, would reduce illness in the top seven conditions by 24–30 million, save up to $100 billion in treatment costs, and add from $340–$500 billion to the GDP in the next 15 years.

• Application of the top 20 proven clinical preventive services (CPS) would save an additional $4 billion in treatment costs and increase quality of life years by over 2 million.[21] WIN will focus on effective delivery for the 10 CPS recommendations that address core primary prevention and lifestyle change factors.[21]

• Suffering associated with chronic disease and pain produces an even greater burden, the cost of which is not quantifiable. Self-care practices can reduce pain, improve quality of life and enhance well-being.[22] [23] [24] Complementary health care practices are especially useful in this regard.[25] [26]

Causes of Avoidable Chronic Disease

• Seventy percent of avoidable costs could be mitigated by behavior changes that involve healthy lifestyle development, wellness enhancement, and early detection and intervention for the conditions listed above. Two-thirds of chronic illness is caused by lifestyle and behavioral factors that are influenced by our mental, social or physical environments.[27]

• Five behavioral factors contribute the most to mitigating costs and to increasing sustainable wellness. These are: (1) reducing toxic substance exposure (smoking, al-

cohol, drugs and pollution); (2) sufficient exercise; (3) healthy diet; (4) psychosocial integration and stress management; and (5) early detection and intervention.[20] [28]

• To achieve gains in wellness and productivity requires a change in the nature of the culture and services provided to our communities. Increased access to our current disease treatment system is not sufficient and will increase costs. We need a concerted investment in creating a flourishing human capital focused on prevention, productivity, healing and well-being.[29]

COMPONENTS OF HUMAN HEALTH BEHAVIOR AND PRODUCTIVITY OPTIMIZATION

We know now that health and disease are a continuum and we know the fundamental elements that move us along that continuum. Both before and after the threshold, between health and disease, the basic elements of health promotion can slow or prevent chronic disease progression and enhance function, productivity and well-being. No matter what the illness or stage of life we now know that the same components of human health behavior and productivity optimization apply. These components are:

1. *Stress Management and Resilience.* The first component is the induction of mind-body States known to counter the stress response and improve readiness and motivational factors for lifestyle change. Recent research has demonstrated that mind/body practices can be taught and can counter the physical and psychological effects of stress, prevent PTSD, increase fitness and weight management, and enhance cognitive and physical function.

2. *Physical Exercise and Sleep.* The second component is physical exercise. Optimum physical exercise can reduce stress hormone swings and improve brain function, improve fitness and enhance weight control. Fitness, along with proper rest and sleep, and rapid management of injury from physical training, will maintain functioning and productivity.

3. *Optimum Nutrition and Substance Use.* Third, ideal weight and optimal physiological function occurs best in the context of proper nutrition and reduced exposure to chemicals (such as smoking, alcohol and drugs) that impair function. Food and substance management requires systematic motivational systems, environmental control, food and substance selection training, and family and community involvement.

4. *Social Integration.* Finally, the social environment is key. Social integration is not only health enhancing in its own right, but is essential for sustainability of behavior change. Health promotion is best achieved in a group and community context, in which common issues in the culture around behavior and lifestyle change are valued and shared with peers, friends and family. Both health and happiness are socially contagious. Social integration allows individuals, their families and communities the opportunity to spread healthy behavior and find day-to-day solutions for maintaining well-being and resilience.

A culture and industry that values and optimizes these components will produce a flourishing, productive society. In addition, the impending economic disaster of continuing to solely apply the current sickness treatment system to our rapidly aging population can be altered at its core. The policy recommendations of WIN are designed to focus directly on optimizing these components for individuals and communities.

CREATING SOURCES OF PREVENTION, PRODUCTIVITY, HEALING AND WELLNESS

• Public policy should support, stimulate and enhance each individual's inherent wellness and healing capacities since this provides the most powerful force we have for maintaining health and productivity when well, and for enhancing recovery and well-being when ill.[30]

• Approaches to the prevention of chronic disease, detection of early risk factors, and enhancement of well-being are well known but not done well or systemically by our health care system.[1]

• Central to a new model of prevention and health care are the development of Optimal Healing Environments (OHE)[31] and integrative health care practices[26] that can support and stimulate inherent healing capacities on mental, social, spiritual and physical levels. As described below, many of these practices provide lower cost alternatives to current conventional practices.[32] [33]

• Of the "Blueprint" recommendations, WIN will focus specifically on supporting areas in "Patient Activation" (pp. 81–95) and "Public Health" (pp. 96–111) but also contribute to other areas, including nurse and geriatric training (p. 9, 23), wellness information technology (p. 27, 47), and developing bundling, capitation and tax relief approaches for delivery of evidence-based health promotion and integrative health care practices (p. 69–71).

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The Military

The military has been at the forefront of health promotion and performance enhancement innovations for decades and has recently developed a renewed effort in "human performance optimization."[34] The non-profit Samueli Institute is working closely with a coalition of military partners to develop the next generation "Systems Wellness System" as a model for combining systems biology with lifestyle change to develop personalized prevention and health promotion tools.[35] This program could become a model for national application.

Health Care Delivery Systems

The health care delivery industry has a major role in advancing prevention and wellness and the "Blueprint" is primarily focused on this area. A recent study of eight "exemplar" OHE programs in health systems demonstrated the ways in which WIN could translate current innovations in health promotion and healing into our health care systems.[36] The use of health information technology could further extend skills in health promotion and self-care and disease management beyond the walls of the hospital and into communities and the home.[37]

Self-Care and Integrated Care

The widespread application of selected, evidence-based integrated health care practices could markedly improve quality of life and reduce costs.[33] Behavioral and mind-body practices have been repeatedly demonstrated to enhance quality of life, improve self-care and reduce costs.[38] Acupuncture has now been definitively shown to improve chronic pain conditions (head, neck, knee and back) at almost twice the rate of guideline-based conventional treatment.[39 40] Massage may be even more cost effective in back pain.[41] Massage has also been shown in multiple studies to accelerate recovery of premature babies, with projected cost savings of $4.7 billion per year if widely used.[42] Training retired persons to deliver this infant massage results in reduced depression and enhanced quality of life in those giving the massage—a double benefit.[43] Herbs and dietary supplements are widely used by the population but with little to no guidance on what is safe and effective.[44] Under current policies, these practices and products are not sufficiently profitable to provide economic incentives for research and investment. Thus, they remain under-investigated and unutilized at the expense of higher cost and more heroic treatment approaches. A properly focused wellness policy would change this situation.

Worksites

It is now well established that multi-component worksite wellness programs enhance productivity, well-being and return on investment (ROI) in industry.[45] For example, Procter and Gamble and the Dow Chemical Company have improved productivity and reduced health care costs, with a positive ROI for their programs at multiple sites.[46 47] Companies are now extending these efforts to reducing costs of medical treatment and for chronic disease prevention and management.[48] Health promotion efforts for America's workers is a double multiplier for the economy by improving productivity and creating jobs.[49] The C. Everett Koop Awards of The Health Project have selected some of the most successful and innovative health promotion programs that could be applied nationally by the WIN.[50]

Community-Based Programs

Community-based, comprehensive lifestyle modification programs have demonstrated effectiveness for mitigating cardiovascular risk factors,[51] stroke prevention,[52] smoking cessation,[53] treating obesity[54] and osteoporosis,[55] and diabetes prevention,[56] as well as other chronic conditions.[57] In Japan, comprehensive lifestyle modification programs including physical exercise and diet/nutrition education have been implemented and extensively evaluated in work sites and in elderly populations, and results have shown dramatic improvements for obesity and lifestyle-related disease.[58] The Centers for Disease Control and Prevention (CDC) has targeted community-based programs as an effective vehicle for delivering health promotion and disease prevention campaigns.

Children

The Wellness Initiative for the Nation will select the best of these programs and develop policies to establish them throughout the United States. The long-term impact of such policies would be a golden age of health, productivity and well-being; a flourishing and great society.

Wellness must start with children by teaching them lifelong healthy habits. Healthy habits need to be a core competency delivered by our educational system.

A number of exemplar programs in schools have produced major impacts on wellness behavior, including effects on obesity. For example, a school program for underserved elementary school children has demonstrated improved health behaviors that spread to families and the surrounding community.[59] Other examples are the *Planet Health Program, and the VERB Program*.[60 61 62 63 64] The *Wellspring Academy's* schools, camps and community programs have produced marked success in improved weight management, enhanced self-esteem and improved mental health during adolescence, a difficult time of life to affect change.[60 65]

Aging

Our population is rapidly aging, resulting in ballooning of chronic disease and illness. The majority of health care costs are expended in the last years of life. The older population is highly motivated for self-care and makes extensive use of complementary and alternative practices, some helpful and some harmful.[66 67] Extending functional years through prevention (such as vaccination), early detection (such as screening), lifestyle and self-management training can also reduce costs of chronic disease treatment. For example, simple procedures (such as providing a health coach or call nurse) significantly reduce health care costs and mortality in cardiovascular disease.[68] Extension of health care into the home with TeleHealth (the delivery of health-related services and information via telecommunications technologies) could further maintain function and reduce costs in the senior population up to 70 percent with current technologies.[69 70 71] A set of recently funded Centers for Medicare & Medicaid Services (CMS) demonstration projects of health promotion in older people are examples of programs that serve as national models under the WIN.[72]

The Underserved

The widening gap in health disparities is one of the major moral failures of our society.[73] Social isolation and socio-economic class are major determinants of chronic disease and premature death.[27] The poor often seek out and use self-care and complementary medical practices, but get little guidance on which practices are effective or harmful.[74] Self-care and integrative health care approaches, when properly delivered, can significantly improve health in these populations. For example, a recent Medicaid demonstration project providing integrative health care found an 86 percent reduction in pain, 25 percent reduction in health care utilization and 20 percent reduction in prescription drug use in an underserved community.[75 76] The Samueli Institute, along with the Institute for Alternative Futures and the Health Resources and Services Administration recently brought together integrated health care programs for the underserved as possible models for WIN.[74]

These examples are only a few of the practices that could improve health, productivity and well-being, and reduce costs from disease and disability in our Nation. For other examples involving disease screening, vaccination, nutritional practices and educational programs, see the governmental summaries on those areas.[5 77 78 79 80 81 82 83 84 85 86]

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Senator MIKULSKI. Thank you, Dr. Jonas.

Dr. Gordon.

STATEMENT OF JAMES S. GORDON, M.D., FOUNDER AND DIRECTOR, CENTER FOR MIND-BODY MEDICINE, WASHINGTON, DC

Dr. GORDON. Thank you, Senator Mikulski.

It is wonderful to be here today, Senator Mikulski, and to hear your words and to feel the spirit and the energy with which you deliver them. I really appreciate your bringing us here together to talk about health and to talk about wellness.

What I want to do is, first of all, echo what my colleagues have said and then to talk about a few particulars that I think are very important. The first thing is that we are at a moment of potentially profound change. In my mind, I think of it as a kind of Copernican moment.

Up until now, we are in a kind of medieval State where we have all these extremely complicated theories and behaviors that are simply not either producing better health or producing economies. Much of the effort that has been made in recent years is to shore up systems to develop new ways of doing the same old thing.

You said it beautifully when you said this is not about reforming the insurance system. It is about transforming our whole healthcare system.

What I think is most important, that I want to address to you and to other members of the committee and to all of us who are here, is that our whole consciousness has to change, and that so many of those things which, as we say in Washington, have been taken off the table need to be put back on the table.

We need to look at what is actually going on and what is actually, as Sister Charlotte and as Wayne have just said, what actually has a chance for making a profound difference in the way we care for our population and also economically.

I would start by saying that one of those items that needs to be put back on the table is a single-payer healthcare system. Physicians for a National Health Plan estimates that if we were to not only not reform the insurance companies, but essentially to take over the work of insuring our whole population, as every other industrialized country does, that we would save $350 billion to $450 billion a year. Very important savings.

Not only that, we would create a foundation from which we could begin to refocus, to take the focus off disease and to put the focus on health or wellness. We know already that the way the system is going, it is bankrupting us. Nationally, it is bankrupting many of our major corporations.

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That is the first point. Let us take that one from the floor and put it back on the table. The second is to refocus away from disease, as both of my colleagues have said, and to focus on wellness.

The disease model works brilliantly in some areas, but it doesn't address the major problems that we have either individually or as a society. It really doesn't address very well 80 to 90 percent of the issues, concerns, problems, and conditions that American people, both children and adults, have. What will address those is a program, a comprehensive program of teaching people the fundamentals of self-awareness, self-care, and mutual help.

If we could bring in effective techniques of stress management, if we could bring in nutrition supplemented not only by vitamin supplements, but supplemented by an attention to the environment, if we could also use physical exercise, we could prevent or successfully treat in a major way most of the conditions that most of us suffer from.

We need to shift our attention in a clinical—not only in terms of setting up prevention programs. Currently, only 5 percent of our budget at NIH, maximum, goes to prevention. It should be 50 percent of our budget going to prevention.

We need to shift in the direction of prevention, and we need to bring those approaches to self-awareness, self-care, and mutual help, mobilizing communities and families to help one another into the center of our healthcare system. If we do that, we can not only prevent, but we can reverse some of the major conditions that afflict us.

Dean Ornish's work—and perhaps you will be hearing about that on Thursday—with heart disease shows very clearly that using self-care, using exercise, meditation, relaxation, group support, dietary change, we are able to reverse coronary artery disease.

The work that we have done with entire populations that have been traumatized by war in Kosovo, Bosnia, Gaza, Israel, and now back here with military coming back from Iraq and Afghanistan, shows that we can teach people, individuals who have been in combat and their family members, how to understand and help themselves and how to heal the conditions from which they suffer, which might otherwise disable them for their whole lives.

The second area that is so crucial is looking at the education of our children. Our kids are actually in worse health than we were as kids, and the situation is getting worse and worse every year. We need to bring—there has been too much of a focus—I am all for reading—and reading and writing and arithmetic. They are crucial. They are crucial to my work. They are crucial to all our work.

But those kids who are so anxious, who are so belabored and beleaguered biologically, who are suffering, beginning to suffer already from attention deficit disorder and hyperactivity, who are depressed and anxious and getting ready or already having diabetes and hypertension, those kids aren't going to be able to learn unless we teach them how to take care of themselves. We have to create wellness programs in every school.

Now there is a mandate, a Federal mandate for school wellness programs, but nowhere that I know of are they truly effective in any State in this country. That seems to be a major area that we need to become involved in. If we do that, we can do so much to

prevent all the chronic diseases that we are now forced to treat well down the road.

Finally, I want to second what Sister Charlotte said in the beginning, which was also a recommendation of the White House commission that I chaired. And that is that we need to have an office at the highest level in the White House that is going to ensure that the kinds of transformation that you and Senator Harkin and others who have been concerned about this for so long are going to catalyze and get off the ground. We need to ensure that is going to continue over time.

It is not something that is restricted to HHS. As you have heard, it is the Defense Department. It is the EPA. It is the Department of Agriculture. It is the Department of Education. There needs to be coordination at the highest level to ensure that the wellness of our population is our national priority.

Thank you very much.

[The prepared statement of Dr. Gordon follows:]

PREPARED STATEMENT OF JAMES S. GORDON, M.D.

MAKING WELLNESS AND SELF-CARE THE HEART OF ALL HEALTH CARE

Chairman Kennedy, Ranking Member Enzi, Senator Mikulski, members of the committee, I'm very pleased to be with you this afternoon. I'm a psychiatrist, founder and director of The Center for Mind-Body Medicine, and a clinical professor of psychiatry and family medicine at Georgetown Medical School. I bring to you today a perspective shaped by 40 years of work as a clinician, researcher, and teacher, as Chair of the Advisory Council of the NIH's Office of Alternative Medicine, and Chair of the White House Commission on Complementary and Alternative Medicine Policy. The recommendations I make are my own and they are shaped by years of discussions with many colleagues, patients, and friends.

We are poised on the verge of a necessary revolution in our health care. It has become clear that an overwhelming attention to disease, an endlessly multiplying system of reimbursable diagnostic tests and side-effect burdened drugs and procedures are actually combining to produce more, not less, suffering in the United States; the health of Americans, according to the World Health Organization, ranks 37th on our planet. We live shorter lives and have higher infant mortality than a host of other industrialized countries, and we spend twice as much as they do on our care: the cost to our national treasury is 16.5 percent of our Gross Domestic Product, and growing every year. It's time, more and more of us realize, to shift our focus from treating disease to promoting health and wellness, from symptomatic treatment to systematic prevention. It is time also to take control of our health care from those who profit from our ill health, to ensure that it responds to the needs of all our people.

In response to a request from the Obama administration, 6 weeks ago, hundreds of groups met around the country to discuss the health care challenges that we face, to come up with new perspectives and fresh ideas for health care. I invited 30 colleagues and friends, and their friends, to my house to respond to this request. Their accents and perspectives were as varied as the 30-person group—men and women from their early twenties to early eighties, blacks and whites, Asians and Hispanics, health care professionals, business people and policy wonks, the wealthy and the barely getting by. Still, remarkably, as each of us spoke of our greatest health care concerns, common themes, common understandings, common solutions emerged—and with them a re-evaluation of our health care system as revolutionary in its way as the theories of Copernicus and Darwin.

In my written testimony, I provide 10 recommendations for transforming health care that emerged from our discussion and from my own 40 years of experience. Here I will offer three that seem most salient and a fourth that will help ensure their continued growth and development.

1. We need a coherent, rational system of National Health Care, a single-payer system that, without demeaning and destructive bureaucratic obstacles, meets the needs of all Americans. This recommendation was supported by successful, stressed-out health professionals and beleaguered parents, by self-styled liberals and conservatives, and by policy analysts who months ago believed it was

"off the table" of political discussion. In spite of any complexities in its creation, it was regarded as the "only sane" remedy. Indeed, one of our participants, a former head of mental health services for the Veterans Administration, pointed out that a majority of U.S. physicians and nurses *already* favor such a plan.

The crucial task, we feel, is to ask the Administration and Congress to examine the available models—Medicare, government employees' insurance, and military health in the United States, and the national systems of other developed countries—and create one that is most beneficial and suitable to our population: a system that facilitates more free choice than the current one, and eliminates the demeaning bureaucratic inquisitions that characterize current insurance practice, while guaranteeing universal coverage and cutting costs. Physicians for a National Health Plan and other advocates estimate that we could reduce our *entire* health care bill by 20–25 percent, or $400–$500 billion *per year*, by enacting a single-payer plan.

Single-payer can no longer be regarded as taboo, or off the table. It is, to use an expression dear to physicians, a "treatment of choice" for our national health care ills—not a panacea, but a platform that makes other necessary changes possible, a structure that offers our best hope for fairness, effectiveness, and economic survival.

Though all participants regarded insurance companies as obstacles, the chief proponents of profits over peoples' welfare, all felt it was imperative that their employees be retained as workers in the single-payer system or retrained for other careers, especially in health care.

2. Whatever model of universal care is chosen, it must be grounded in a profoundly different point of view and practice from the current one, a model in which prevention is as important as treatment and in which self-care and mutual help are understood as fundamental to both prevention and treatment.

This means that education about psychosocial and economic factors in health and illness and practical instruction in the use of nutrition, exercise, stress management, and mind-body approaches (like meditation, guided imagery, biofeedback, and yoga) must come to be seen and practiced as the true primary care. These effective and inexpensive practices—"breathing, moving, learning how to shop," as one mother of three put it—must be central to both prevention and treatment, used wherever possible *prior* to more side-effect burdened approaches like surgery and drugs, as well as along with them. This is not meant to disparage drugs and surgery in any way. It is simply to put them in their proper place in health care: vital remedies, with significant hazards, to be used only when necessary.

All of our group believed that this approach was absolutely essential to cost savings as well as our national health; that it should be *mandated* as primary care. And all of us are firmly convinced that this emphasis on self-awareness and self-care needs to be central to the training of all health professionals, and that research on its effectiveness in treating and preventing chronic illness cannot be an afterthought for our government. It needs to be the central focus of its attention and funding at NIH and elsewhere.

This approach to wellness and prevention does not, we believe, require economic incentives and penalties as many have insisted—carrots and sticks. It can be grounded in an entire system which helps people who have felt discouraged and disrespected and alienated to become actively engaged in their own care. I and other clinicians in the room reported that when we treated our patients with respect, taught them techniques they could use to help themselves, and provided the kind of practical, emotional, and social support they needed to sustain the changes they decided to make, health care miracles were possible. Many of us, including The Center for Mind-Body Medicine staff (and many of our professional trainees), have found this approach to be highly successful with populations that are often regarded as recalcitrant and incapable of self-care, including the low-income, chronically ill elderly; delinquent adolescents; HIV-positive ex-prisoners; and war-traumatized children and adults. Respected and treated as equals who are capable of understanding and helping themselves, offered the opportunity to use simple, practical tools of self-care to live healthier and fuller lives, the vast majority respond—and so will the vast majority of all Americans.

3. The transformation of the health of our population must begin with our children. In this process, the Department of Education must be understood as a central agency in health promotion and disease prevention. Current school health programs are largely negative—"don't smoke, don't drink, don't have sex, etc. etc."—and largely ineffective. The school wellness curricula that all States have been ordered to develop are a good first step. Congress needs to ensure that they are taken far more seriously, closely examined, and carefully and completely implemented. True and comprehensive wellness—including exercise, nutrition, stress management and self-expression—must become a central part of all school curricula and of the

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lives, and the teaching and learning experience, of all school personnel and of the parents of school children, and of the health professionals who work with both parents and children. Those who are teaching self-care must themselves learn and practice it, and the homes that children live in must support their children's efforts to help and care for themselves.

4. A White House Office of Health and Wellness. As we surveyed these and other changes we were recommending, it became clear to our group—and has become clear to other groups and leaders around the country—that a small but powerful agency at the highest level of our government is required to ensure continued responsiveness to the ongoing and changing health needs of Americans.

I respectfully recommend therefore that a White House Office of Health and Wellness be established. This office (which would in some ways be similar to the White House Offices of Science and Technology and Drug Policy) would ensure, along with Congress, that government bureaucracies (including any required for National Health Care as well as the NIH, the Departments of Education, Agriculture, and Defense and the Veterans Administration) are accountable to a vision in which service to all Americans is paramount, and to the implementation of programs, like the school wellness program, which make this vision a reality. The White House Office—and its representative National Advisory Board—would help ensure ongoing active engagement of our population in their own care and in shaping the kind of care that will most effectively, humanely, and economically meet all our evolving needs.

ATTACHMENT.—REPORT ON THE HEALTHCARE COMMUNITY DISCUSSION

RECOMMENDATIONS SUBMITTED TO PRESIDENT OBAMA

The accents and the perspectives were as varied as the 30-person group—men and women from their early twenties to early eighties, blacks and whites, Asians and Hispanics, healthcare professionals, business people and policy wonks, the wealthy and the barely getting by. Still, remarkably, as each of us spoke of our greatest health care concerns, common themes, common understandings, common solutions emerged.

Healthcare is "too expensive," said the first speaker, an FDA scientist calling up other countries' statistics. "My neighbor," a currently unemployed old friend, ventured, "gets $2,600 a month in disability and pays $1,500 for her insurance. How can you live like that?" "My daughter and her husband," an active-duty Army colonel told us, "are actually getting divorced so Medicaid will cover my grandchild's surgical bills." "We are," concluded a former high Clinton administration official, a serious man suddenly sad, "the only advanced country where people without insurance go bankrupt."

Everyone agreed that catastrophic care after a car accident or in a surgical or medical emergency was often excellent, but that the model of swift and decisive intervention had been long misapplied. "We have a 'sick care,' not a health care system," a black family physician told us, to a general nodding of heads. "I can't bill for obesity or smoking cessation." The current system, everyone agreed, often reimburses for expensive treatments of questionable value, instead of supporting preventive and self-care approaches. Small businesses, including doctors' offices, we heard, cut services and raise fees to meet the escalating costs of their own employees' healthcare—"It's more than 15 percent a year," a second family physician, who'd brought his budget with him, told us. Anxiety about health and coverage, our participants said again and again, contributes to the illnesses that demand coverage, and keep poorly covered people from seeking the help they need. The costs mount out of control while our national health grows worse—we spend far more money, our group members said with pain, incredulity, and outrage, live far less long and have far higher rates of infant mortality than just about any other industrial society.

Still, in spite of the pain, disappointment, and the frustration that providers, patients, and policymakers have all repeatedly experienced, they still feel, there was, all around the circle and throughout the evening, a sense of promise and a feeling of hope in the room. Everyone deeply appreciated that the opinions of the American people were finally being asked for and that their voices would be heard. This time of crisis in our national health care, we agreed, can be an opportunity for profound change in the structure and the content of our healthcare, a time to eliminate the waste and "collateral damage" of our current system and to cut its killing costs, an opportunity to create a health care system devoted to people, not profits.

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At the end of the evening, I summarized the most robust recommendations that were emerging from the rich soil of our conversation, the ones we would make to the Obama-Daschle team. Here they are:

1. **We need a coherent, rational system of National Health Care, a single-payer system that, without demeaning and destructive bureaucratic obstacles, meets the needs of all Americans.** This recommendation was supported by successful, stressed-out health professionals and beleaguered parents, by self-styled liberals and conservatives, and by policy analysts who months ago believed it was "off the table" of political discussion. In spite of any complexities in its creation, it was regarded as the "only sane" remedy. Indeed, one of our participants, a former head of mental health services for the Veterans Administration, pointed out that a majority of U.S. physicians and nurses *already* favor such a plan.

The crucial task, we felt, was to examine the available models—Medicare, government employees' insurance, and military health in the United States, and the national systems of other developed countries—and create one that was most beneficial and suitable to our population: a system that facilitated more free choice than the current one, and eliminated demeaning bureaucratic inquisitions while insuring universal coverage and cutting costs. Though all participants regarded insurance companies as obstacles, the chief proponents of profits over peoples' welfare, all felt it was imperative that their employees be retained as workers in the single-payer system or retrained for other careers, especially in healthcare.

2. **Whatever model of universal care is chosen, it must be grounded in a profoundly different point of view and practice from the current one, one in which prevention is as important as treatment and in which self-care and mutual help are understood as fundamental to both prevention and treatment.**

This means that education about psychosocial and economic factors in health and illness and practical instruction in the use of nutrition, exercise, stress management, and mind-body approaches must come to be seen and practiced as the true primary care. These effective and inexpensive practices—"breathing, moving, learning how to shop," as one mother of three put it—must be used wherever possible *prior to* more side-effect burdened approaches like surgery and drugs, as well as along with them. All of our group believed that this approach was absolutely essential to cost savings as well as our national health; that it should be *mandated* as primary care.

We realized as we listened to several military participants that we have much to learn from the Armed Forces' emphasis on comprehensive fitness programs which include mental, emotional, spiritual, social, familial, and financial, as well as the physical, aspects of health.

This approach to wellness and prevention does not, we believe, require economic incentives and penalties as many have insisted—carrots and sticks. It can be grounded in an entire system which helps people who have felt discouraged and disrespected and alienated to become actively engaged in their own care. I and other clinicians in the room reported that when we treated our patients with respect, taught them techniques they could use to help themselves, and provided the kind of practical, emotional, and social support they needed to sustain the changes they decided to make, health care miracles were possible. Many of us, including The Center for Mind-Body Medicine staff (and many of our professional trainees), have found this approach to be highly successful with populations that are often regarded as recalcitrant and incapable of self-care, including the low-income, chronically ill elderly; delinquent adolescents; HIV-positive ex-prisoners; and war-traumatized children and adults. Respected and treated as equals who are capable of understanding and helping themselves, offered the opportunity to use tools to live healthier and fuller lives, the vast majority respond—and so will the vast majority of all Americans.

3. **Integrative approaches to healthcare must be adopted as the standard of care and rigorously studied.** This means including in National Health Care whichever forms of helping and healing—whether previously described as conventional, complementary, or alternative—have proven to be most effective and making them available to all Americans in comprehensive and individualized programs: meditation *and* medication, acupuncture *and* surgery, group support in sustaining programs of self-care as well as individual diagnosis and consultation in designing them.

4. **Transforming the selection and education of health professionals.** The health professionals who will sustain and embrace this new commitment to comprehensive care, self-care, wellness, and prevention, must be imbued with idealism and humanitarianism, with a primary devotion to science in the service of people, to patients, not profits. To train and support them, we must create a system which

provides a *free professional education* with an emphasis on wellness, self-care, and prevention as well as biomedicine, and, in return for it, require compulsory public service for all physicians, nurses, and other health professionals.

This system would foster the selection and education of the most committed, gifted, and dedicated healthcare providers regardless of financial background. It will give all health professionals both a scientific understanding of the therapeutic power of self-care and prevention as well as a profound personal experience of these approaches. It will emphasize character, commitment, and genuine concern for others equally with academic achievement.

5. **The transformation of the health of our population must begin with our children.** In this process, the Department of Education must be understood as a central agency in health promotion and disease prevention. Current school health programs are largely negative—"don't smoke, don't drink, don't have sex, etc. etc."—and largely ineffective. The school wellness curricula that all States have been ordered to develop are a good first step. They need to be taken far more seriously, closely examined, and carefully implemented. True and comprehensive wellness—including exercise, nutrition, stress management and self-expression—must become a central part of all school curricula and of the lives, and the teaching and learning experience, of all school personnel and of the parents of school children. Those who are teaching self-care must themselves learn and practice it, and the homes that children live in must support their children's efforts to help and care for themselves.

6. **We must create a sane alternative to the current overpriced, counterproductive, indeed, destructive system of malpractice insurance.** This new option would separate financial compensation for patients from re-education and punishment of health professionals and hospitals. A national fund would fairly compensate those who have been injured by medical and hospital error (the vast majority of whom, according to a number of studies in New York and elsewhere, do not sue and are not compensated) in a way similar to workman's compensation. Instead of perpetuating the destructive narrowness of "defensive medicine," this new approach would provide genuine re-education for erring physicians or—if their offenses warrant it—bar them from practice. This kind of system, which is being successfully used in such countries as Norway and New Zealand, must be investigated and refined to meet U.S. needs.

7. **We must remove the baleful influence of the insurance and pharmaceutical companies on healthcare quality and its cost, and make industry serve, rather than exploit, Americans with health needs.** This includes eliminating health insurance companies from the health care equation. They are formed for profit rather than service, and each year add hundreds of billions of dollars ($350 billion according to Physicians for a National Health Plan) of administrative costs, executive pay, and shareholder profits to our health care bill. This measure would require retraining and re-deploying the several hundred thousand managers and workers in the insurance industry—equipping those who are genuinely interested to provide health care and health education. A national system of health care should have and use its bargaining power to ensure true competitiveness among pharmaceutical manufacturers and thereby significantly lower costs. Elimination of the influence of direct-to-consumer advertising—deplored by health professionals as well as patient advocates at our meeting—would further lower costs as well as reduce unnecessary, propaganda-driven drug-prescribing and drug-taking.

8. **We must develop a research program which serves the needs and priorities discussed above, one which helps set the agenda for our Nation's health, rather than one that uncritically reflects a narrow biomedical perspective.** The NIH's 30-some billion dollar budget must be put to the best possible use, with a far more significant percentage—up from the current 2 percent to perhaps 20 percent—explicitly dedicated to studying the effectiveness of prevention, self-care, and wellness. An additional 20 percent of the budget needs to be shifted away from the single intervention studies—one drug or one procedure—on which NIH grants focus, to the study of comprehensive, integrative and individualized programs of care for the chronic illnesses that beset our population and consume our health care dollars, approaches that appear to be likely to produce the best results—for example, nutritional, mind-body, and exercise interventions for arthritis, heart disease, and chronic pain; chemotherapy along with nutritional therapy, acupuncture, herbs, and group support for cancer. Finally, 10 percent of the budget that is allocated to single intervention studies should be awarded to research on non-patentable approaches, including mind-body therapies, herbal remedies, therapeutic dietary programs, acupuncture, musculoskeletal manipulation, etc., etc.

9. **We must recover the ancient philosophical perspective, in which the highest quality healthcare is seen as promoting personal, emotional, social, and spiritual fulfillment, and we must develop programs that manifest this**

perspective. The military's health care may be more effective than most civilian care because it has allegiance to and is implemented in the service of a greater mission—the defense of our country. A similar and perhaps even more life-affirming spirit—one of enhancing our collective national life and of providing service to our fellow citizens—can be called on and mobilized for civilian health care.

10. **A White House Office of Health and Wellness.** As we surveyed the changes we were recommending, it became clear to our group that a small but powerful agency at the highest level of our government was required to ensure continued responsiveness to the ongoing and changing health needs of Americans. Therefore, we recommend that a White House Office of Health and Wellness be established. This office (which would in some ways be similar to the White House Offices of Science and Technology and Drug Policy) would ensure that government bureaucracies (including any required for National Health Care as well as the NIH, the Departments of Education, and Defense and the Veterans Administration) are accountable to a vision in which service to all Americans is paramount. The White House Office would help ensure ongoing active engagement of our population in their own care and in shaping the kind of care that will most effectively, humanely, and economically meet all our needs.

The attendees of The Center for Mind-Body Medicine's Community Healthcare Discussion, 12/30/2008

The Center for Mind-Body Medicine is a 501(c)3 non-profit organization.

Senator MIKULSKI. Thank you, Dr. Gordon.

That is pretty profound. Every one of you could be a subject of an hour or longer hearing.

Dr. Kreitzer.

STATEMENT OF MARY JO KREITZER, PH.D., R.N., FAAN, FOUNDER AND DIRECTOR, UNIVERSITY OF MINNESOTA CENTER FOR SPIRITUALITY AND HEALING, MINNEAPOLIS, MN

Dr. KREITZER. Madam Chair and members of the committee, it is an honor to be asked to testify before this distinguished body on an issue of such vital importance as healthcare reform.

As a nurse, I have worked as a nurse practitioner, healthcare administrator, NIH-funded researcher, and I am currently a professor of nursing at the University of Minnesota, where I also direct an interdisciplinary, integrative health center called the Center for Spirituality and Healing.

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Our healthcare system is on a trajectory that in many ways mirrors what has happened in the financial system. There has been greed, excess, and a failure to do what is right due to vested interests. Putting more money into the same system will only produce more of what we currently have, which I think we would all agree is untenable.

I want to highlight several strategies related to the integrative health that I think have the potential for being transformative to the healthcare system.

You have heard from my colleagues about the importance of a fundamental shift from a healthcare system that focuses on disease to one that focuses on health. In my first public health nursing course over 35 years ago, I learned the core principle that it is cheaper to prevent disease than to cure it. We need to get into the hands of consumers information, tools, and resources that will enable them to better manage their health and their healthcare.

We have a health coaching program at the University of Minnesota—we have had it for 4 years—where we are preparing health professionals to help people focus on comprehensive lifestyle changes that includes the use of integrative health. We have also created a Web site for consumers called Taking Charge of Your Health that focuses on helping people learn how to navigate the health system and to develop a personal plan for health and well being.

As we shift from a system that focuses on disease to one that focuses on health, nurses, the largest group of health professionals in the country, are very well prepared to provide leadership, to be a health corps for the Nation. We need to rethink the workforce, particularly around primary care.

Numerous studies have confirmed that nurse practitioners and physician assistants can effectively manage 80 percent of primary care. Nurse practitioners in particular are educated to focus on wellness, health promotion, and chronic disease management, including the use of integrative therapies.

In 2008, Minnesota passed healthcare home legislation. We call it a healthcare home, not a medical home. While the primary care provider has traditionally been viewed as a physician trained in typical specialties, such as family medicine, pediatrics, and geriatrics, the Minnesota legislation recognizes the importance of expanding the definition to include nurse practitioners, physician assistants, and others who provide primary care.

While not included by name in the Minnesota legislation, there are licensed CAM providers who serve as the first provider patient contacts and who need to be part of any workforce solution.

In addition to developing new models of care that enable primary care providers to practice to the top of their license, we also need reimbursement mechanisms that are aligned with the goals of health promotion and better management of chronic disease. We have reimbursement for procedures, but not for nutritional or lifestyle counseling.

Reimbursement levels from both public- and private-sponsored programs are not based solely on the service provided, rather the educational level of the provider. Reimbursement for services, for example, by an advanced practice registered nurse, such as a nurse

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practitioner or certified nurse midwife, can range from 65 to 85 percent of the physician fee.

This differential has the effect of discouraging clinics from having advanced practice registered nurses provide services for which they are very educated and capable and encouraging the same services to be provided by physicians in order to maximize reimbursement. This discrimination in reimbursement occurs with CAM professionals, as well as physician assistants and advanced practice registered nurses.

As daunting a task as it is to reform our healthcare system, including the care models and reimbursement, I am here to tell you that we face an equally daunting task in transforming how we educate health professionals. There is resistance to change, lots of incentive to maintain the status quo, discrimination in how CAM institutions fare compared to conventional institutions, and very few, if any, educational programs that are truly transformative.

Faculty cultures in both CAM and conventional institutions are deeply ingrained. We need innovation in education that is based on a future view of healthcare that includes a focus on health as well as disease, a different mix of health professionals and a broader array of therapeutic approaches, and consumers who are activated to take charge of their health.

If we invest in educational infrastructure, it is essential that the focus be on innovation rather than the maintenance of the status quo. I will close my remarks with an example of an innovation that is bold and that could be transformative.

What if we were to leverage the strengths of schools of nursing and CAM institutions across the country and have them formally partner with community health centers in their communities to create a truly comprehensive, holistic, integrative healthcare model? This would require a new model of reimbursement as well as care.

Then what if we were to go a step further and re-design the curricula for students around this dynamic learning environment in a way that there is a strong focus on health and that students can actually interact and learn together? In addition to providing access and care to patients, it would provide an outstanding site for faculty practice and research as well as student learning.

We know that community health centers are ideal health homes. Multiple studies have shown the effects of being able to reduce low-birth weight babies and hospitalization for people who are chronically ill.

Using funds from the recently passed economic stimulus package and awarded to HRSA, pilot projects could be funded that would help us develop and evaluate a model of integrative primary care. I also agree with my colleagues that to provide the leadership necessary to launch the changes that we are talking about today, I support the creation of a Federal office that would be responsible for developing policies and programs in support of a wellness integrative health agenda.

Thank you very much.

[The prepared statement of Dr. Kreitzer follows:]

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PREPARED STATEMENT OF MARY JO KREITZER, PH.D., R.N., FAAN

Mr. Chairman, Madam Chairwoman and members of the committee, it is an honor to be asked to testify before this distinguished body on an issue of such vital importance as healthcare reform. As a nurse, I have worked as a nurse practitioner, health care administrator, NIH-funded researcher and am currently a professor of nursing at the University of Minnesota where I also serve as the director of an interdisciplinary integrative health program—the Center for Spirituality and Healing.

Our health care system is on a trajectory that mirrors what has happened in the financial system. There has been greed, excess, and the failure to do what is right due to vested interests. Putting more money into the same system will only produce more of what we currently have, which is untenable. Everyone in this room is well aware of the statistics. We spend more money in our Nation on health care than any other country in the world yet 46 million or more have no insurance and thus limited access and we are ranked near the bottom of the industrial world in health outcomes.

I want to highlight strategies related to integrated healthcare that have the potential to be transformative to our healthcare system.

• We need a fundamental shift in orientation from disease to health and well-being. In my first public health course in nursing school over 35 years ago, I learned the core principle that it is cheaper to prevent disease than to cure it. We need to get into the hands of consumers information, tools and resources that will enable them to better manage their health and health care. We have a health coaching program at the University of Minnesota where we are preparing health and wellness professionals who are prepared to help people focus on comprehensive lifestyle change which includes the use of integrative health care approaches. We have also created a Web site for consumers titled "Taking Charge of Your Health" that focuses on helping people learn how to navigate the health system, serve as a health advocate, and develop a personal plan for their health and well-being.

• We need to re-think the workforce—particularly around primary care. Numerous studies have confirmed that nurse practitioners and physician assistants can effectively manage 80 percent of primary care. Nurse practitioners in particular are educated to focus on wellness, health promotion and chronic disease management including the use of integrative therapies. In 2008, Minnesota passed health care home legislation—we do not call it a medical home. While a primary care provider has traditionally been viewed as a physician trained in typical specialties such as family medicine, pediatrics, and geriatrics, the health care home legislation recognizes the importance of expanding the definition to include nurse practitioners, pharmacists, physician assistants and others who provide primary care. In this definition, primary care provider includes the first provider-patient contact for a new health problem and ongoing coordination of patient-focused care. There are licensed complementary and alternative medicine (CAM) providers (naturopathic medicine, chiropractic and acupuncture/Chinese medicine) who can meet this definition as well. While not included by name in the MN legislation, licensed CAM providers need to be part of the workforce solution.

• We need new models of care that use primary care providers to the highest and best use of their respective education and capacity, that focus on health promotion as well as disease prevention and chronic disease management, that make use of all therapeutic approaches and providers including CAM, and that facilitate collaboration and team delivery of care. We also need reimbursement mechanisms and incentives that will help us get intended results. We remain locked in a fee for service mentality. It is a very simple formula—the more services you provide or tests and procedures you do, and the higher the price—the more money the provider makes. As Clay Christensen noted in his book the *Innovator's Prescription*—it encourages providers not to offer as much care as needed, but to offer as many services as possible for which there is coverage. In order to make ends meet for clinics, providers are constantly trying to patch together procedures that will help cover costs rather than focusing on what would help patients lead healthier lives. The system is flawed in that it will reimburse for procedures, but will not reimburse for a nutritional or lifestyle counseling session. Reimbursement from both private and government-sponsored programs reflect not the level of service performed, but rather the educational level of the provider. Reimbursement for services provided by advance practice registered nurses (APRNs) can range from 65–85 percent of the physician fee. This differential has the effect of discouraging clinics from having APRNs provide services for which they are trained and capable and encouraging the same services to be performed by physicians in order to maximize reimbursement. Discrimination in reimbursement occurs with CAM professionals as well as PA's and APRNs.

• We need strategic investment in infrastructure, particularly in the areas of research and education.

- Research.—The stimulus package is providing a desperately needed influx of funds for the research enterprise which is badly underfunded. Instead of using these funds for business as usual, it would be most helpful to have the investment focus on research that is very applied—that will create jobs—the research equivalent of "shovel ready projects." NIH has focused heavily on basic science research over the past 8 years, we need translational and applied research. Integrated health care is ripe for this and could produce the innovation that is so badly needed within healthcare reform.
- Education.—As daunting as the task is to fundamentally change our health care system including care models and reimbursement, we face an equally daunting task in transforming how we educate health professionals. There is tremendous resistance to change, lots of incentive to maintain the status quo, discrimination in how CAM institutions fare compared to conventional institutions and very few, if any, educational programs that are truly transformative. Faculty cultures in both CAM and conventional institutions are deeply engrained and are a major barrier to change. We need disruptive innovation in education that is based on a future view of health care that includes a focus on health (diet, nutrition and exercise) as well as disease, a different mix of health professionals, a broader array of therapeutic approaches, and consumers who are activated to take charge of their health. If we invest in educational infrastructure, it is essential that the focus be on innovation, rather than maintenance of the status quo.

To provide the leadership necessary to launch and manage this initiative, it is recommended that a Federal office be established, with a director and staff, who would be responsible for developing polices and programs for lifestyle-based chronic disease prevention and management, integrative health care practices and health promotion.

Integrative health care holds the potential of shifting the current U.S. health care system from one that is sporadic, reactive, disease-oriented and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment, and a focus on the full range of physical, mental, spiritual and social support needed to improve health and minimize the burden of disease.

PREPARED STATEMENT OF MARY JO KREITZER, PH.D., R.N., FAAN, DIRECTOR, CENTER FOR SPIRITUALITY AND HEALING, UNIVERSITY OF MINNESOTA AND TENURED PROFESSOR, SCHOOL OF NURSING; BENJAMIN KLIGLER, M.D., M.P.H, ASSOCIATE PROFESSOR OF FAMILY AND SOCIAL MEDICINE AT ALBERT EINSTEIN COLLEGE OF MEDICINE AND RESEARCH DIRECTOR OF THE CONTINUUM CENTER FOR HEALTH AND HEALING IN NEW YORK; AND WILLIAM C. MEEKER, D.C., M.P.H., PRESIDENT, PALMER COLLEGE OF CHIROPRACTIC, WEST CAMPUS*

ABSTRACT

Over the past 3 decades, evidence has accumulated that demonstrates that the U.S. health care system as currently structured is untenable given the cost of health care, poor outcomes associated with this cost, imminent shortages in many categories of health professionals and underutilization of other health professionals. The system also faces other challenges, such as the lack of access to care and a growing demand by consumers for health care that offers choice, quality, convenience, affordability and personalized care. Workforce analyses estimating needs and anticipated shortages of health professionals are projected on the current health care system which generally does not include integrative health care and do not include complementary and alternative medicine (CAM) practitioners. This paper examines the opportunities and implications of going beyond the current paradigm of workforce planning and health professions education and offers recommendations that detail how the health of the public may be served by incorporating an integrative health perspective into health professions education and workforce planning, deployment and utilization.

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*The responsibility for the content of this article rests with the author and does not necessarily represent the views of the Institute of Medicine or its committees and convening bodies.

INTRODUCTION

Over the past 3 decades, evidence has accumulated that demonstrates that the U.S. health care system as currently structured is untenable given the cost of health care, poor outcomes associated with this cost, imminent shortages in many categories of health professionals and underutilization of other health professionals, lack of access to care and a growing demand by consumers for health care that offers choice, quality, convenience, affordability, and personalized care. It is well established that the United States spends far more on health care than any other nation, yet it ranks only 34th in the world in life expectancy and has a higher infant mortality rate than many other developed nations. A recent report on the State of the Nation's health workforce by the Association of Academic Health Centers (2008) highlighted what is described as dysfunction in public and private health workforce policy and infrastructure that is contributing to vulnerabilities for the workforce and putting the health of the American public at risk. Issues identified include the following:

- The current system of reimbursement is beset with distortions, inequities and contradictions that have influenced and shaped the health workforce over many years.
- Market initiatives of the last 2 decades have engendered perverse reimbursement incentives that do not address greater societal needs.
- Younger generations are deterred from entering the health professions because of debt, compensation factors, hazardous work environments, and reduced access to education.
- The growth of the U.S. population, its increasing diversity, and the aging of the baby boomers raise concerns about the adequacy of the health workforce.
- A lack of national leadership and alignment exists amongst numerous educational, accrediting, and licensure bodies.
- Health care needs of the public are largely left to the States; State governments are inclined to focus on the specific needs of their populations, without concern for greater national priorities.

A key finding of the 2008 report is that federally funded and national workforce planning commissions have tended to have a limited focus, often concentrating on one profession or a limited series of issues, rather than a broad strategic vision. A recommendation ensuing from this analysis is that a broader, more integrated national strategic vision is needed if complex and urgent health workforce issues are to be addressed effectively.

As comprehensive and bold as this recent analysis is, it falls dramatically short in two respects. While it decries the historical lack of comprehensive workforce planning, it focuses exclusively on conventional health professionals including physicians, nurses, optometrists, pharmacists, dentists, psychologists, public health professionals, podiatrists veterinarians, and other allied health professions (defined as dental hygienists, occupational, physical, and respiratory therapists and physician assistants). It does not include chiropractors, naturopathic physicians, traditional Chinese medicine practitioners or any other type of CAM practitioner. Nor does it describe what workforce needs might look like if we had a different vision of health care, one that includes for example, integrative health care. The report implicitly presumes that we need more of what we have. This approach is consistent with that taken by the National Center for Health Workforce Analysis (2008) in the Bureau of Health Professions in the Health Resources and Services Administration (HRSA), the Federal agency responsible for collecting, analyzing, and disseminating health workforce information and facilitating national, State and local workforce planning efforts.

As interest in integrative health care and the use of complementary and alternative therapies by consumers has continued to grow, concern has increased that health professionals be sufficiently informed about integrative health that they can effectively care for patients. Among various professional groups, debate continues as to what constitutes sufficient information. Various national panels and commissions have examined this issue and recommendations have emerged, some of which are beginning to impact the education of health professions.

This paper will attempt to go beyond the current paradigm of workforce planning and health professions education and will:

- Review recommendations for curricular reform that have emerged from the Institute of Medicine (IOM) panel on Health Professions Education, the IOM Panel on Use of Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine and the National Education Dialogue.

• Summarize efforts by National Institutes of Health National Center for Complementary and Alternative Medicine (NIH NCCAM) to stimulate curricular reform in both conventional and CAM institutions.
• Examine the educational preparation and workforce structure of representative CAM and biomedical professions and efforts within the professions to make curricular changes that advance integrative health care.
• Review data on attitudes of health professionals toward integrative health care, conventional medicine, and CAM.
• Identify strategies impacting health professions education including the development of competencies and interdisciplinary education initiatives at the undergraduate and graduate level.
• Discuss the implications of changing care models on workforce needs and the focus and demand for health professions training.
• Offer recommendations that will advance integrative health care and enable the United States to move from the current health care system that is sporadic, reactive, disease-oriented and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment, and focuses on the full range of physical, mental, and social support needed to improve health and minimize the burden of disease.

There are a number of different definitions of integrative health and integrative medicine commonly used. The Bravewell Collaborative (2008) describes integrative medicine as having the following characteristics:

• Patient-centered care and focuses on healing the whole person—mind, body, and spirit in the context of community.
• Educates and empowers people to be active participants in their own care, and to take responsibility for their own health and wellness.
• Integrates the best of Western scientific medicine with a broader understanding of the nature of illness, healing, and wellness.
• Makes use of all appropriate therapeutic approaches and evidence-based global medical modalities to achieve optimal health and healing.
• Encourages partnerships between the provider and patient, and supports the individualization of care.
• Creates a culture of wellness.

The Consortium of Academic Health Centers for Integrative Medicine (2005), a consortium of 42 medical schools, offers the following definition: "Integrative medicine is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals and disciplines to achieve optimal health and healing." Many health care providers who practice whole person, relationship-based care that embodies the characteristics described in the above two definitions do not identify their practice as being medicine-based, viewing that word as focusing on the discipline of medicine. Boon et al., (2004) describe integrative health care as an interdisciplinary, nonhierarchical blending of both conventional and complementary and alternative health care that provides a seamless continuum of decisionmaking, patient-centered care, and support. According to Boon and colleagues, integrative health care is based on a core set of values, including the goals of treating the whole person, assisting the innate healing properties of each person, and promoting health and wellness and the prevention of disease. It employs an interdisciplinary team approach that is guided by consensus building, mutual respect, and a shared vision of health care. For the purposes of this paper, integrative health care will be used to describe a healing oriented approach that encompasses the above definitions. The term integrative medicine will be used more narrowly when referring to the education and practice of medical doctors. CAM is a term that is used to describe a group of diverse medical and health care systems, practices and products that are not considered to be part of conventional medicine. CAM includes a wide variety of disciplines and practices, ranging from licensed chiropractors, naturopathic physicians and traditional Chinese medicine practitioners to yoga or meditation teachers. In this paper we will distinguish between the licensed CAM fields and those that are not.

CURRICULUM REFORM RECOMMENDATIONS

Over the past 10 years, several multidisciplinary national panels including the IOM Committee on Health Professions Education, the IOM Committee on Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine, and the National Education Dialogue have made recommendations for specific reforms to address some of the pressing problems in the

education of health care professionals. Recommendations have addressed some of the deficiencies in cross-discipline understanding and communication which have contributed to the "quality chasm" described by the IOM in 2001.

The IOM Committee on Health Professions Education (IOM, 2003), although it did not specifically address the issue of integrating CAM professions with "conventional," put great emphasis on the need for team-based, interdisciplinary educational strategies as a means to reduce medical error and improve health care quality. The committee stated as it's overarching vision for education of health professionals, that "all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics." It also recommended that a set of shared competencies across all health care professions, focused on patient-centered care, be required by regulatory bodies governing education in the various disciplines.

The IOM Committee on Complementary and Alternative Medicine recommended that all conventional health professions training programs incorporate sufficient information about CAM into the standard curriculum to enable licensed professionals to competently advise their patients about CAM (IOM, 2005). It did not specifically address the need for CAM professionals to have basic information about the conventional disciplines, but did stress the need for more research training for the CAM professions as a way to bridge the gap in communication between disciplines.

The White House Commission on CAM (2002) made several specific recommendations regarding training, including the following:

- The education and training of CAM and conventional practitioners should be designed to ensure public safety, improve health, and increase the availability of qualified and knowledgeable CAM and conventional practitioners and enhance the collaboration among them.
- CAM and conventional education and training programs should develop curricula and other methods to facilitate communication and foster collaboration between CAM and conventional students, practitioners, researchers, educators, institutions, and organizations.
- Increased Federal, State, and private sector support should be made available to expand and evaluate CAM faculty, curricula, and program development at accredited CAM and conventional institutions.

Finally, the report from the National Education Dialogue (NED), a multidisciplinary group of educators from health care disciplines including nursing, medicine, acupuncture and traditional Chinese medicine, naturopathic medicine, chiropractic, and massage recommended a process to identify and promote the development of interinstitutional training relationships, stating that "students educated in an environment of mutual respect and collegiality among disciplines will be more likely to practice collaborative health care" (NED, 2005). The proceedings of this meeting in 2005 included a survey documenting a substantial degree of interest in interaction/exchange between medical schools affiliated with the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) and CAM schools. As noted by Weeks (2006), approximately 85 percent of respondents from both medical and CAM schools agreed that creating a fully integrated healthcare system will require that institutions and programs develop stronger, multi-dimensional, interinstitutional relationships with programs of the other disciplines. Like the IOM Committee on Health Professions Education, the NED participants recommended the development of a set of shared competencies/values across disciplines which would ultimately be required for every discipline and thus would lay the groundwork for more effective collaboration.

NIH NCCAM R-25 GRANT PROGRAMS

The National Center for Complementary and Alternative Medicine (NCCAM) was established in 1998 at the National Institutes of Health (NIH) in response to public interest in complementary and alternative medicine (CAM). Public Law 105-277 authorized NCCAM to conduct scientific research, train researchers, and disseminate authoritative information about CAM to the public and health professionals. In 1999, NCCAM initiated a program called the Complementary and Alternative Medicine Education Project, the goal of which was to incorporate CAM information into the curriculum of selected health professions schools. The details of this program are described in a recent article by Pearson and Chesney (2007). Between 2000 and 2003, 14 schools in the United States and the American Medical Students Association received grants of up to $300,000 per year in direct costs with a maximum duration of 5 years. Twelve grants were awarded to medical schools or programs focused on education of more than one discipline and two were awarded to schools

of nursing. As noted by Pearson and Chesney, the emerging goals from these CAM curriculum efforts were that conventional health care providers, as part of an integrative health care environment, would have sufficient knowledge and skills to:

- Know how to ask patients about their use of CAM or integrative medical practices.
- Be familiar with the most commonly used forms of CAM so they can discuss these practices with their patients.
- Be able to refer interested patients to reliable sources of information.
- Know how to obtain reliable information about the safety and efficacy of CAM or integrative medical practices.

The October 2007 issue of *Academic Medicine* was devoted to a series of articles on the CAM Education Project grants. Detailed information is available on the rationale and focus of student learning (Gaylord and Mann, 2007; Gaster et al., 2007); organizational and instructional strategies (Lee et al., 2007); barriers, strategies and lessons learned (Sierpina et al., 2007); strategies to foster student self awareness (Elder et al., 2007); evaluation of CAM education programs (Stratton et al., 2007); and collaborative initiatives between allopathic and CAM health professionals (Nedrow et al., 2007).

NCCAM initiated a second series of R–25 grants in 2004 that focused on the goal of increasing research content in CAM practitioner programs that offer a doctoral degree in a CAM practice. The CAM Practitioner Research Education Project Grant Partnership required that a CAM school partner with a research intensive university to develop curricula. The major focus of curricular efforts is research literacy and the integration of content on evidence-based or informed practice. Awards were made to nine institutions that included institutions offering chiropractic, naturopathic and TCM.

A common finding among all of the institutions awarded grants under the R–25 program is that while these grants were titled curriculum grants, at the core, the focus without exception has also been on fostering culture change. This has required extensive faculty development and it is widely acknowledged that change of this nature takes significant time, requiring engagement of leadership, faculty, and students.

HEALTH WORKFORCE STRUCTURE AND EDUCATION

Education of health professionals occurs in a wide variety of public and private settings. Within some academic programs preparing physicians and nurses, information on integrative health and medicine is taught in required or elective curricula. Topics commonly addressed include relationship-based care, whole person care (i.e. mind, body and spirit), complementary and alternative medicine and self-care. Organizations such as the CAHCIM, a consortium of 42 medical schools with integrative medicine programs, and the NCCAM R–25 education grants have accelerated curriculum innovation.

Integrative health care is also practiced by a number of practitioners, often referred to as CAM practitioners. These practitioners vary considerably in educational preparation, scope of practice and licensure to such an extent that a generic term such as CAM is not particularly descriptive or useful. Recently, the term "natural medicine" has been associated with educational programs in licensed fields of chiropractic, naturopathic medicine, TCM and massage therapy. While the major focus of these educational programs is content related to the respective area of specialization, to varying extents, information is also taught on self-care, whole person care, evidence-based or informed practice, relationship-based care, and other aspects of integrative health care. Content on interdisciplinary or team care is generally not adequately addressed in either the CAM or conventional health care educational institutions/programs.

In an effort to highlight the diversity and complexity of the U.S. health care workforce and the opportunity that we face to advance the health of the public by fully utilizing health professionals prepared in integrative health care, we have chosen to profile two biomedical professions (medicine and nursing) and four licensed disciplines in natural medicine (chiropractic, naturopathic medicine, TCM and massage therapy). While this is not an exhaustive review that includes all biomedical and CAM disciplines, it is intended to be illustrative of the strengths, weaknesses, challenges, and issues faced within health professions education that both impede and advance integrative health care.

Medicine

Medicine (also known as "biomedicine," "allopathic medicine," and "conventional medicine") is an approach to health care which applies scientific principles and find-

ings from medical research to treat specific disease conditions and prevent illness. The most commonly used strategies in conventional medicine involve the use of pharmaceuticals, surgical procedures, and other technologically advanced interventions. There is a strong belief in conventional medicine that most, if not all, diseases can ultimately be determined to have a physical cause, whether this cause is biochemical, infectious, genetic, or traumatic. Influences of mind and spirit on overall health have been generally not emphasized in medical training and approach outside of the specialty of psychiatry, although this has changed to some degree in the past two decades. Medical doctors trace the history of their profession back to Hippocrates; however, the current scientific approach to medicine really began in the late 19th century.

Primary care physicians include family practitioners, internists, pediatricians, and gynecologists, and are generally the first point of contact for patients with the health care system and have an explicit focus on prevention as well as treatment of disease. Specialists including surgeons, dermatologists, physiatrists, radiologists, and many others, typically focus on the application of a specific approach to the treatment of disease. Subspecialists include cardiologists, oncologists, gastroenterologists, and many other disciplines generally focused on the diagnosis and treatment of dysfunction in one specific organ or organ system.

Medical doctors must graduate from an accredited medical school and pass a licensing exam given by the U.S. Medical Licensing Examination (USMLE). There are 130 accredited medical schools currently in the United States. The curriculum includes courses in anatomy, biochemistry, pharmacology, physiology, and genetics, and medical doctors in training must complete "rotations" in the major disciplines including medicine, pediatrics, psychiatry, surgery, obstetrics/gynecology, and family practice prior to graduation from medical school. After 1 year of postgraduate training they may apply for a license in their State; licensing is State-specific and medical doctors must apply for licensing in each State in which they wish to practice. Board certification in a given specialty requires completion of an accredited residency in that specialty; residency programs can range in length from 3–7 years. Board certification also requires passing an exam developed by a specialty recognized by the American Board of Medical Specialties. At this point, many specialties require recertification at intervals of 7–10 years. Subspecialty certification generally requires an additional 1 to 3 years of fellowship training.

As of 2006, there were approximately 633,000 physicians employed in the United States (U.S. Department of Labor, 2008). The American Medical Association data from 2005 show that approximately 40 percent of physicians were in a primary care specialty, and 60 percent in subspecialties (American Medical Association, 2007). Data suggest that some geographic areas have significant shortages of primary care physicians (Fryer et al., 2004). Historical data also show that major health outcomes including all-cause mortality, cancer, heart disease, stroke, and infant mortality; low-birth weight; and life expectancy are significantly better in areas with adequate access to primary care (Macincko et al., 2007; Starfield et al., 2005). The concept of the "medical home," currently gaining momentum in the health care system is based on this data regarding the importance of an identified source of primary care. To date, no data definitively suggest that this primary care must be delivered by a medical doctor.

Services of medical doctors are generally reimbursed by insurance companies. In recent years, due to delays in payments from insurers and inadequate reimbursement levels, many physicians have begun to "opt-out" of insurance plans. This has compounded the problems with access to medical care created by the large percentage of uninsured in the U.S. population.

Since the publication of Eisenberg's work documenting the extent of use of CAM in the U.S. population (Eisenberg, 1998), there has been a movement to incorporate basic knowledge on CAM into conventional medical education. As of 2003, 98 of 126 U.S. medical schools have incorporated at least some teaching on CAM into their curricula (Barzansky and Etzel, 2003). However, many of these offerings were elective rather than required, and the true impact of these curriculum offerings on attitudes and practices of physicians has not been systematically evaluated.

The first set of published guidelines on CAM in conventional medical education curriculum was developed for residency-level training by the Society of Teachers of Family Medicine in 2000 (Kligler et al., 2000). Of all the medical specialties, family medicine as a discipline—perhaps because of its basis in the biopsychosocial model and the "whole person" perspective that engenders—has been the most open to exploring new strategies to teach trainees about integrative approaches. Post-graduate level training in family medicine—both at the residency and fellowship levels—has proved a relatively receptive environment for integrative medicine training programs. An exciting recent development, spearheaded by the Center for Integrative

Medicine at the University of Arizona, is the Integrative Medicine in Residency program (IMR). The IMR is a 250-hour internet-based curriculum in integrative medicine designed for family medicine and other primary care residents which is currently being piloted for feasibility and effectiveness at eight residency programs around the country.

The IMR program grew out of another important innovation, again led by the Arizona Center: the Integrative Family Medicine program. This program, which combines fellowship level training in integrative medicine with family medicine residency training, has been running at six residency sites since 2003, and has trained over 30 fellows (Maizes et al., 2006). The IFM has been an excellent laboratory to develop educational strategies as well as competency-based evaluation tools for the incorporation of CAM training into conventional medical post-graduate education (Kligler et al., 2007).

Another development on the post-graduate national landscape was the formation of the American Board of Integrative Holistic Medicine (ABIHM), which was formed in 1996 as an independent credentialing body for physicians in this field. Although ABIHM is not recognized by the American Board of Medical Specialties and therefore does not represent an "official" board certification in the eyes of orthodox medicine, it does represent a serious effort to establish standards for certification in this area for physicians. To date 1,040 physicians have received ABIHM Diplomate designation.

Although many medical schools now offer at least elective courses in CAM and integrative health care, undergraduate medical education has been a more difficult challenge for integrative medicine educators. Over the past 6 years CAHCIM has been very active in trying to promote curriculum reform and to move towards goals outlined by the previous IOM committees, the White House Commission, and the NED process. In 2004, a set of consensus guidelines for undergraduate medical education in integrative medicine was published in *Academic Medicine* (Kligler et al., 2004). This document, a collaborative effort between educators at 13 medical schools, incorporated a set of core values critical to education in integrative medicine as well as a set of knowledge, skills, and attitudes. Although this document provides a useful set of tools for educators, to date its curriculum recommendations have not been widely implemented.

A recent small step forward resulted from an exchange between CAHCIM and the Liaison Committee on Medical Education (LCME), the accrediting organization for U.S. medical schools. CAHCIM proposed specific changes to 3 LCME Educational Accreditation Standards, with the aim of more explicitly requiring medical schools to include teaching on integrative medicine in their required curriculum. The proposed changes would have incorporated modifications into the mandated educational standards regarding multidisciplinary content areas, communication skills, and cultural competence—all areas in which education in integrative health care would naturally fit. Although the LCME did not agree to revise any standards, it did take a step forward by adding the topic of "complementary and alternative health care" to the list of topics addressed in the LCME Medical Education Database relative to accreditation standard ED–10 for schools anticipating survey visits scheduled for 2009–2010 and thereafter. (LCME, 2008) This educational standard mandates the inclusion of behavioral and social sciences in the curriculum, and details a list of subjects in this area considered important for physicians. As part of the LCME survey (LCME Part II Annual Medical School Questionnaire), schools will now be asked to identify where in their curriculum CAM is covered (required vs. elective course or clerkship) and how many sessions are dedicated to this topic.

This change in LCME policy represents progress; however, it falls short in that it still does not specifically mandate required exposure to CAM or integrative health care. The recommendation as it stands does not ensure achievement of the recent IOM recommendation for physicians to emerge from training "competent to advise" patients on CAM. As such, further steps by the LCME mandating required coverage of this area in the medical school curriculum will be needed if we are to reach this outcome.

Nursing

While the role of nurses, their educational preparation, and the settings in which they practice have evolved over time, the focus of nursing has remained fairly constant. Florence Nightingale, the founder of modern nursing, described the work of the nurse as helping the patient attain the best possible condition so that nature could act and self-healing could occur (Dossey, 2000). The focus of the art and science of nursing goes beyond fixing or curing to ease the edges of patients' suffering, to helping them to restore function, maintaining patient health, aiding those living with chronic illness, or supporting patients through a peaceful death. Nurses

are experts in symptom management, care coordination, health promotion and chronic disease management. In addition to caring for people from birth to death, they are also prepared to plan and manage care for communities, conduct research, manage health systems and address health policy issues.

Much of what is now called CAM or complementary therapies has fallen within the domain of nursing for centuries. Nurses are educated to be holistic practitioners—attentive to the whole person, the mind, body and spirit. Academic programs in nursing routinely include information on massage, music, imagery, energy healing, meditation and relaxation therapies, and use of essential oils.

Nurses constitute the largest group of health care professionals in the Nation. They are academically prepared in several ways. Nurses educated in 2-year associate degree or 3-year diploma program are eligible for registered nurse (RN) licensure and most commonly work in hospitals, long-term care facilities and out-patient (clinic) settings. Baccalaureate prepared nurses or nurses who attain entry into practice in accelerated MA programs are also eligible for RN licensure and work in public health as well as the settings noted above. They are also more likely to assume leadership roles. Two agencies provide accreditation to nursing programs: the Commission on Collegiate Nursing Education (CCNE) and the National League for Nursing Accrediting Commission (NLNAC). CCNE accredits baccalaureate and graduate education programs. NLNAC accredits diploma, associate, baccalaureate and master's degree nursing programs. State licensing authorities regulate entry into the practice of nursing. Candidates for licensure as an RN are required to pass the National Council Licensure Examination—Registered Nurse (NCLEX–RN) exam developed by the National Council of State Boards of Nursing (NCSBN).

The nurse practitioner (NP) role emerged in the mid-1960s as a cost-effective approach to address the Nation's primary care needs during an era of projected physician shortages. NPs complete a graduate level education program that prepares them for practice in their area of specialty and are licensed independent practitioners. NPs provide primary care in a wide variety of settings including adult health, pediatrics, family, gerontological, and women's health care. NPs are also prepared in specialty areas such as mental health, neonatal care and acute care. They are prepared to diagnose and treat patients with undifferentiated symptoms as well as those with established diagnoses. NPs provide initial, ongoing, and comprehensive care that includes taking health histories, providing physical examinations and other health assessment and screening activities, and diagnosing, treating, and managing patients with acute and chronic illnesses. This includes ordering, performing, supervising, and interpreting laboratory and imaging studies; prescribing medication and durable medical equipment; and making appropriate referrals for patients and families. NPs have prescriptive authority in all States. The scope of practice of NPs includes health promotion, disease prevention, health education, and counseling as well as the diagnosis and management of acute and chronic diseases. It is estimated that NPs can effectively manage 80 percent of patients' primary care needs. In two meta-analyses (Brown and Grimes, 1995; Horrocks et al., 2002) of over 35 studies, comparable care outcomes were attained by M.D.s and NPs. The most recent Health Resources and Services Administration (HRSA) Survey report (2005) estimates 141,209 nurse practitioners in the United States, an increase of more than 27 percent over 2000 data. The actual number of nurse practitioners in 2006 is estimated by the American College of Nurse Practitioners (2008) to be at least 145,000.

A report on competencies of nurse practitioners in primary care settings prepared for HRSA in 2002 by the National Organization of Nurse Practitioner Faculties (NONPF) and American Association of Colleges of Nursing (AACN) (2002), contains no explicit reference to content on integrative health/medicine. However, a survey by Burman (2003) of family nurse practitioner program directors found that 98.5 percent of the 141 respondents reported that their FNP programs included CAM-related content and that 83 percent integrated CAM content into existing courses.

Certified nurse-midwifes (CNMs) provide a full range of primary health care services to women throughout the lifespan, including gynecologic care, family planning services, preconception care, prenatal and postpartum care, childbirth, and care of the newborn. Like NPs, CNMs are nurses with graduate preparation and are licensed, independent practitioners who have prescriptive authority. Nurse-midwives provide care in many settings including hospitals, birth centers, and a variety of ambulatory care settings including private offices, community and public health clinics and homes. A recent Cochrane review (Hatem et al., 2008) of 11 trials (12,276 women) found that women who had midwife-led models of care were less likely to experience antenatal hospitalization, regional anesthesia, episiotomy, and instrumental delivery and were more likely to experience spontaneous vaginal birth and initiate breastfeeding. Women randomized to receive midwife-led care were less

likely to experience fetal loss before 24 weeks gestation and their babies were more likely to have a shorter length of hospital stay. The review concluded that all women should be offered midwife-led models of care and should be encouraged to ask for this option. The American College of Nurse Midwives (2007) in a document titled *Core Competencies for Basic Mid-wifery Practice*, describes the evaluation and incorporation of complementary and alternative therapies in education and practice as a hallmark of mid-wifery practice in all settings for mid-wifery care including hospitals, ambulatory care settings, birth centers and home.

NPs and nurse-midwives are advanced practice registered nurses (APRNs), as are nurse anesthetists and clinical nurse specialists. APRNs attain certification in their specialty and practice within standards established or recognized by professional associations and licensing bodies. Currently, no uniform model of APRN regulation exists across the States. Each State independently determines the APRN legal scope of practice, the roles that are recognized, the criteria for entry-into advanced practice, and the certification examinations accepted for entry-level competence assessment. This has created a significant barrier for APRNs to easily move from State to State. The graduate preparation for APRNs has historically been a master's degree. Over the past 5 years, there has been a transition to a clinical doctorate degree, the doctorate of nursing practice (DNP).

Integration of content on integrative health/medicine into other graduate nursing programs varies considerably. Many graduate programs in nursing teach content on integrative health/medicine as it relates to health promotion, lifestyle coaching, and disease management. A more recent trend has been to develop graduate programs in nursing that have integrative health as a major area of emphasis. The University of Portland offers a DNP program with a Family Nurse Practitioner specialty that includes emphasis on integrative health. New York University College of Nursing offers a masters level adult holistic health nurse practitioner program. At the University of Minnesota School of Nursing, integrative health is integrated into all 14 DNP specialty programs including adult health, women's health, midwifery, and public health. Additionally, a DNP in Integrative Health and Healing was developed to prepare practitioners and leaders who can work within a wide variety of clinical settings with diverse patient populations and provide leadership within organizations.

Nurses prepared at the Ph.D. level are skilled in conducting research. As integrative health care becomes a more visible and prominent area of focus within nursing programs, it is anticipated that doctorally prepared faculty and clinicians will contribute to the evidence-base of CAM and integrative health care.

According to the American Association of Colleges of Nursing (AACN) (2008), the United States has a severe nursing shortage that is expected to intensify as the need to health care grows with the aging of the baby boomers and as the need for health care grows. The shortage of RNs could reach 500,000 by 2025. Nursing colleges and universities are struggling to expand enrollment levels to meet the rising demand for nursing care, a situation made more challenging by a shortage of nursing faculty.

Chiropractic

Chiropractic is a 113-year-old primary (first contact) health care profession that developed in the U.S. Chiropractic practitioners focus on the neuromusculoskeletal system, especially the spine, to manage related conditions and to enhance general health and wellness. Surveys have found that chiropractic care is used overwhelmingly by patients with pain complaints related to joints, muscles and other somatic tissues, though a significant fraction of patients also use chiropractic care to enhance their well-being and quality of life (Meeker and Haldeman, 2002). Doctors of Chiropractic (DC), by statute and choice, generally practice a drugs-free hands-on approach that includes the full range of standard case-management behaviors including the application of broad diagnostic responsibilities and skills. Chiropractors are well-known as experts in the biomechanical science and art of manual manipulative procedures known as "chiropractic adjustments" but they are trained to recommend therapeutic and rehabilitative exercises, as well as provide nutritional, dietary and lifestyle counseling. DCs are trained to work well with other professionals when patients' needs can most benefit from a coordinated approach, and to refer to medical specialists as appropriate.

Approximately 70,000 licensed DCs in the United States handle over 190 million visits annually, providing care to an estimated 7–10 percent of the population, which compares favorably with the approximately 380 million visits made to primary medical care providers (Eisenberg et al., 1998). Chiropractors are concentrated in urban areas, but some also serve as the only primary health care providers in rural medically-underserved areas (Smith and Carber, 2002). The profession experi-

enced considerable growth through the mid-1990s, but this has slowed to modest growth projections through the next decade. However, the profession is expanding at a strong rate outside of North America.

The profession of chiropractic began in Iowa in 1895 when D.D. Palmer coined the word to describe a theory of health and disease that incorporated spinal manipulation as a major part of the approach. Forms of joint and soft tissue manipulation have been components of traditional treatments dating back thousands of years, but Palmer claimed to have perfected the art and professionalized the practice. He established the Palmer College of Chiropractic in 1897, the largest and oldest chiropractic institution in the world. Over the course of the next 7 decades, chiropractic became a legally licensed profession one State at a time, often experiencing considerable political resistance from conventional medicine (Meeker and Haldeman, 2002).

Effective political lobbying and patient support caused Medicare to begin limited reimbursements for chiropractic care in the early 1970s. Around the same time, chiropractic education was officially accredited by the U.S. Department of Education through the Council on Chiropractic Education (CCE). In 1987, the profession won a decade-long legal battle against the American Medical Association for antitrust violations. In 1994, HRSA began to fund chiropractic institutions to conduct research, which was followed in 1997 with significant center grant funding by NIH NCCAM. Chiropractic scientists were appointed to serve on NCCAM's National Advisory Committee, on NIH study sections, and on other policymaking bodies.

Practitioners, scientists and policymakers have become increasingly aware that a reasonable body of credible scientific evidence was accumulating concerning the benefits of spinal manipulation for spine-related pain (Bronfort et al., 2008; Chou et al., 2007), a major public health concern (Dagenais et al., 2008). This was initially codified in a clinical guideline published by the U.S. Agency for Health Care Policy and Research in 1994 (Bigos et al., 1994). Within the past decade, chiropractors have been officially positioned in the Veteran's Health Administration and Department of Defense facilities. Chiropractic is now so widely acknowledged and used by the public for spine-related conditions and embedded in some standard health delivery and reimbursement systems, that it can be characterized as standing at the "crossroads between alternative and mainstream medicine" (Meeker and Haldeman, 2002).

Philosophically, chiropractic is based on the premise that the body contains an "innate" healing ability, and that a drugs-free, hands-on "natural" approach best enhances this healing response. The emphasis tends to be on wellness and quality of life, working with patients' environments and motivations to reach the highest level possible of pain-free function. The "personality" of chiropractic care leads to very strong doctor patient relationships, which have been described in many studies noting high levels of patient satisfaction (Cherkin and MacCornack, 1989; Carey et al., 1995). Strong support by patients has probably contributed to chiropractic's current position as the most widely utilized profession-based "CAM" practice in the United States.

Chiropractors are licensed and accordingly regulated in all States after the completion of what is typically a 4–5 year academic program conferring the DC degree, and the passing of a 4-part progressive standardized set of didactic and practical examinations administered by the National Board of Chiropractic Examiners, the principal testing agency for the profession. Most States require annual continuing education credits to maintain licensure. DCs are now recognized in most public and private reimbursement systems and within the past decade the profession's institutions have begun to be included in some Federal programs as potential recipients of programmatic support for education, practice, and research.

Currently, 17 chiropractic training institutions in the United States are accredited by the CCE. All but two colleges are also accredited by regional accrediting bodies as well. Most are free-standing, non-profit organizations but at least two are programs contained within larger colleges or universities. During the past decade, at least four chiropractic institutions have also initiated or incorporated training programs for other types of CAM practitioners such as massage, acupuncture, and naturopathy. Students entering chiropractic programs must have successfully completed at least 90 credit hours (3 years) of undergraduate coursework that must include specific hours in basic sciences and humanities. Approximately 75 percent of entering students have baccalaureate degrees. The DC curriculum of 4,200 minimum hours is similar to a medical school curriculum but emphasizes neuromusculoskeletal conditions and biomechanical interventions over pharmacology. Chiropractic institutions are increasingly embracing the evidence-based care paradigm of making clinical decisions based on best available scientific evidence, clinical experience, and patient preferences. Practical experience is required in public teach-

ing clinics as opposed to hospital internships. National board exams are required at specified points during the educational journey, and are necessary for final State licensure as described above. Post-graduate specialty certification is available in radiology, rehabilitation, sports, nutrition, pediatrics, orthopedics, neurology, and others, usually after the completion of courses, a residency, and a standardized examination.

Chiropractic has the most highly developed educational system of the four licensed CAM professions in the United States being profiled in this paper. The most visible current reform efforts are being driven by the accrediting body, the CCE, and by recent educational program grants (R–25) awarded by NCCAM to 4 schools to increase scientific content and critical thinking skills in the curricula. In all schools there is a general movement to increase training in evidence-based practice (EBP) concepts and to incorporate the knowledge, attitudes, and skills of EBP into the clinical component of the education. In concert with evolving educational practices, there is a growing institutional emphasis on institutional assessment of learning outcomes. Chiropractic institutions have nurtured a scholarly community that meets annually under the auspices of the Association of Chiropractic Colleges to share data, programs and experience. Educational research is published in the *Journal of Chiropractic Education*.

While not directly related to integrative health care goals, the advent of federally funded basic and clinical research grant awards to chiropractic institutions starting in the 1990s has contributed significantly to the evolution of the nascent scholarly culture. During the past decade, the government awarded approximately $40 million to support chiropractic-related research, much of it in projects requiring scientific collaborations with established universities. *The Journal of Manipulative and Physiological Therapeutics*, the premier research journal of the profession, dates back to 1978, and is widely regarded in the generic physical medicine community. Faculty development is now receiving special attention as never before. For example, the Palmer Center for Chiropractic Research received a K–30 NIH grant in 2001 to establish a Master of Clinical Research degree to train chiropractors to conduct high quality clinical research, and has been successful in placing graduates in scholarly positions. In addition, Palmer recently established the Center for Teaching and Learning for its three campuses to develop and execute focused faculty development efforts using emerging educational technologies. With regard to interdisciplinary training and experience, the majority of chiropractic institutions either have or are in the process of developing clinical rotation opportunities at Veteran's Health Administration hospitals and Department of Defense facilities that employ chiropractors. Further efforts are being made to incorporate newly graduated chiropractors in loan-repayment programs that reward service in community health clinics. While these arrangements are currently few in number, the clinical experience to be gained from working in integrated health care settings has obvious implications for students as they subsequently move along in their careers, and underscores the need to develop didactic interdisciplinary objectives.

Traditional Chinese Medicine

Chinese medicine is an ancient healing tradition dating back almost 3,000 years. Its core components are acupuncture, Chinese herbal medicine, moxibustion, massage (or body-work), and exercise and lifestyle/nutrition recommendations. Acupuncture is most widely known in the United States, but the majority of licensed acupuncturists also use Chinese herbs and other approaches. The philosophy of Chinese medicine revolves around the modulation of the flow of Qi (life energy) through a system of channels in the body. Most States of illness or imbalance can be traced to disorders in the flow of Qi, and correcting these can help restore health and prevent illness. According to the 2002 National Health Interview Survey, as of 2002, approximately 8.2 million U.S. adults had used acupuncture, and an estimated 2.1 million U.S. adults had done so in the previous year (Barnes et al., 2004).

Forty-three States plus Washington, DC regulate and license acupuncturists. The scope of practice varies by State. Most States require the passage of the National Certification Commission for Acupuncture and Oriental Medicine exam, although California has its own exam. The entry level degree for the field is a master's degree. Currently, there are three main degrees offered in the acupuncture/Oriental medicine educational institutions: the master's in acupuncture (3 years); the master's in acupuncture and Oriental medicine (4 years); and the Doctorate in Acupuncture and Oriental Medicine (DAOM) (an additional 2 years following the masters's degree). As a general rule, physician acupuncturists undergo significantly less training (300 hours on average) than those with master's or doctoral degrees in acupuncture and oriental medicine.

A qualifying exam that is used by most States as a component for licensure has been administered by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) since 1985, and to date over 19,000 certificates have been granted in Acupuncture, Oriental Medicine, Chinese Herbology, and Asian Bodywork Therapy, the four categories in which the NCCAOM examines for qualification (NCCAOM, 2008). To be eligible for NCCAOM certification, one must graduate from a master's or doctoral level program accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM), the agency designated by the U.S. Department of Education to set standards in this area. Currently over 60 schools and colleges are either accredited or have candidacy status with the ACAOM (ACAOM 2008). To be accredited, an acupuncture program must be at least 3 years in length, and include core subjects such as history and theory of Oriental medicine, acupuncture point location, diagnostic skills, treatment techniques, and biomedical clinical sciences. The Acupuncture and Oriental Medicine master's degree must be at least 4 years in length and include Chinese herbology. The clinical Doctorate in Acupuncture and Oriental Medicine (DAOM) must be a total (including the master's degree) of 4,000 hours. There are currently eight AOM colleges offering the DAOM clinical doctoral degree.

Because different dimensions of Chinese medicine are practiced by practitioners in these varying categories, establishing exact estimates of the number of Chinese medicine practitioners or acupuncturists in the U.S. workforce is extremely difficult. Estimates of the number of licensed acupuncturists currently practicing in the United States range from 25,000 to 30,000; the number of physician acupuncturists is estimated at 3,000–6,000.

Although Chinese medicine has been practiced in Asian communities in the United States since the 1850's, its widespread availability in the United States has developed since 1970, when China opened to the West. Many different styles of Chinese medicine are currently practiced in the United States. Perhaps most widespread is TCM, a modified system developed in the 1950s which combines a heavier reliance on herbal medicines in combination with acupuncture. Classical Chinese medicine, the dominant system until the emergence of TCM under Mao, relies more on the use of acupuncture channels. Various other approaches have developed elsewhere in Asia and Europe and are now practiced in the United States as well, including Japanese acupuncture, Korean hand acupuncture, five element theory, auricular acupuncture, and others.

A large body of clinical research now exists supporting the effectiveness of acupuncture for a wide variety of clinical conditions. The most extensively studied applications are in pain conditions: for example, a Cochrane review of 35 randomized controlled trials (RCT) covering 2,861 patients with chronic low-back pain concluded in 2005 that acupuncture is more effective for pain relief than no treatment or sham treatment, in measurements taken up to 3 months (Furlan et al., 2005). Recently, a large NIH-funded clinical trial showed acupuncture to be effective in treating osteoarthritis of the knee (Berman et al., 2004). In clinical practice, acupuncture is also widely used for conditions for which clinical evidence is somewhat less definitive, including treatment of allergies, asthma, and infertility.

TCM institutions have been generally more internally focused on basic educational reforms and issues within the discipline than on integrative health care goals. The diversity of TCM institutions and inconsistent scope and licensing laws in the United States demand a great deal of attention from TCM leaders. Steady progress has been made however. Accreditation standards now mandate that doctoral level students work collaboratively with other types of health care providers in a variety of settings including hospitals. For example, many TCM programs have developed high-level training relationships with TCM hospitals in China. Typically, TCM students in the last stage of training may spend 1 month or more observing and treating patients in a multidisciplinary setting. There is growing interest in evidence-based concepts and some TCM institutions have been awarded a number of educational and research grants from NCCAM. In most cases, these efforts also required collaborations with established university scientists.

A new and exciting development is the emergence of post-graduate fellowship programs for licensed acupuncturists seeking to gain more experience in conventional health settings. Beth Israel Medical Center in New York recently launched the first such program in the United States, and eight graduate-level acupuncturists are now working and training for 1 year in the hospital setting. As TCM moves towards a doctoral-level degree for licensing on a national level, it is likely that such interdisciplinary clinical training will become more commonplace.

Naturopathic Medicine

Naturopathic medicine is a comprehensive system of primary health care emphasizing prevention, treatment, and the promotion of optimal health through the use of therapeutic methods and modalities that encourage the self-healing process. It is a holistic approach to health care that seeks to respect the unique individuality of each person.

Founded in the United States in 1902, naturopathic medicine achieved its first regulation as a licensed practice within a decade. The profession declined in the mid-century, only to begin a period of renewal in the late 1970s when a new generation began to seek a science-based education which would prepare them to be licensed with a broad scope as general practitioners of natural medicine. The educational, research, professional and regulatory infrastructure for the present naturopathic profession was significantly reformed in this modern era.

A naturopathic physician (ND) must complete a bachelor's degree with premedical training before entering naturopathic medical school. Naturopathic medical education is a 4-year graduate level training program. Education in the first 2 years includes a basic science curriculum very similar to M.D. education. Course work includes anatomy, biochemistry, microbiology, physiology, embryology, histology and genetics. Students complete additional courses in clinical diagnosis, pathology, lab diagnosis and diagnostic imaging as well as naturopathic philosophy and therapeutics, nutrition, mind-body medicine, homeopathy and botanical medicine. In the final 2 years, didactic education builds on naturopathic therapeutics and additional coursework is completed in pediatrics, gynecology, gastroenterology, orthopedics, cardiovascular health, disorders of the eyes, ears, nose and throat, nephrology and dermatology. The focus is on clinical sciences and supervised clinical instruction through teaching clinics and externships in community locations.

This educational program is based on standards of the Council on Naturopathic Medical Education (CNME), which gained recognition as an approved accrediting agency by the U.S. Department of Education in 1987. Within North America, there are seven naturopathic medical schools that have programmatic accreditation or candidacy status with the CNME, five of these are in the United States. Each U.S. institution is also accredited by, or is in candidate status for accreditation with one of the regional accrediting agencies approved by the U.S. Department of Education.

The seven CNME-recognized schools are also members of the Association of Accredited Naturopathic Medical Colleges (AANMC). In 2007, the AANMC published a report on educational competencies. The report delineated knowledge, skills and attitudes around 5 key roles for the naturopathic physician:

- The medical expert, who integrates naturopathic principles and philosophy to reach accurate diagnoses and formulate safe, effective treatment plans, manage patient care and interact with other healthcare professionals for patients' benefit.
- The naturopathic manager, who can create, develop and maintain a clinical practice. Courses in practice management, ethics and jurisprudence together with clinical training provide students with the necessary experience and knowledge to succeed in this endeavor.
- The naturopathic professional, who is well-grounded in the history of the profession, understands the importance of ethical practice, public health and participation in professional affairs on a State and national level.
- The naturopathic health scholar, who practices *docere*, the role of doctor as teacher with individual patients and in the wider community and who stays current through continuing medical education and reading and critically evaluating the peer-reviewed literature.
- The naturopathic health advocate, who practices prevention with patients, understands and promotes the relationship of environmental sustainability to human health, and participates in the broader health care dialog.

To attain licensure, naturopathic physicians are required to graduate from a CNME recognized program and then pass the Naturopathic Physicians Licensing Examination Board (NPLEX). The board examination is offered by the North American Board of Naturopathic Examiners (NABNE) and is utilized by all of the States licensing naturopathic doctors. To maintain licensure, NDs are required to fulfill State-mandated continuing education requirements annually, and to practice within the specific scope of practice defined by their State's law.

Naturopathic physicians are currently licensed in 15 States, as well as the District of Columbia, and the United States territories of Puerto Rico and the United States Virgin Islands. Expanding licensing is a priority of the profession. California was added in 2004 and Minnesota in 2008. The scope of practice of licensed naturopathic physicians varies from State to State. In all States with updated or laws, licensed members of the profession have prescriptive authority for conventional phar-

maceuticals, although the breadth of the formulary varies. Variation between States also exists in such areas as rights to use injections, the question of whether "physician" is a legal term, the practice of natural childbirth and minor surgery, and inclusion of acupuncture. Licensing efforts are underway in New York, Massachusetts, Illinois, Florida and elsewhere.

The size of the naturopathic medical workforce has increased significantly in the modern era, and particularly the past decade. According to a 2001 report issued by the Center for Health Professions at UCSF (Hough et al., 2001), there were approximately 1,300 naturopathic physicians licensed in the United States. The number of licensed NDs has more than tripled in the past 10 years and the American Association of Naturopathic Physicians (AANP) now estimates that there are 3,500 licensed NDs across the United States. Roughly 400 new NDs graduate each year.

The AANP estimates that approximately 50 percent of NDs provide primary care in office-based, private practice as solo practitioners. NDs with less than 10 years of experience are more likely to practice in interdisciplinary group practices. (Howard, 2008).

Insurance coverage varies by plan, and by jurisdiction. Connecticut and Vermont have coverage mandates which in Vermont, beginning in 2007, also included Medicaid. The "every category of provider statute" in Washington State requires that all of that State's plans, beginning in 1996, had to include naturopathic physicians. In some plans, members can choose naturopathic physicians as their primary care providers. Because naturopathic physicians in Washington do not have the right to admit patients to hospitals, the NDs in that State must have a collaborative relationship with an M.D. to manage admissions.

Clinical research into natural therapies has become an increasingly important focus for naturopathic physicians. Investigators at naturopathic medical schools have been the recipients of NIH grants and NIH NCCAM funded a project that led to the development of a research agenda (Standish et al., 2006) that identified four strategic priorities:

- High validity randomized controlled trials (RCTs) of whole practice naturopathic medicine;
- Basic science including mechanism of action;
- Health services research through regional demonstration projects; and
- Exploration of naturopathic medical principles through basic and applied research.

The level of integration of naturopathic physicians with the conventional healthcare system varies from State to State and is in part, a function of the legally defined scope of practice and inclusion by third party payers. In States where the relationship has had a chance to mature, naturopathic professional activities are known to include: creation of school-based health clinics; employment in community health clinics; recognition as a primary care provider (PCP) option in leading plans; participation in a State-funded student loan-payback program for providing primary care to underserved communities; collaboration on research, education and practice with conventional academic health centers; participation with multidisciplinary consortia of educators; employment as staff physicians or as specialists in cancer centers and other specialty clinics; service on boards of hospitals and public health agencies; and ongoing participation, through actions of the professional associations, in diverse State and local policy venues as part of the primary care matrix.

Massage Therapy

Massage therapy is an umbrella term covering a very wide range of manual procedures targeting the body's soft tissues, primarily muscles, with the intent of improving health. There is a notable lack of consistency in the legal definition and scope of massage therapy, but most jurisdictions agree that massage therapy excludes diagnosis; drug prescription; manipulation or adjustments of the skeletal structure; or any other service, procedure or therapy which requires a license to practice orthopedics, physical therapy, podiatry, chiropractic, osteopathy, psychotherapy, acupuncture, or any other profession or branch of medicine.

Massage can be delivered as a relaxation procedure to reduce stress and enhance well-being, or it can be used to address a variety of health complaints such as musculoskeletal pain, headache, and anxiety. At least 80 types of massage therapy exist including Swedish massage, trigger point massage, deep tissue massage, and sports massage. There are also many forms of massage from Asian cultures, notably Shiatsu, Thai massage and acupressure. Most therapists specialize in a few techniques.

Massage is a popular procedure delivered by practitioners in a variety of private and professional settings, including hospitals, medical spas and chiropractic offices. According to the American Massage Therapy Association (AMTA) Web site (2008),

typical massage therapy sessions run 30–60 minutes. Estimates vary, but the *2007 AMTA Consumer Survey* results show that 24 percent of American adults had a massage at least once in the preceding 12 months. AMTA further estimates that there are 265,000 to 300,000 massage therapists and students in the United States, and that employment for massage therapists will increase by 20 percent between 2006 and 2016. Most therapists are female (85 percent) and enter it as a second career (76 percent) in their early 40s, although increasingly, younger people are beginning to enter the field as a first career. Therapists practice an average of 19 hours per week and work in the field for about 7 years. Because of the chaotic regulatory environment, health services data on the relative rates of reimbursement are rough estimates at best. Most massage practice is cash-based, but is being increasingly reimbursed by many health plans and third party payors.

Massage is an empirical health care practice that dates back to before recorded history. The overarching philosophical approach, according to one well-regarded textbook, encompasses concepts of natural healing, a holistic view of human life, and an innate healing ability of the body (Benjamin, 2005). Massage therapists would describe themselves as highly service-oriented practitioners who believe in their ability to enhance their clients' well-being. Modern western-style massage practice is usually linked to the work of Per Henrik Ling (1776–1839) and Johann Georg Mezger (1838–1909), which came to be known as Swedish massage around the turn of the century.

It is only in the past few decades that massage therapy has begun to take on the characteristics of a health profession. State-level licensing laws are being passed, such as in California where, until recently, massage was regulated (or not) by local jurisdictions only, creating an inconsistent and incoherent practice environment. Today, 39 States and the District of Columbia have passed laws regulating massage therapy. In the States that have regulations, therapists must meet legal requirements that usually include a minimum number of hours of initial training and passing an exam. The national average number of training hours of currently practicing therapists stands at 688 hours, but this is likely to increase as a result of the drive to standardize the education and practice. The National Certification Board for Therapeutic Massage and Bodywork (NCBTMB) has been able to certify 90,000 massage therapists since 1992 through an exam required in many States. The Federation of State Massage Therapy Boards, established in 2005, is also involved in developing national licensure examinations.

As the least developed licensed CAM profession, the massage therapy educational community has made significant progress. It will need to continue to work in concert with its licensing and political organizations so that massage therapy training programs will have the time, funding and ability to concentrate specifically on integrative health care curricular goals. Currently, leaders of the profession are focused on developing national educational standards that will determine the appropriate level of skills and knowledge required to be a licensed and certified massage therapist. In 2002, the U.S. Department of Education recognized the Commission on Massage Therapy Accreditation (COMTA) (2008), which has become the primary accrediting body. At this time it has accredited approximately 100 of the estimated 1,675 massage schools and programs in the United States and Canada.

In terms of clinical training, most therapists do not experience work in interdisciplinary settings, but this is likely to change. Massage therapy is almost universally involved in integrative health care clinics as part of the CAM package of therapies, and it is used in many hospitals. For example, Lucille Packard Children's Hospital at Stanford University offers massage therapy to patients as part of its pain management program. Other near-term goals will be to further apply accreditation standards to the many small proprietary training programs that exist, and stabilize the current chaotic set of State licensing regulations to a consistent norm.

In addition to the growing popularity and respect that massage therapy is experiencing, it is now on the agenda for the NIH, and a growing body of studies shows promising effects (Massage Therapy Research Consortium, 2008). The profession has established a research foundation (Massage Therapy Foundation, 2008), which has a database containing over 4,800 records including both indexed and non-indexed journal citations, and a newly formed peer-reviewed journal, the *International Journal of Therapeutic Massage and Bodywork: Research Education and Practice*. The Foundation was founded in 1990 with the mission of bringing the benefits of massage therapy to the broadest spectrum of society through the generation, dissemination, and application of knowledge in the field of massage therapy.

Summary: Reform/Innovation Initiatives Within Health Professional Education

As is evident from the reviews above, each health care discipline faces unique challenges in making training in the integrative approach to health care a reality.

Nursing, perhaps due to its underlying holistic philosophy, is in many ways the most advanced in this process. In biomedicine, we see modest progress at the postgraduate level and in undergraduate programs. Within the CAM professions, although we see substantial movement to place more emphasis on scientific methods, research, and EBP, it is not at all clear that enhancing the critical-thinking skills of CAM practitioners will cause them to automatically embrace their medical colleagues within a new integrative health care paradigm. In fact, with regard to integrative health care *per se*, the CAM professions generally have not yet developed and implemented specific curricular objectives. Little curricular dialogue with respect to integrative health care has taken place among a wider group of educators in each CAM profession. Furthermore, the CAM professions' accreditation bodies have no history of formally working with each other.

The comparable breadth and depth of each profession's educational infrastructure is an important issue that will need to be addressed. A full discussion of the resource challenges facing CAM education is beyond the scope of this paper, but it is difficult to imagine that a wider gap could exist in the resources available to CAM education compared to medical and nursing education. Almost all CAM training institutions are stand-alone, not-for-profit entities that depend almost entirely on tuition revenue to cover expenses. CAM institutions are generally not in a position, as are many medical and nursing institutions, to take advantage of the expertise and financial support of publically funded universities. While a few relatively recent significant counter examples can be cited, for all intents and purposes, funding from grants and contracts that drive many innovative educational and research enterprises in conventional health care institutions simply does not exist in CAM institutions. This paucity of financial support and all that it represents to the CAM professions is one of the core issues that challenges the advancement of an interdisciplinary integrative health care agenda.

There are however, two organizations that have made efforts to bring together educators to advance integrative health/medicine education. The Consortium of Academic Health Centers for Integrative Medicine (CAHCIM), a group of 42 medical schools, has among its goals to stimulate changes in medical education that facilitate the adoption of integrative medicine curricula. The Academic Consortium for Complementary and Alternative Health Care (ACCAHC) (2008) was formed in 2004 as a joint effort of the national educational institutions of the fully accredited complementary and alternative health care (CAM) disciplines. ACCAHC's mission is to advance the academic needs and development of the evolving CAM professions, as well as the traditional world medicine professions that are emerging in the United States; and to foster a coherent, synergistic collaboration with academic institutions of the conventional medical, nursing, and public and community health professions. ACCAHC includes the following licensed CAM professions: Acupuncture and Oriental Medicine (also called TCM), chiropractic medicine, direct entry midwifery, massage therapy and naturopathic medicine.

In summary, educational reforms in the major health professions, specifically with respect to integrative health care goals, vary considerably depending on the overall current state of development of each profession. Common to all the CAM professions, however, is that they all suffer from lack of access to adequate financial and human resources that could be used to meet the educational goals of a well-integrated health care system. Nevertheless, progress is certainly possible and indeed, is beginning to be visible. Overtures by medical institutions seeking to initiate educational efforts to promote integrative health care will generally be seen as consistent and desirable with CAM educational goals as well, especially in interdisciplinary care.

ATTITUDES OF HEALTH PROFESSIONALS

As consumer use of CAM has increased and evidence has accumulated demonstrating safety and efficacy of CAM approaches, attitudes of conventional health care providers towards CAM have become more favorable. Very few studies have focused on attitudes of CAM providers and no studies were found that focused specifically on attitudes of any professional group towards integrative health care, as distinct from CAM.

The largest numbers of studies have examined physician attitudes and practice patterns related to CAM. In a regional survey conducted by Berman et al. (1995), over 90 percent of respondents expressed the view that CAM approaches, such as diet and exercise, biofeedback and behavioral medicine, are legitimate medical practices. Over 70 percent of respondents indicated that they were interested in more training in areas including hypnotherapy, massage therapy, acupressure, herbal medicine, and prayer. In a subsequent national survey, Berman et al. (1998) re-

ported that physicians in practice more than 22 years had the least positive attitudes towards CAM and that attitudes and training were the best predictors of use in professional practice. In a survey of primary care and medical subspecialties practitioners, Crock et al. (1999) found that overall, physicians demonstrated an open attitude toward CAM, but had low rates of referral for CAM therapies. In a study of physicians in an academic health center, Wahner-Roedler et al. (2006) reported that the majority of physicians agreed that some CAM therapies hold promise for the treatment of symptoms or diseases but most of them were not comfortable in counseling their patients about CAM treatments. In a study of osteopathic physicians, Kurtz et al. (2003) reported that family physicians and internists were more likely than pediatricians to talk to their patients about CAM or refer their patients for CAM. Physicians 35 years of age and younger were more likely than those over 60 to use CAM for themselves or their families.

In a study of critical care nurses, Tracy et al. (2003) found that despite barriers including lack of knowledge, time and training, 88 percent of respondents were open or eager to use complementary therapies in their practice. In a study of faculty and students in an academic health center, Kreitzer et al. (2002) found that 90 percent of medical and nursing school faculty and students believed that clinical care should integrate conventional care and CAM therapies and that health professionals should be able to advise their patients about commonly used CAM methods. In a recently published literature review that summarized 21 surveys of physicians, nurses, public health professionals, dietitians, social workers, medical/nursing faculty and pharmacists, Sewitch et al. (2008) concluded that overall, physicians demonstrated more negative attitudes towards CAM compared to other health care professionals. Positive attitudes toward CAM did not correlate with CAM referral or prescription patterns, and health care professionals of all disciplines wanted more information about CAM.

Very few studies have focused on the attitudes of CAM practitioners towards working with biomedical practitioners. In a qualitative study of CAM practitioners, Barrett et al. (2004) reported that CAM providers stressed the holistic, empowering, and person-centered nature of CAM and that they describe themselves as healers. While calling for the greater integration of conventional and complementary health care, these authors identified that attitudes and beliefs were often larger impediments to integration than were economic or scientific considerations. A study of students' perceptions of interprofessional relationships in eight health professional programs including chiropractic using the Interdisciplinary Education Perception Scale revealed substantial differences among the students in perceptions of competence/autonomy, perceived need for cooperation, perception of actual cooperation, and understanding others' value (Hawk et al., 2002). Data from one study revealed that chiropractors do not identify their profession as falling within the domain of CAM. Redwood et al. (2008) surveyed chiropractic faculty and practitioners and reported that 69 percent do not believe that chiropractic should be categorized as CAM. Twenty-seven percent (27 percent) thought that chiropractic should be classified as integrative medicine.

Kaptchuk et al. (2005) have advocated the concept of "pluralism" as opposed to "integration" as a philosophy or attitude to ground the ongoing discussion between biomedical and CAM practitioners:

> "Integration . . . ignores unbridgeable epistemological beliefs and practices between mainstream and alternative medicine. Pluralism, which has been relatively ignored, calls for cooperation between the different medical systems rather than their integration. By recognizing the value of freedom of choice in medical options, pluralism is compatible with the principle of patient autonomy . . . Pluralism encourages cooperation, research, and open communication and respect between practitioners despite the possible existence of honest disagreement, and preserves the integrity of each of the treatment systems involved."

Pluralism may ultimately prove the most reasonable approach to bridge the gaps in paradigm and tradition between the health care professions while at the same time promoting discussion and dialogue.

EDUCATIONAL STRATEGIES FOR EFFECTING CHANGE

Identification of Core Competencies

The IOM report, *Health Professions Education: A Bridge to Quality* (IOM, 2003) has already been mentioned as a highly influential document urging substantial changes that are highly consistent with the goals and hopes of integrative health care. The IOM committee spent considerable effort to make recommendations to introduce core competencies for an outcome-based education system that better prepares practitioners to meet the needs of patients and the requirements of a chang-

ing health care system. The competencies are: (1) provide patient-centered care; (2) work on interdisciplinary teams; (3) employ evidence-based practice; (4) apply quality improvement; and (5) utilize informatics. The report emphasizes that the core competencies are meant to be shared across the health professions and that careful consideration should be paid to the cultural changes necessary to support their inclusion. Notably, however, the document is silent on the issue of integrative health care.

Kligler, et al. (2004), representing the Educational Working group of the CAHCIM, identified 30 competencies in integrative medicine in the four domains of values, knowledge, attitudes, and skills. The authors also discussed challenges to educators and provided some specific successful examples of implementation and evaluation. The overarching goal was to develop "a coherent, generally agreed-upon framework that articulates the core knowledge to be mastered by medical students." The competencies in the report were derived after a 2-year process of dialogue on the content, process and scope of integrative medicine education.

The authors expanded the standard knowledge/attitudes/skills format in order to emphasize that humanistic values and philosophical perspectives should be the foundation for an integrative approach to health care. They emphasized the value of experiential learning, self-care and reflection, and the need for faculty development in this area. They also acknowledged the presence of substantial challenges concerning how competencies could be implemented and properly evaluated in individual institutional settings.

The impact and implications of the CAHCIM document (Kligler et al. 2004) were almost immediately recognized by educational leaders of CAM institutions represented by the ACCHAC. It stimulated a vigorous discussion that ultimately led to a formal response published in the *Journal of Alternative and Complementary Medicine* in 2007 (Benjamin et al. 2007). The ACCHAC took issue with a number of points in the CAHCIM paper, these concerns were clarified through a Delphi process with ACCHAC members. Five key areas of concern emerged: (1) the definition of integrative medicine as presented, (2) lack of clarity regarding the goals of the proposed integrative medicine curriculum, (3) lack of recognition of the breadth of whole systems of health care, (4) omission of competencies related to collaboration between medical and CAM professionals in patient care, and (5) omission of potential areas of partnership in integrative health care education. At root were familiar concerns of the CAM professions that they were being relatively ignored while their approaches, methods, and values were being adopted by medical educators. A clear desire was expressed by the CAM professions to be better recognized and included as equal partners in the evolution of integrative health care education. The ensuing dialog between CAHCIM and ACCHAC was fruitful; in 2005, CAHCIM revised its definition of integrative medicine to more clearly indicate that collaboration with ". . . all appropriate therapeutic approaches, *healthcare professionals and disciplines* to achieve optimal health and healing," should be a hallmark of integrative health care (Benjamin et al. 2007).

A related effort was spearheaded about the same time by the National Education Dialog to Advance Integrated Health Care (NED) (Weeks et al. 2005), a multidisciplinary collaboration of CAM and conventional medical educators and policymakers that culminated in a meeting at Georgetown University in 2005. The vision of the NED was stated to be a ". . . healthcare system that is multidisciplinary and enhances competence, mutual respect, and collaboration across all CAM and conventional healthcare disciplines." Among nine recommendations for action, at least five involved education including one on inter-institutional relationships and one on developing competencies on shared values, skills and attitudes. Both of these had implications for refining workable integrative health care competencies, but the process fell short of operationally defining the competencies in any detailed fashion. Nevertheless, this cross-disciplinary meeting identified many of the challenges and opportunities for shared educational efforts.

Subsequent dialogue by a subset of NED participants identified, as have others, that with respect to the goal of interdisciplinary collaboration, the set of knowledge, skills, and values identified for *Practitioner to Practitioner Relationships in Relation-Centered Care* developed by the Pew-Fetzer Task Force on Advancing Psychosocial Health Education could provide an excellent foundation (Tresolini, 1994). While the Pew-Fetzer Task Force was not focused on integrative health care *per se*, it listed 24 learning goals organized into four topic areas: self-awareness, traditions of knowledge in health professions, building teams and communities, and working dynamics of teams and communities. While also leaving something to be desired in the way of specific measurable competencies, there is a notable consistency of the Pew themes with efforts to define competencies for integrative medicine.

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A different and instructive effort from the field of allied health attempted to "harmonize" core competencies to develop a framework for interprofessional education for medicine, nursing, occupational therapy, and physical therapy in Canada (Verma et al. 2006). While also not focused on integrative health care, this effort identified challenges to collaboration across disciplines within the umbrella of conventional medicine which apply even more clearly to the gulf that has separated the conventional and CAM professions. By reviewing key competency documents from the four professions, they were able to demonstrate substantial convergence in six domains or roles, that of: a professional (including as a health advocate), an expert, a scholar, a manager, a communicator, and a collaborator. The authors felt that the perceived competency silos of each profession were, in fact, more perceptions than real, and that with some effort, shared competencies can be identified and implemented. The emerging importance of team-based skills and interdisciplinary education to integrative health care, and the attendant challenges are discussed in further detail below.

Recently, Kreitzer (Kreitzer et al. 2008) surveyed the principal investigators of the aforementioned NCCAM awarded R–25 grants to 15 medical and nursing programs in order to obtain recommendations on the core competencies in CAM that had evolved during the course of their projects for conventionally trained students, physicians and nurses. Responses varied substantially depending on the original aims and the context in which the grantees were able to execute ideas. Nevertheless, five thematic domains emerged. These were described as: (1) awareness of CAM therapies and practices, (2) the evidence base underlying CAM therapies, (3) CAM skill development (primarily focused on cultural competence skills to enhance patient communication about CAM use, but relatively little on specific CAM treatment skills), (4) self-awareness and self-care (particularly mind-body approaches to alleviating stress), and (5) CAM models and systems. While perhaps partially explained by the overlap between the institutions receiving R–25 grants and the institutional members of CAHCIM, it was noted that the "grassroots" results obtained by 15 programs over time demonstrated considerable consistency with those developed by the more focused CAHCIM consensus process. The details and differences reflected in the NCCAM grant-driven domains probably reflect practical experience and more realistic expectations, but the degree of consistency with the loftier goals set by the CAHCIM document is encouraging because it demonstrates that curricular changes are possible.

At this juncture, the dialogue continues, but now with a growing base of experience and an acknowledged set of key publications from authoritative sources in both the conventional and CAM worlds. There is some controversy as to what, if any, level of skill should be expected of physicians in recommending specific integrative approaches to patients—and as such if the suggested CAHCIM competencies demand more than may be practical as expected competencies for all physicians. There is however, general agreement that the recent IOM recommendation that physicians be "competent to advise" patients about CAM represents a basic competency that can be expected of all medical school graduates. The challenge has been to clarify and describe what comprises this competency—i.e., what level of knowledge and/or experience of CAM should be required—and how to measure it. The most common approach has been to teach and then test for this as a "communication" competency i.e., expecting that all physicians will incorporate inquiry on patients' use of CAM into their history taking in a nonjudgmental manner. This competency shares much with competencies now expected in patient-centered communication and multicultural sensitivity. Several schools are now using either observed standardized clinical encounters or standardized patient scenarios to evaluate students and residents for their competency in this particular skill (Kligler et al. 2007).

There is a similar and equally important controversy surrounding what level of competency in primary care (i.e., diagnosing and either treating or properly referring common presenting problems) should be expected of CAM professionals. Some of the professions—naturopathy, chiropractic and traditional Chinese medicine most notably—already define such competencies for their profession, but others do not. If the health care system of the future is going to more closely interweave the health professions, the role and responsibility of the "first contact" with a patient needs to be defined much more explicitly and in a fashion which will lead to more trust, collaboration, and referral across and between specialties. This inter-profession discussion of what comprises "competency" in primary care will be difficult because it will also involve many questions of "turf," reimbursement, and power, but we cannot hope to move to the next level of integrative care without finding a way to promote such a dialogue as part of the discussion of shared competencies.

Once we reach a wider consensus about the shared competencies that will support the infrastructure for truly integrated and integrative health care, we will face the challenge of measuring whether these competencies are being taught effectively.

This is a challenge facing all the health professions individually as well as we move from evaluating only the cognitive skill domain to trying to define measurable behaviors that will actually impact patient care. Here again, nursing has much to teach the other professions, having focused for a number of years already on defining and evaluating behavioral competencies.

Interdisciplinary Education

The IOM report on Health Professions Education provides the best template currently available for how to move forward training in integrative health care in its emphasis on multidisciplinary/team-based education. The report describes a wonderful vignette of an interdisciplinary learning team—comprised of medical, pharmacy and nursing students—collaborating on the care of a complex inpatient (IOM, 2003). Each profession addresses the area of care most relevant to its role, and information is shared continuously and freely. An environment of respect pervades the team communications, which ultimately spills over to the approach to the care of the patient. The model falls short only in its failure to include students of the other healing arts—acupuncture, chiropractic, massage therapy, for example—in its vision.

Although there are some examples of interdisciplinary strategies to integrative health care education, to date many medical schools have focused on either M.D. faculty teaching about CAM, or faculty from local CAM schools doing this teaching as guest faculty. There is some evidence that this approach—simply incorporating the "CAM" content into the conventional curriculum, or engineering occasional appearances as teachers by CAM practitioners—may not be enough to engender widespsread culture change and true integration of the different healing paradigms. A report from one of the NCCAM-funded R–25 institutions at Oregon Health Sciences University (OHSU) found that having CAM practitioners teaching about CAM has not had a significant impact on OHSU's culture. These authors reported that "attitudes held by faculty at OHSU are largely unchanged by these research, educational, and clinical initiatives, as serial qualitative interviews have demonstrated (Nedrow et al. 2007)."

Two examples of pilot programs bringing students from conventional medicine and CAM disciplines together early in training are based on the idea that sharing common experiences early in training will break down barriers to effective collaboration and communication in a way no amount of teaching "about" CAM or even contact with CAM school faculty can do. First-year medical students at the University of Minnesota have an immersion experience in TCM at Northwestern Health Sciences University as part of a first-year required course. In addition to interacting with TCM students and faculty and learning about its theoretical basis, students observe and experience various aspects of TCM (NED 2005). Another such collaborative program occurs between Georgetown School of Medicine and the Potomac Manual Therapies Institute: PMTI students visit the Georgetown anatomy lab where medical students lead a 90-minute cadaver tour. Medical students then visit PMTI and massage therapy students offer the Georgetown students an experience of massage, with appropriate education on application and techniques. Between 2003 and 2006, 120 PMTI students (50 percent of the student body) and 80 Georgetown students (25 percent) had participated in the program (Kreitzer and Sierpina, 2006). According to the program faculty, this effort demonstrates that "personal encounters, working side by side and learning about each other's discipline, result in mutual respect, which may ultimately contribute to the creation of an integrated health care system."

Although a body of research literature is emerging studying the outcomes of interprofessional educational (IPE) efforts, some degree of controversy remains as to whether this approach can actually be said to change the behaviors of the professionals involved. Hammick et al. (2007) reviewed 21 studies of IPE programs and concluded that these interventions are generally well-received and facilitate the development of skills in working collaboratively across disciplines, but that it is more difficult to demonstrate a clear impact on the behavior of the service delivery team. In a Cochrane review, Reeves et al. (2008) evaluated six studies of IPE interventions which met their inclusion criteria, and found that although most studies reported positive outcomes, it was not possible to draw real conclusions about the key elements of each intervention or their overall effectiveness. These authors and others call for more rigorous study of IPE interventions, incorporating an evaluation process to document the impact on the processes of care delivery and on patient-centered outcomes. Whatever efforts move forward to promote interdisciplinary training in integrative health care should include a research component examining the impact of these initiatives.

Interdisciplinary Graduate Programs in CAM or Integrative Health Care

Several types of interdisciplinary graduate programs have emerged that focus on CAM or integrative health care. Some are offered through interdisciplinary centers or programs within universities and others are offered through collegiate programs, such as schools of medicine.

• In 1999, the University of Minnesota approved an interdisciplinary graduate minor in complementary therapies and healing practices and subsequently began offering a graduate certificate program in CAM with an optional track in health coaching. The minor enables students pursuing masters or PhD degrees to enhance their degree program by focusing on CAM. The program attracts clinicians and researchers who aspire to practice or conduct research in integrative health.

• Georgetown University introduced a CAM-oriented, science-based master of science in physiology in 2003. The program is designed for students interested in careers in research, industry, regulatory affairs, CAM practice, or the practice of medicine. In 2005, Georgetown School of Medicine launched a 5-year M.D./MS track that enables students to complete the 4-year medical school curriculum and the CAM MS degree.

• In 2003, Tufts University School of Medicine and the New England School of Acupuncture (NESA) launched a unique collaborative program. While completing a master's degree at NESA, students can simultaneously enroll in a multidisciplinary pain management program at Tufts, thereby also earning a master's degree from Tufts.

• The University of Medicine and Dentistry of New Jersey School of Health Related Professions recently launched an online 30-credit MS degree in health sciences with a new track in integrative health and wellness. The track focuses on preparing licensed and certified health professionals to expand their competencies in CAM practices.

Each of these programs represent a unique path that offers students options to expand their expertise in CAM or integrative health care beyond information that may be obtained within their basic health professional education program.

Interdisciplinary Undergraduate Programs in Wellness or Integrative Health

Several types of interdisciplinary undergraduate programs have emerged that focus on wellness, CAM or integrative health. As noted by Burke et al. (2004), these programs are helping to build an education infrastructure at the baccalaureate level and may consist of a minor, major or certificate program. For example, San Francisco State University (SFSU) has been offering a series of holistic health courses since 1976. The Institute for Holistic Studies at SFSU, under the department of health education, offers a minor in holistic studies. Students enrolled in the minor take a set of courses that introduce the students to holistic health concepts. These courses are followed by advanced CAM courses in areas such as biofeedback and Chinese herbs. Similar minors are offered at Metropolitan State College of Denver and Georgian Court College in New Jersey. Northern New Mexico College offers a bachelor of science degree in Integrative Health Sciences (IHS). The IHS program accepts both new students and students with health backgrounds who want to gain knowledge and skill in integrative health. A wide range of courses is offered including aromatherapy, nutrition, energy healing and acupressure. These programs are attracting students who are planning to become health professionals and who wish to supplement their training with courses that focus on holistic health early on as well as students who enroll for personal development.

Innovative Teaching Methodologies/Transformational Learning

Along with a need for frequent and extensive contact with other health care disciplines throughout professional training, there is growing consensus among many health care educators that teaching about CAM—whether done by M.D.s or by CAM faculty—although necessary as part of the integration process, is not sufficient. Because a true integration of CAM into the health care system will require medical students and physicians to expand their perspective on what constitutes "healing," reflection-based curriculum must be part of this process. Just as health care practitioners cannot learn to practice patient-centered medicine or culturally competent health care without some capacity for reflection on the impact of their own behavior and attitudes on the patient's experience, without an experiential/reflective component the integrative approach cannot be taught effectively: "For example, a lecture on acupuncture is unlikely to capture the sensate experience of having an acupuncture needle placed or the deep relaxation which may be experienced through a practice such as tai chi. Similarly, describing the physiology of the relaxation response may be less effective than having students experience it directly through a meditation exercise. Inclusion of traditional systems of medicine and other complementary

approaches requires both a synthesis of additional facts and a need for experience-based understanding to facilitate real clinical awareness (Kligler et al. 2004)."

Separate and apart from the world of CAM and integrative health care, medicine as a discipline is wrestling with how to incorporate reflection, mindfulness, and self-awareness into medical training (Dobie, 2007). This effort is taking shape in the wide array of curricula in professionalism which have been developed at schools around the country in response to an LCME mandate for teaching in this area. Much of the genesis of this movement relates to the IOM statement in 2001 identifying the "continuous healing relationship" as the foundation for improving all patient care (IOM, 2001). The consensus emerging regarding the importance of experiential/reflective teaching strategies in this area is demonstrated by the fact that 14 of the 15 NCCAM R–25 grantees rated self-awareness and reflection activities as highly or very highly-valued components of their curriculum development plan (Elder et al. 2007).

The best example of a widely accepted reflection-based in medical education is the Healer's Art Program. This teaching program was developed at the University of California, San Francisco, and is now offered in over 50 medical schools as an elective. This 4–6 session program, taught in small groups, utilizes a variety of reflective exercises designed to help students develop and maintain an understanding of the "human dimension of health care" and on understanding and maintaining a clear commitment to the meaning of their work (Remen and Rabow, 2005). In one session typical of this course, students work to write their own Hippocratic oath to describe how they hope to realize the values and attitudes which brought them into medicine as a profession.

IMPACT OF A NEW HEALTH CARE MODEL ON HEALTH PROFESSIONS EDUCATION

Changes in the health care system, such as a new care model, could both accelerate and reinforce changes being made in health professions education to advance integrative health. Currently, there are very few examples of integrative health or integrative medicine being practiced in a comprehensive and systematic manner in primary care, acute care, long-term care, or public health settings. This makes it challenging to educate students and it creates dissonance in graduates who, if they are educated in integrative health, may become quickly discouraged and disillusioned if they are unable to practice what they have learned. For integrative health care to advance the health of the public, there needs to be alignment in education, workforce development and deployment and practice settings. Primary care will be used to illustrate this point.

The American College of Physicians recently warned that "primary care, the backbone of the Nation's health care system, is at grave risk of collapse" (ACP, 2006) There is a confluence of factors contributing to challenges currently facing the U.S. health care system. An estimated 47 million people do not have insurance, thus limiting their access to care. With the aging of the population, there is a dramatic increase in chronic illness. Factors contributing to chronic illness include many lifestyle patterns including poor diet, lack of exercise, smoking and chronic stress. As noted by Bodenheimer and Laing (2007), the 15-minute office visit does not allow the provider to provide acute, chronic and preventive care, build relationships with patients and manage multiple, complex diagnoses. The system as structured is expensive and achieves less than desirable outcomes. Solutions often proposed include generating more primary care physicians and reforming the payment system that may undervalue office visits and overvalue technological and procedural services. At best, these strategies would enable us to produce more of the less than satisfactory outcomes that are presently being generated.

Fundamental reform of the system requires that we address the following questions:

- What are the health care needs of the public?
- Who are the health care providers best prepared to meet those needs?
- How can the strengths and assets of the workforce be leveraged to improve patient outcomes and reduce costs?
- What models of care will enable us to move from the current health care system that is sporadic, reactive, disease-oriented and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment and a focus on the full range of physical, mental and social support needed to improve health and minimize the burden of disease?

To achieve better outcomes and to reduce costs, it is proposed here that the health care system focus on integrative health care throughout the continuum of care and to more strategically use the full complement of health professionals within the workforce. Primary care includes health promotion, disease prevention and the man-

agement of acute and chronic illness. A first line of care could include nurse practitioners and nurse midwives who can manage an estimated 80 percent of primary care. Primary care physicians could complement and support this care with specific emphasis on management of patients with more complex chronic illness. Ideally, within the primary care system, patients could also access chiropractors, TCM providers, naturopathic physicians, massage therapists, and other CAM professionals skilled in health promotion and disease prevention as well as management of chronic disease. This team or cadre of health professionals along with health coaches, are optimally positioned and prepared to help people examine lifestyle patterns and choices. Typically, medical doctors, who the system currently relies heavily on for primary care, receive minimal training in nutrition and health promotion.

The U.S. health care system is unparalleled in the use of technology, the management of trauma and the diagnosis and treatment of patients with complex acute and chronic illnesses. Advances in areas such as surgery, oncology, transplantation, infectious disease, neonatal care, intensive care, and high-risk pregnancy are both life saving and life enhancing. It is well documented that M.D. specialists who perform high volumes of diagnostic and surgical procedures attain better outcomes than colleagues who perform procedures with less frequency. This both justifies and reinforces the need for specialty training of physicians from a workforce perspective.

In an effort to improve primary care, several innovative models have recently been proposed that could be significantly enhanced by including a focus on integrative health care.

Primary Care Innovation

Over the past 5 years, as the need to change the primary care system has become more apparent and urgent, ideas for innovation have emerged. Two models will be highlighted: the medical or health care home concept and the teamlet model of primary care. These models will be examined from the perspective of both the health care needs of the population and the workforce strengths and capacities.

Medical home concept: The American Academy of Pediatrics (AAP) first introduced this concept in a 1992 policy statement (AAP, 1992) advocating that a pediatrician or other primary care physician should be identified as a regular source of primary care for the patient. In a 2002 policy statement, the AAP (2002) expanded the definition of medical home to include the following operational characteristics: accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective care.

More recently, the American College of Physicians (ACP), American Academy of Pediatrics, the American Osteopathic Association and the American Academy of Family Physicians (AAFP) have endorsed this concept and have issued a statement on joint principles of the patient-centered medical home (AAMC, 2008). The concept of the medical home as defined in this document is that every person should have access to a primary care base where they have access to a person who serves as a trusted advisor and provider. This provider is supported by a coordinated team, with whom the patient has a continuous relationship. The medical home promotes prevention; provides care for most problems and serves as the point of first-contact for that care; coordinates care with other providers and community resources when necessary; integrates care across the health system; and provides care and health education in a culturally competent manner. It is proposed that payment for the medical home model should appropriately recognize and reward health care providers for their contributions to prevention, patient care, and care coordination. This model is often referred to as a patient-centered and physician-guided model of care.

The focus on accessibility, health promotion, disease prevention, chronic disease management, and coordination of care attains much of what is described above as being desirable in a reformed health care system. The model falls short in two respects: it neglects to reflect the inclusion of integrative approaches to healing including the use of licensed CAM providers and it presumes that the M.D. is the only capable and prepared provider around to organize the medical home concept. A modified approach might describe this as a "health home"—rather than a "medical home"—that leverages the capacities of nurse practitioners, chiropractors, and naturopathic physicians, among others, to provide primary care as well as first point of entry care. The underlying operating assumption would be to use less invasive and expensive methods first, including the use of CAM. Some consumers, for example, may opt to access a traditional Chinese medicine provider as the first point of entry. M.D. specialists would be used to access the unique and indispensable care that only they can provide. Health coaches could also be effectively used in this model.

Teamlet model of primary care: Bodenheimer et al. (2007) have described an innovation called the teamlet model. The presumption is that all primary care practices

have a team. The team varies significantly with the size and type of the practice but has, as a constant feature, the clinician-health coach dyad. Goals of the teamlet model include improving the patient experience and enhancing patients' self-management skills, improving preventive and chronic care, improving the work life of primary care clinicians, ensuring that all practice personnel are working to their fullest potential, and cutting health care costs by reducing unnecessary hospitalizations and emergency visits through intensive management of high-risk and high-utilizing patients by using health coaches. While some practices operate with the ratio of one clinician to two health coaches, others have successfully used a ratio of five coaches per two clinicians. Under this model, patients generally spend more time with the health coach than the primary care clinician. Bodenheimer et al. are not prescriptive as to the background and training of the primary care clinician. Presumably, it could be any of the health professions described in this paper who are trained to provide primary care. While this model does not describe integrative health care per se or the use of CAM, it seems reasonable that the model could be modified to include this expanded perspective.

Regarding the exploration of the role of new models of integrative care in our future health care system, a small but potentially important step was taken recently in the convening of a "scoping" meeting jointly organized by HRSA, the Samueli Institute, and the Institute for Alternative Futures to explore the role of integrative health care in reducing health disparities for underserved populations (Fritts et al. 2009). A planning process is now underway to study and disseminate information more widely on the potential role of increasing access to an integrative approach as one solution to some of our current problems with access to high quality care for chronic illness in the United States.

SUMMARY

Over the past decade, many authoritative sources, including the IOM and the Association of Academic Health Centers, have repeatedly identified deficiencies in the training of the U.S.-health care workforce that if addressed could lead to a better health care system. At the same time, other authoritative sources have chronicled the growing interest in what is becoming known as integrative health care. By virtue of its overarching humanistic philosophy and broad biopsychosocial perspective aligned with evidence-informed clinical decisionmaking, integrative health care could have the power to transform the training of all health care professionals to be able to deliver a safer, more effective and more coordinated form of care to the public. Admittedly, this is a bold statement that will require bold steps to bring into reality.

This paper has attempted to set the stage for future action by reviewing recommendations for curricular reform that have emerged from the IOM Committee on Health Professions Education, the IOM Committee on Use of Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine and the National Education Dialogue. Each of these efforts has involved dedicated educational experts committed to high ideals. We subsequently summarized the initial seed efforts by NIH NCCAM to stimulate curricular reform in both conventional and CAM institutions. Many lessons can be derived from these collective efforts to change institutional and professional cultures that have proven resistant to change on many levels in both the CAM and conventional worlds. A more concerted and coordinated set of initiatives will need to be developed to move the training of all health care professionals to a new level.

Our review of two conventional (medicine and nursing) and four licensed CAM professions (chiropractic, naturopathy, TCM and massage therapy) highlight the opportunities that exist for a more coordinated health care workforce, but also the challenges that exist to bringing disparate professions together. We summarized the educational preparation and workforce structure of CAM and biomedical professions and their efforts to make curricular changes that advance integrative health care. It is abundantly clear that the glaring differences in resources, needs, and motivations of conventional health care training institutions compared to CAM institutions will require sensitivity, significant resources and extraordinary collaborative leadership.

While significant challenges exist, we also determined that the attitudes of health professionals toward integrative health care and CAM are undergoing significant shifts. Medical and CAM leaders have officially organized themselves to begin a dialogue to identify innovative strategies that could impact each health profession's education. These have resulted in the development of specific integrative health care competencies and interdisciplinary education initiatives at the undergraduate and graduate level that show great promise. In concordance with efforts under the um-

brella of integrative health care, medical leaders have separately identified a number of primary care models that have the potential not only of transforming the way most health care is delivered, but also how interdisciplinary care is taught and modeled in all health care professions' training. These models have great potential for bringing together the new thinking on both primary care and integrative health care.

Finally, in the next section we offer recommendations that will advance integrative health care and enable the movement from the current U.S.-health care system that is sporadic, reactive, disease-oriented, and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment, and a focus on the full range of physical, mental, and social support needed to improve health and minimize the burden of disease.

RECOMMENDATIONS

The following recommendations address how the health of the public may be served by incorporating an integrative health perspective into health professions education and workforce planning, deployment and utilization.

1. Convene a high level, interdisciplinary group, supported by HRSA, to be charged with developing core competencies in integrative care for all health professions students. This group should include representatives of the major accrediting bodies for the licensed health professions as well as leading educators from each profession. This will be a complex, multi-year process and will require significant administrative and funding support.

2. Bold innovation and reform is needed in health professions education that will expand the focus of education from the treatment and management of disease to one that includes a focus and emphasis on wellness. Regulatory bodies governing education in the various health disciplines should be charged to mandate the inclusion of integrative health in basic, advanced and post-graduate training. At a minimum, this should include content on:

- patient-centered and whole person care;
- personal responsibility for health and wellness;
- lifestyle choices, behaviors and outcomes including but not limited to diet, exercise, and stress reduction;
- health promotion and disease prevention; and
- knowledge, principles, practices and processes that facilitate the integration of conventional biomedical care with CAM.

3. Academic programs preparing health professions should be urged by the IOM and their regulatory bodies to create within their institutions a culture of wellness that includes a focus on self-care and reflection of one's own health and wellness behaviors.

4. At the Federal and State level, legislation and regulation should be implemented that will create incentives and reimbursement structures for conventional and licensed CAM health professions that accelerate reform and innovation in the health care system and that will achieve the following outcomes:

- Emphasis on health and wellness,
- Early detection and intervention for disease,
- Personal responsibility and patient empowerment,
- Access to integrative health options throughout the continuum of care, and
- Team-based care that maximizes utilization of conventional and CAM practitioners.

From an education perspective, it is critical to have clinical sites that enable students to obtain experience in integrative health and medicine and that reinforces learning acquired in the classroom.

5. Changes in legislation and regulation should be enacted at the State level that will enable health professionals including CAM providers and advance practice nurses to practice to the top of their license. Barriers should be removed that prevent health professionals from providing care and treatment that they are trained to safely provide.

It is anticipated that these changes will impact recruitment into health professions education and training programs.

6. The Department of Health and Human Services and other Federal and State agencies responsible for workforce planning should be required to develop a national strategic vision for workforce planning that is based on new models of care and that encompasses conventional and licensed CAM providers.

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Naturopathic Medical Colleges, Council of Colleges of Acupuncture and Oriental Medicine, and the Midwifery Accreditation Education Council. This resource book will be published by the Academic Consortium for Complementary & Alternative Health Care in 2009.

Senator MIKULSKI. Mr. Duggan.

STATEMENT OF ROBERT M. DUGGAN, M.A., M.Ac., PRESIDENT, TAI SOPHIA INSTITUTE, LAUREL, MD

Mr. DUGGAN. Thank you, Senator. Thank you for giving me this opportunity to speak to you and the committee.

I speak representing the faculty, the staff, the board, the patients of the Tai Sophia Institute in Laurel, MD, an accredited graduate school with more than 400 full-time students studying the healing arts.

In many ways, we are representative of the industry Wayne mentioned, a school grown outside of the existing healthcare system and existing healthcare framework. We have more than 1,200 graduates across the country, and they are, indeed, the beginning of a national wellness corps, a corps of teachers of wellness. I have submitted more detailed written comments.

I speak as someone who has practiced the art of healing for more than 41 years, and I have learned a great deal from my patients about the importance of patient-centered and relationship-centered care.

Tai Sophia is an anchoring academic institution for an American wellness system. The training ground for those who can teach and motivate others, including our existing healthcare providers, as several previous speakers have mentioned—teaching them and motivating them to care for themselves, to live wisely, to reduce their stress so that we can re-engage the entire population in self-care.

As an educator, I have a problem that I hope Congress could help with. The financial incentives for all of our graduates and students are the same as those for all healthcare professionals—to work with a disease, to prove in order to be reimbursed that their particular methodology of dealing with the disease is better than someone else's methodology for dealing with that disease.

They are reimbursed essentially for making people dependent on them with repeated treatments and visits for dealing with that disease rather than being reimbursed for motivating, teaching, and empowering people with the best ways to stay well using community and family resources. All the financial incentives for our students and graduates reward fixing the disease, not maximizing independent living.

When we first opened the institute in 1975, a wonderful Howard County physician, the founder of one of the Nation's first HMOs in Columbia, MD, said to us, "If you know something about treating a tummy pain before it becomes an ulcer, go for it. I am only trained to treat it when it has become a pathology."

Those words have stayed with me and our community through the years. All of our Nation's medical and healthcare incentives are geared toward the treatment of disease, not the promotion of wellness.

Given the importance of shifting those incentives, I recommend, as several colleagues have already done, first, the creation of a national office, perhaps in the White House, charged with motivating

habits of wellness in every aspect of American life—in our schools, in our agriculture, in our military, in our environmental affairs, as well as in the healthcare system.

Second, that we fund, perhaps using funds from the stimulus package, demonstration initiatives in many local communities, such as you saw the other day with Peter Beilenson in Howard County, demonstrations designed to reduce medical expenditures when healthy lifestyle habits are reinforced at a community level.

I think of the example with first grade children. Do we want to give them Ritalin, or do we want to teach them yoga and tai chi and engage them in exercise? It is the kind of example that immediately comes to mind.

Third, that we have a program to train all current healthcare providers to understand their own bodies. Many healthcare workers are on burnout and exhaustion, and they need to maintain their own wellness. As they do that, I trust it will help all of their patients.

Fourth, create national wellness educational programs that enable and empower individuals and families to learn to be motivated to be their own primary care providers.

And finally, to fund the development of a series of wellness universities across the United States, such as Tai Sophia, to train a national corps of wellness educators for our schools and our communities.

Thank you for giving me this opportunity.

[The prepared statement of Mr. Duggan follows:]

PREPARED STATEMENT OF ROBERT DUGGAN, M.A., M.AC.

Albert Einstein: *"The significant problems that we have cannot be solved at the same level of thinking we were at when we created them."*

THE AMERICAN WELLNESS SYSTEMS—AN ALTERNATIVE WAY OF THINKING

The usual conversation about the American healthcare system revolves around what is called "the iron triangle of cost-quality-access." In reality, a change in any one of these aspects will affect all the others. We suggest that the "iron triangle" presents a false dilemma, and that this level of thinking cannot solve the current crisis.

We must incentivize 75 percent of people to move from the current sick-care system to a self-pay, community-focused wellness system.

PREAMBLE: HOW WE GOT IN THIS SITUATION

1. The United States has a sick-care system, a disease-prevention system, and a death-prevention system—all of this with great expense and very little public satisfaction. (I cite an NIH official, Ezekiel Emanuel, writing in JAMA, May 15, 2007.)

2. A 60-year focus on turning to experts to fix disease has effectively taken away the capacity of the individual and the family to know how to tend their own symptoms and diseases. The automatic refrain, "Ask your doctor before you do anything," has created a massive feeling of impotency throughout the public.

3. This disempowerment of the public originates with the Flexner Report in 1908; devised essentially at Johns Hopkins, the study resulted in the closing of most other schools of healing by 1920. Thus the ascendancy of what we currently call medicine was actually crafted 100 years ago in a process that greatly reduced the diversity of healing options.

4. The longing for expert-based care was advanced by the discoveries of antibiotics and blood transfusions and other acknowledged miracles of modern medicine. It was assumed, as with many other aspects of life, that everything could be made well by technology. In the last quarter of the 20th century, this myth began to recede; and now the plea of the American public is a simple call to the medical profession: "Please listen."

5. Several studies at Tai Sophia indicate that even when symptoms are relieved, patients often are not satisfied. Satisfaction is correlated with "I now understand how I control my symptoms." Having an expert remove a headache is a vastly different experience than having someone teach you how to change your own headache by drinking more water, getting more sleep, breathing more deeply, or clearing an upset. (The research of Nortin Hadler, M.D., Claire Cassidy, Ph.D., and others underscore this observation.)

6. A root of this issue is an assumption long held in the medical community that the mind and the body are separate, and that the physical body can be dealt with separately from dealing with emotions—a view that now is clearly unsustainable from a scientific perspective.

7. The situation for healthcare is similar to the issue of creating a sustainable planet. Humans must learn to live appropriately and well with our bodies, tending life as it is. In both cases, the issue is sustainability.

8. Almost all existing conversations about health policy—whether mainstream or complementary or integrative—focus inherently on treating disease, preventing disease, and preventing death. All of the economic incentives go to those who claim to tend these aspects of healthcare; and insurance reimbursement is linked to the identification of the disease being treated, the disease being prevented, or the particular cause of death.

RESOURCES: BUILDING ON A MOVEMENT ALREADY WELL IN PLACE

1. The public is longing for empowerment to live well. This is evidenced by a vast movement, especially among the wealthy, for access to spas, wellness clinics, the use of complementary/alternative medicine, and the use of yoga. This is a worldwide movement where countries such as Thailand and India are positioning themselves to be the future of wellness and medical care with a strong emphasis on wellness.

2. The United States has an army of wellness providers in the form of massage therapists, acupuncturists, herbalists, chiropractors, wellness and holistically-oriented physicians and nurses. However, because of the way funding works, most of these individuals do not focus on promoting wellness, but are focused on promoting care reimbursed by insurance within the existing system; thus, they are diverted from their main interest of educating the individual on how to be well.

3. This longing for learning about wellness and how to live well is emphasized continuously on shows such as those by Montel Williams and Oprah Winfrey, and through enormous sales of books by Andrew Weil, Deepak Chopra, and Mehmet Oz, etc. The public longs for this kind of learning.

4. There are demonstration projects. For example, the British Government recently funded a project in Devon with Dr. Michael Dixon and Simon Mills, who have devised a wellness program that gives local primary care physicians funding incentives to invest in wellness, and provides them the freedom to keep for the community any funding not needed for disease-care. It is an inventive system to promote wellness and to reduce the habit of turning to high-tech, higher cost interventions.

5. Many of the components for an American wellness system are available. They must be triggered by certain public policy steps to redirect the way in which cash flows—a way of breaking the iron triangle.

6. We break the iron triangle with a focus on a wellness system, designed to move 75 percent of the public (a public that now repeatedly goes to disease experts) into learning wellness practices—how to breathe, how to sleep, how to exercise, and how to live well. It is a conversation about what is **not insurable**. Wellness must be incentivized, but we cannot **insure** well-living. We must figure out from a public policy perspective how to encourage young children in the first grade to breathe deeply, to get enough sleep, and to eat well. For example, rather than immediately resorting to the pharmaceutical Ritalin, we must learn how to incentivize deep breathing and exercise for hyperactive children.

PUBLIC POLICIES

1. The President must use his "pulpit" to preach that healthcare reform must start with an individual responsibility to live well using wise habits: enough sleep, simple food, plenty of exercise, and leisure time with family and friends. This seems to be the President's personal lifestyle—focused not on preventing illness, but on wise habits through which we feel good about being alive.

2. We must create a White House Office charged with promoting the habits of wellness in every aspect of American life. Wellness is not only a matter for the healthcare system; it must be developed through the engagement of our educational system, our businesses, our environmental awareness, our military families, our veterans services, etc.

3. Fund demonstration initiatives in local communities, designed to reduce medical expenditures when healthy lifestyle habits are reinforced at a community level. Howard County, MD, currently has such a demonstration project for the uninsured. These demonstrations should provide financial and community-benefit incentives for corporations and local governments to build wellness programs. Most self-insured corporations and local governments and colleges have a financial self-interest in promoting such initiatives. These wellness programs must be incentivized with demonstration funding.

4. Funds provided for disease research must remain level, while additional funds should be used to build and research a wellness model for our society.

5. Wellness must not be insurance-linked. Insurance must be used to tend pathologies when there are recognized ways to help. Tax-exempt savings accounts may incentivize the transition from a disease model to a wellness culture. (Nortin Hadler, at the Medical School at the University of North Carolina, has written widely on this topic.)

6. All current healthcare providers must be trained to understand their own bodies, i.e., how to maintain their own wellness. Most healthcare workers endure extreme stress and are very vulnerable to chronic illnesses. Like most Americans, healthcare workers tend to take a pill in the presence of a headache rather than relieve the stress that generated the headache.

7. This training for healthcare workers will effectively enable each of them to become a wellness coach. As healthcare workers learn to tend their own wellness, they will become a national army of wellness educators able to instruct those who come to them, guiding them to maximize their wellness and deal effectively with symptoms before their symptoms become pathologies.

8. Individuals and families must learn to be their own primary care providers. Our disease-oriented system will become more efficient as people learn how to function with day-to-day symptoms and to manage chronic disorders, and thus move out of this disease system. Thus, demand for disease-care services will decrease, making access and funding available for those who do need immediate care for a pathology.

9. The United States must fund the development of a series of wellness universities (such as Tai Sophia) to train wellness educators for our schools and our communities.

Senator MIKULSKI. Thank you, Bob.

Dr. Baase.

STATEMENT OF CATHY BAASE, M.D., GLOBAL DIRECTOR HEALTH SERVICES, DOW CHEMICAL COMPANY, MIDLAND, MI

Dr. BAASE. Good afternoon, Madam Chairwoman and members of the committee.

I want to thank the committee for inviting me to discuss integrative health as a means of health reform. I would like to call your attention to the fact that I refer to this as "health reform" rather than "healthcare reform" so that we keep the emphasis on health is what we are seeking, not so much to continue what is currently a disease care system.

My name is Dr. Catherine Baase. I am the global director of health services for the Dow Chemical Company and a board-certified family practice physician responsible for Dow's global occupational health, epidemiology, and health promotion programs.

Dow has offered an employee occupational health program for 90 years, and we have had a formal, focused health promotion program for more than two decades. We are recognized worldwide, particularly for our leadership, innovation, measuring outcomes, and operating a truly international health program.

In 2004, we developed a business case analysis related to the health of Dow people that concluded that Dow's economic impact associated with the health of Dow people exceeds $700 million annually. We spend nearly $300 million per year in the U.S. on direct healthcare costs alone.

This is very significant in terms of cents per share. Our U.S. healthcare spend is about 70 percent of what we spend on research and development, and we illustrated the very real opportunity to change that situation.

This business case drove development of a simple, yet powerful corporate-level health strategy that is built on four pillars—first, prevention; second, quality and effectiveness of care; third, health system management; and fourth, advocacy for these important principles.

The strategy reflects the alignment between the health of our people and the success of our company. Our global approach includes all elements of a comprehensive health promotion program, including awareness, motivation strategies to engage employees, skill-building programs, and supportive environments.

Programs implemented since the onset of this health strategy have been yielding positive results. For example, 75 percent of our U.S. employees voluntarily participate in health assessments. Ninety-five percent report this as a highly valued program. About 90 percent of U.S. employees participate in at least one or more health programs each year.

Between 2004 and 2008, for our top risk factors—tobacco use, physical activity, and obesity—we have seen a 15 percent reduction in high-risk people and an 18 percent increase in those at low risk. By 2013, with continued progress in just the United States, we will have saved the company a cumulative $420 million over 10 years and will have contributed in the year 2013 10 cents per share.

Last, in 2007, one of our programs, our Health Advocacy Case Management, yielded Dow a projected $11.7 million advantage and saved the company more than 9,000 absenteeism days. A key learning from the Dow health strategy is recognizing that the health of our people is essential.

As a Nation, we do not focus on health outcomes. Every dollar should seek maximum value. To broaden and sustain workplace health programs, there are several steps the Federal Government can take. For example, extending favorable tax treatment for health and wellness programs would remove a major barrier for other work sites.

The Partnership for Prevention, which Dow is a member of, recommends additional specific actions. Some of these include communicating better the benefits of health programs, supporting research to evaluate and improve these programs, creating an employer's health promotion resource center.

Finally, as you and your esteemed colleagues engage in debate around the future of our country's health system, I believe that worksite health programs like those at Dow are key to ensuring that we reverse the trends of increasing health risks and chronic disease for our citizens.

Thank you again, Madam Chairwoman and members of the committee, for this opportunity. I look forward to answering any questions.

[The prepared statement of Dr. Baase follows:]

PREPARED STATEMENT OF CATHERINE M. BAASE, M.D.

SUMMARY

In the United States, we have what has been described as an "illness" care system—not a health system. As we work to reform the "health" system, we must be compelled by the fact the "health" of our people is the critical outcome and the leading indicator of the success. The money we spend on health is an investment in the sustainable future of individuals, families and business enterprises. Every dollar spent should deliver maximum value.

WORKPLACE HEALTH PROMOTION PROGRAMS

The role of employers in improving public health has received minimal attention in health care reform discussions, even though the potential for achieving a large-scale health and economic impact among the group of employed, working-age adults is undeniable. Well conceived workplace health promotion programs can improve employees' health, reduce their risks for disease, reduce unnecessary health care utilization, limit illness-related absenteeism, and reduce health-related productivity losses.

THE DOW MODEL

The Dow Chemical Company has offered an employee occupational health program for 90 years and has provided a focused health promotion program for 20 years. The Company's approach has yielded global results that have improved health and overall success of our business. After an analysis of employee health in 2004, Dow's integrated approach to health was strengthened by creation of a corporate Dow Health Strategy. The strategy is focused on four elements: (1) Prevention, (2) Quality and Effectiveness, (3) Health Care System Management and (4) Advocacy.

Positive results include:

• Approximately 85 percent global employees and 75 percent U.S. employees voluntarily participated in Dow health assessments. According to satisfaction surveys from these participants, 95 percent value the Dow health assessment.

• About 75 percent of our people globally and 90 percent in the United States participate in one or more internal Dow health services each year.

• Reduced health risks in our population, especially for our top three risk targets of tobacco use, physical inactivity and obesity. Between 2004 and 2008, we saw a 15 percent reduction of our employees in higher risk health groups and a 18 percent increase of our employees in lower risk health groups.

POLICY RECOMMENDATIONS

There are many steps government can take to encourage businesses to implement workplace health programs and reward those that have them. Extending favorable tax treatment for employer-contributions to pay for employee health and wellness programs would remove a major barrier to more widespread adoption of employee health and wellness programs and lead to a healthier America. The Partnership for Prevention recommends specific actions for local, State and Federal efforts, such as: better communicate the benefits of workplace health programs, support research to evaluate and improve them, create an employers' health promotion resource center, recognize industry leaders; support research and activities to improve and employ best practices; and provide tools and resources to support health promotion efforts.

I. INTRODUCTION

Good afternoon Madam Chairwoman and members of the committee. I would like to thank the committee for inviting me to testify today on the subject of integrative health as a means of health reform, particularly as it relates to businesses and workplace health promotion programs. My name is Dr. Catherine Baase and I am a board-certified Family Practice physician and the Global Director of Health Services for The Dow Chemical Company. I have direct responsibility for leadership and management of all Occupational Health, Epidemiology, and Health Promotion staff and programs around the world. In addition to these roles, I am deeply involved in the design and implementation of Dow's Health Strategy for employees, retirees, and their families.

My testimony focuses on workplace health promotion programs, the rationale for their adoption, Dow's positive experience with them and policy recommendations

that will expand their effective use and very important public health impact. I hope to provide some insights on how companies can provide successful, comprehensive health programs for their people which result in healthy and enriched lives for individuals while simultaneously delivering an improved economic impact to the organization. Employee health and workplace health promotion programs should be viewed and managed as strategic investments in the health of populations, rather than simply costs. There are many ways that government can support and encourage corporate health promotion efforts.

At Dow, we have seen concrete results from our commitments to workplace health promotion that advance our business goals, our corporate social responsibility commitments and deliver highly valued services to Dow people.

We are a proud leader in our national health discussion and believe that health is of paramount importance to the success of individuals, families and every enterprise—both private and public. As a company, we care about our employees and their health is vital to us personally and to the progress of our organizations.

I would like to acknowledge Garry Lindsay and the Partnership for Prevention, and the staff of the National Business Group on Health, for their assistance and contributions in compiling some of the information related to health prevention and workplace health promotion programs.

II. HEALTH REFORM—THE ROLE OF THE WORKPLACE

We have in this country what has been described as an "illness" care system and not a health care system. We do not focus on health outcomes. The dialogue and debate about the many ills of our health care system has escalated in recent weeks because of the economic crisis and the substantial funding for health included in the economic stimulus bill that was signed into law last week. As implementation of the stimulus bill's health provisions begins, it is vital that we keep sight of the fact that the "health" of our people is the critical outcome and leading indicator of the success of our expenditures. The money we spend on health is an investment in our sustainable future and intended to make people healthier. How much we spend or who has access to our illness care system has limited meaning if we're not focused on results and whether our health is sustained or improving. Every dollar should seek maximum value.

From a results and outcomes perspective, the situation of our current overall health is not a positive story. As an example, I'm sure you have all seen the tremendously disturbing maps of our country as they illustrate, over time, the dramatic epidemic of obesity. According to the Centers for Disease Control, in 2007, only one State (Colorado) had a prevalence of obesity less than 20 percent. Thirty States had a prevalence equal to or greater than 25 percent; three of these States (Alabama, Mississippi and Tennessee) had a prevalence of obesity equal to or greater than 30 percent.[1]

Health issues including obesity are among the broadest social concerns we have. They affect every aspect of our lives—in our roles as individuals, family members, citizens or business persons. From the business perspective, based on data from the Towers Perrin Health Care Cost Survey, we project average health care costs will increase 6 percent this year alone to an average total per employee cost of $9,552. While the rate of growth is holding steady with prior year increases, companies and their employees still face record-high costs in 2009. Costs of this magnitude—and continuing increases above core economic inflation—are clearly problematic, most especially now, in a steep recessionary environment.

To put this in perspective, for an individual company like Dow, the total economic impact (direct and indirect costs) related to the health of our people exceeds $700 million annually. We spend nearly $300 million per year on direct health care costs in the United States alone. From our 2007 summary, this was about 30 cents per share or 70 percent of what we spent on research and development.

From the cost of health care to the impact of worker health on productivity, every business or enterprise clearly has a natural alignment between the health of its people and its overall success. The two are closely interwoven. So, it is of consequence there is now consensus that current and future spending in employee health is unsustainable, and poses a significant threat to the overall competitiveness of American businesses within the global marketplace.

Recently, employers have implemented a number of approaches to manage the supply of health care resources—and the demand—sometimes through greater cost-shifting to the employee. However, leading organizations have realized managing

[1] Centers for Disease Control, *http://www.cdc.gov/nccdphp/dnpa/Obesity/trend/maps/index.htm*.

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health benefit costs alone without a balanced focus to ensure achievement of health outcomes is a matter of dwindling returns.

One popular aspect of corporate health efforts is to focus on primary prevention and risk avoidance, thus keeping the majority of the workforce (and its dependents) low risk and healthy. Why is this the case? First, a significant percentage of deaths in the United States are associated primarily with modifiable, lifestyle-related behaviors. Remarkably, more than one-third of total mortality is attributed to three general risk factors: tobacco use, poor diet/low physical activity (and their influence on obesity), and excessive alcohol consumption.[2] [3]

Beyond the quality of life impact, the annual social costs associated with tobacco use and obesity are $192 billion and $117 billion, respectively. They are major risk factors for chronic health conditions such as cardiovascular disease, chronic obstructive pulmonary disease, cancer, and diabetes.[4] [5]

Further, research is showing it is more cost-effective to invest in preventive health practices, such as preventive screenings, immunizations, health risk appraisals, behavioral coaching, and health awareness/education, rather than spending resources exclusively on the small minority of employees/dependents who are responsible for high-cost health claims.[6] This is not to say employers should neglect high-cost employees. To the contrary, best-practice research is demonstrating the total value of an integrated, population-based strategy that addresses the health needs of all employees, dependents, and retirees across the health continuum.

A majority of employers report they have established some health promotion efforts in the workplace. Regrettably, as reflected in the findings of the 2004 National Worksite Health Promotion Survey, the majority of employers have not implemented a successful strategy—only 6.9 percent of surveyed organizations met the criteria for a comprehensive health promotion program.[7] This is far short of the 75 percent target included in the Healthy People objectives for the Nation, which shows there are still significant barriers to adopting—on a large scale—worksite health promotion practices by organizations both large and small.[8] Research has demonstrated several elements are required for the effectiveness of workplace health promotion efforts. These are illustrated in the language of the proposed Healthy Workforce Act which describes employers should have all four of the following components in their health promotion programs: Awareness, Motivation Strategies to Engage Employees, Skill Building Programs, and Supportive Environments.

For additional information, I direct you to the Partnership for Prevention's workplace health promotion policy paper entitled *Workplace Health Promotion: Policy Recommendations that Encourage Employers to Support Health Improvement Programs for their Workers* which was authored by Dr. Ron Z. Goetzel, Ph.D., Research Professor and Director, Institute for Health and Productivity Studies, Emory University, and Vice President, Consulting and Applied Research, at Thomson Reuters, and his colleagues at the Institute for Health and Productivity Studies, Emory University, Dr. Enid Chung Roemer, Ph.D., Rivka C. Liss-Levinson, and Daniel K. Samoly.

III. THE RATIONALE FOR CORPORATE OR WORKPLACE HEALTH PROMOTION PROGRAMS

In keeping health at the center of health reform, it is valuable to review the determinants of health. Many similar analyses of these factors are available. In the recent Shattuck Lecture article entitled "We Can Do Better—Improving the Health of the American People" by Steven A. Schroeder, M.D., published in the New England Journal of Medicine (NEJM), February 15, 2009, we see another poignant reminder of the opportunities to improve population health.

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[2] Mokdad AH. Marks JS. Stroup DF. Gerberding JL. Actual Causes of death in the United States, 2000. *JAMA.* 2004;291(10):1238–1245. (see also Correction: actual causes of death in the United States, 2000. *JAMA.* 2005;293(3):293–294.)

[3] Flegal KM, Graubard BI, Williamson DF, et al. Excess deaths associated with underweight, overweight, and obesity. *JAMA.* 2005;293:1861–1867.

[4] Christakis NA, Fowler JH. The spread of obesity in a large social network over 32 years. *N Engl J Med.* 2007;357(4):370–379.

[5] American Cancer Society. *Smoking Costs United States $157 Billion Each Year. http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Smoking_Costs_US_157_Billion_Each_Year.asp*. Accessed February 14, 2009.

[6] Health Management Research Center. (2008) *Cost Benefit Analysis and Report 2008*. University of Michigan, Ann Arbor, MI.

[7] Linnan L, Bowling M, Childress J, Lindsay G, et al. Results of the 2004 National Worksite Health Promotion Survey. *Am J Public Health.* 2008;98(1):1–7.

[8] U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

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Dr. Schroeder states, "Health is influenced by factors in five domains—genetics, social circumstances, environmental exposures, behavioral patterns, and health care (Fig. 1). When it comes to reducing early deaths, medical care has a relatively minor role. Even if the entire U.S. population had access to excellent medical care—which it does not—only a small fraction of these deaths could be prevented. The single greatest opportunity to improve health and reduce premature deaths lies in personal behavior. In fact, behavior causes account for nearly 40 percent of all deaths in the United States. Although there has been disagreement over the actual number of deaths that can be attributed to obesity and physical inactivity combined, it is clear these risk factors, along with smoking, are the top behavioral causes of premature death. Clinicians and policymakers may question whether behavior is susceptible to change or whether attempts to change behavior lie outside the province of traditional medical care."[9]

Of all the five domains of the determinants of health outcomes, behavior patterns have the largest proportion of impact at 40 percent while health care accounts for only 10 percent. As noted by Dr. Schroeder, it is vital to have an effective mechanism to affect behavior. Corporate health programs and worksite health promotion represent an ideal opportunity to have impact on health behaviors for adults and their families.[10]

FIGURE 1

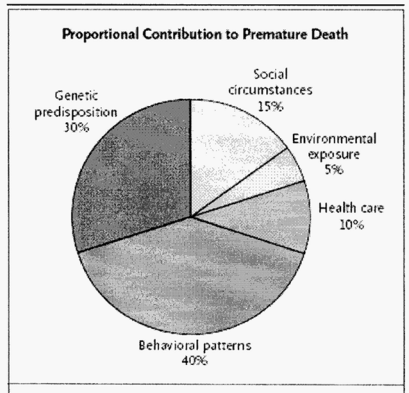

Figure 1. Determinants of Health and Their Contribution to Premature Death.
Adapted from McGinnis et al.[10]

The role of employers in improving public health has received minimal attention in discussions of health care reform, even though the potential for achieving large-scale health and economic impact among working-age adults is undeniable.[11] After closely examining their organizations' data, many large U.S. companies have concluded poor health increases employees' utilization of health care services and di-

[9] Steven A. Schorder, M.D., "We Can Do Better—Improving the Health of the American People" *New England Journal of Medicine*, 357;12 September 20, 2007.

[10] Steven A. Schorder, M.D., "We Can Do Better—Improving the Health of the American People" *New England Journal of Medicine*, 357;12 September 20, 2007.

[11] Goetzel, RZ, *Workplace Health Promotion: Policy Recommendations that Encourage Employers to Support Health Improvement Programs for their Workers*. A Prevention Policy Paper Commissioned by Partnership for Prevention. Washington, DC. December 2008.

[12] Goetzel RZ, Long SR, Ozminkowski RJ, Hawkins K, Wang S, Lynch W. Health, Absence, Disability, and Presenteeism Cost Estimates of Certain Physical and Mental Health Conditions Affecting U.S. Employers. *Journal of Occupational and Environmental Medicine.* 2004;46(4):398–412.

[13] Anderson D, Whitmer R, Goetzel R, et al. The relationship between modifiable health risks and group-level health care expenditures: A group-level analysis of the HERO database. *American Journal of Health Promotion.* 2000;15(1):45–52.

[14] Goetzel RZ, Jacobson BH, Aldana SG, Vardell K, Yee L. Health Care Costs of Worksite Health Promotion Participants and Non-Participants. *Journal of Occupational and Environmental Medicine.* 1998;40(4):341.

[15] University of Michigan. *The Ultimate 20th Century Cost Benefit Analysis and Report.* 2000:45–52.

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minishes employee performance, safety, and morale. For a business, workers in poor health, as well as those with behavioral risk factors, mean greater medical expenditures, more frequent absenteeism, increased disability, more accidents and suboptimal productivity.[12] [13] [14] [15] [16] [17] [18] [19] [20]

Over the past 30 years, many enlightened employers have put in place comprehensive, multi-component health promotion programs. They have come to appreciate the important role these programs play in improving the health and well-being of their workers, which in turn can increase worker productivity and improve benefit costs.[21] Many of these employers also believe health promotion programs can significantly influence an organization's ability to attract and retain top talent who are drawn to a healthy company culture which encourages a work-life balance.[22] In fact, some employers have made employee health promotion initiatives part of their overall emphasis on sustainability and corporate social responsibility.[23]

Dow believes any reform of our health care system must contain a broad approach to prevention which incorporates clinical preventive services, public health and community-based interventions. As a vital component of a true "health" system, companies can make a positive difference in the health of their people, and can have a peripheral impact in the communities where they operate. Well-conceived workplace health promotion programs can improve employees' health and quality of life, reduce their risks for disease, control unnecessary health care utilization, limit illness-related absenteeism, and decrease health-related productivity losses.

The worksite is the right place to tackle many of our health problems because adults spend so much of their active, waking hours at work. As Dr. Goetzel points out, health promotion programs make sense because:

- Workplace programs can reach large segments of the population not exposed to and engaged in organized health improvement efforts;
- Workplaces contain a concentrated group of people who share common purpose and culture;
- Communication with workers is straightforward;
- Social and organizational supports are available;
- Certain policies, procedures and practices can be introduced and organizational norms can be established; and
- Financial or other types of incentives can be offered to gain participation in programs.[24]

Further, there is a logical basis for workplace health prevention:

1. Many of the diseases and disorders are preventable;
2. Many of these diseases and disorders are triggered by modifiable health risks;
3. Many modifiable health risks are associated with increased health care costs and decreased worker productivity;
4. Modifiable health risks can be improved through health promotion and disease prevention programs;
5. Improvements in the health risk profile of a population can lead to reductions in health care costs and absenteeism, and heightened productivity; and

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[16] Mercer Human Resource Consulting. *National Survey of Employer-Sponsored Health Plans—Survey Highlights. http://www.mercerhr.com/referencecontent.jhtml?idContent=1258390. July 3, 2006.*

[17] Mercer Human Resource Consulting. Mercer/Marsh *Survey on Health, Productivity, and Absence Management Programs. http://www.mercerhr.com/pressrelease/details.jhtml/dynamic/idContent/1231700.* July 12, 2006.

[18] Goetzel RZ. *Examining the Value of Integrating Occupational Health and Safety and Health Promotion Programs in the Workplace.* Department of Health and Human Services, Public Health Services, Centers for Disease Control and Prevention, National Institute of Occupational Safety and Health, 2005:1–61.

[19] Goetzel RZ, Juday TR, Ozminkowski RJ. What's the ROI? *A Systematic Review of* Return-On-Investment Studies of Corporate Health and Productivity Management Initiatives. AWHP's Worksite Health. 1999;6(3):12–21.

[20] Goetzel RZ, Hawkins K, Ozminkowski RJ, Wang S. The Health and Productivity Cost Burden of the "Top 10" Physical and Mental Health Conditions Affecting Six Large U.S. Employers in 1999. *Journal of Occupational and Environmental Medicine.* 2003;45(1):5–14.

[21] Linnan L, Bowling M, Childress J, et al. Results of the 2004 National Worksite Health Promotion Survey. *American Journal of Public Health.* 2008;98(1).

[22] Wolfe R, Parker D, Napier N. Employee Health Management and Organizational Performance. *The Journal of Applied Behavioral Science.* 1994;30(1):22–42.

[23] Health Enhancement Research Organization. *http://www.the-hero.org/*. August 4, 2008; and Goetzel R, Ozminkowski R. The Health and Cost Benefits of Worksite Health Promotion Programs. *Annual Review of Public Health.* 2008;29:303–323.

[24] Testimony of Ron Z. Goetzel, Ph.D., before the House Armed Services Committee Subcommittee on Military Personnel, March 12, 2008.

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6. Well-designed and well-implemented worksite health promotion and disease prevention programs can save money and produce a positive return on investment (ROI).[25]

In over three decades of research, the University of Michigan Health Management Research Center (HMRC) has demonstrated the association between health risks and excess health and productivity-related costs. As Charts 2 and 3 (from the HMRC) illustrate, increased health risks equate to higher health care costs, whereas reduced health risks equate to lower overall costs. Simply put: costs follow risks.[26]

CHART 2

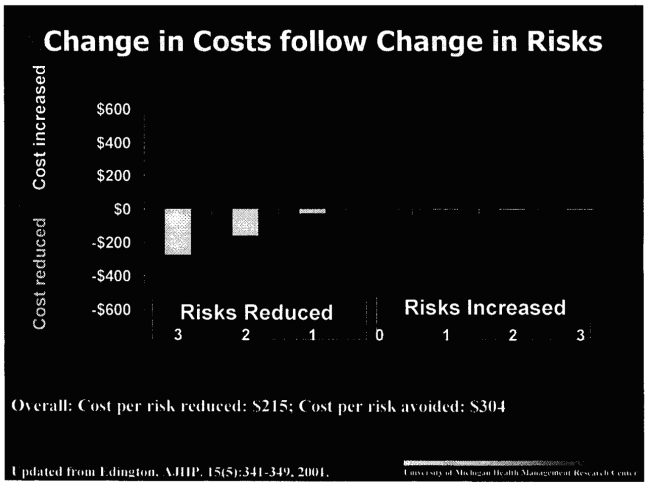
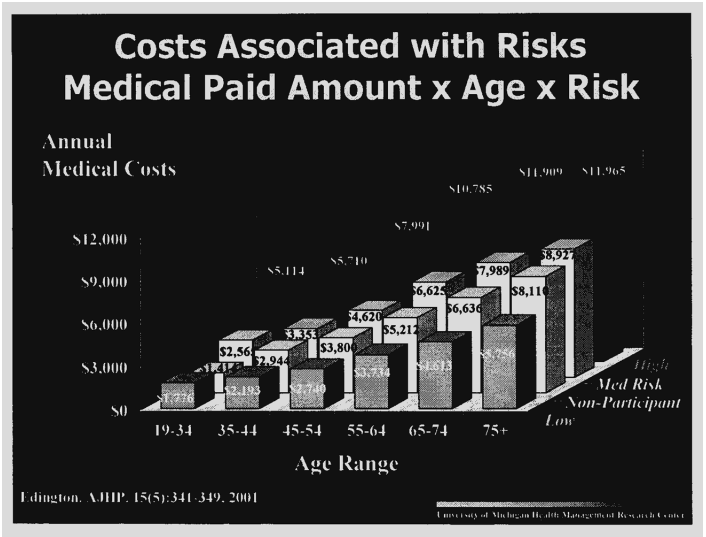


CHART 3



The HMRC has demonstrated the same associations between health-related risks and productivity-related costs attributed to disability, workers' compensation, and

[25] Testimony of Ron Z. Goetzel, Ph.D., before the House Armed Services Committee Subcommittee on Military Personnel, March 12, 2008.

[26] Health & Vitality Ink Communications. *The Case for Health Promotion Programs.* 2002.

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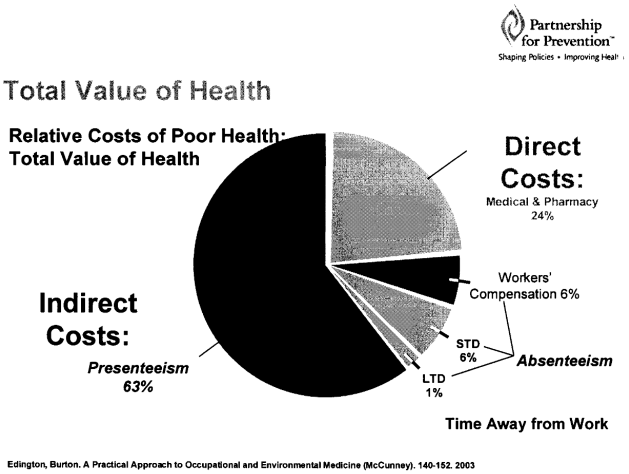
presenteeism. The HMRC has also shown excess health risks (e.g., three or more co-morbid health risks such as inactivity, excess body weight, and tobacco use) are independent of the cost burden of chronic disease. In other words, excess health risks further compound the total cost burden of managing chronic health conditions such as chronic obstructive pulmonary disease, diabetes, and heart disease.[27]

It is important for organizations to address not only high-cost groups (e.g., heart disease, asthma, diabetes) through such interventions as disease management programs, but also address "at-risk" groups who exhibit modifiable risk factors (e.g., obesity, low physical activity, poor diet, tobacco use) which are associated with chronic health conditions and further exacerbate their management once diagnosed.

Today, there is sound evidence that investing in workplace health promotion programs provides organizations with a number of financial incentives which not only addresses escalating health care costs, but also provide a productivity management strategy. From the HMRC, we see (in Chart 4) the typical organizational profile of the economic impact of the health of a corporate population.

CHART 4



Consider the following:

The HMRC estimates an organization saves $350 annually when a low-risk employee remains low risk, compared to a savings of $153 when a high-risk employee's health risks are reduced.[28]

One meta-review of 56 published studies of workplace health promotion programs shows[29]:

- Average 27 percent reduction in sick leave absenteeism;
- Average 26 percent reduction in health care costs;
- Average 32 percent reduction in workers' compensation and disability management claims costs; and
- Average $5.81 to $1 savings-to-cost ratio.

The question about return on investment for health promotion or prevention efforts has long been debated. I would like to bring to the attention of the committee the work of Dr. Steven Woolf in the February 4, 2009 issue of the Journal of the American Medical Association (JAMA), titled, "A Closer Look at the Economic Argument for Disease Prevention."

Dr. Woolf states,

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[27] Health Management Research Center. (2008) *Cost Benefit Analysis and Report 2008.* University of Michigan, Ann Arbor, MI.

[28] Edington DW. Emerging research: a view from one research center. *American Journal of Health Promotion.* 2001:15(5)341–349; and University of Michigan Health Management Research Center. *The Worksite Wellness Benefit Analysis and Report.* 1979–2004;7–15.

[29] Chapman LS. Meta-Evaluation of Worksite Health Promotion Economic Return Studies: 2005 update. *The Art of Health Promotion.* 2005;19(6):1–11.

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"The question of whether prevention saves money is incorrectly framed. Health care, like other goods, is not purchased to save money. The dollar can be stretched further—more goods can be acquired—by optimizing economic value. The proper question for a preventive (or therapeutic) intervention is how much health the investment purchases. . . . Prevention accounts for only 2 percent to 3 percent of health care expenditures. . . . Disease care is the dominant driver of health spending, and yet it evades the economic scrutiny applied to preventive services. . . . The same questions posed for prevention must now be applied to disease treatments: does the intervention improve health outcomes, and how strong is the evidence? If the intervention is effective, is it cost-effective (a good value)? Can other options achieve better results, or the same results at lower cost? Throughout health care, the spending crisis requires a comprehensive search for ways to shift spending from services of dubious economic value to those with high cost-effectiveness or net savings. Whether those services are preventive or otherwise is not the point; what matters is prioritizing services that produce the greatest health benefits for the dollars spent. In that context it makes sense to invest in a well-defined package of preventive services that are effective and offer good economic value. Services that yield net savings—whether prevention or treatment—are priorities." [30]

This article extracts and reinforces information developed in a white paper, "The Economic Argument for Disease Prevention: Distinguishing Between Value and Savings," by Dr. Woolf, Corinne G. Husten, M.D., M.P.H., Lawrence S. Lewin, James S. Marks, M.D., M.P.H., Jonathan Fielding, M.D., M.P.H., M.B.A., and Eduardo Sanchez, M.D., M.P.H., on behalf of Partnership for Prevention's National Commission on Prevention Priorities. This white paper is accessible on the Web site: *http://www.prevent.org/images/stories/PolicyPapers/prevention%20cost-effectiveness.pdf*.

At Dow, we have adopted this investment focus and health outcomes approach because the health of our company depends on the health of our people. The health of Dow's employees, their families and the communities in which we operate is a strategic priority and is seen as essential to the company's sustainability. One of Dow's four strategic themes is to "build a people-centric performance culture." This means attracting and retaining the most talented people from throughout the world, developing them, and rewarding them for the results they achieve with the goal of driving both personal and company success. Worksite programs are in many ways, an embodiment of our people-centric performance culture.

This is the rationale for workforce health programs: company health depends on employee health and there are clearly identifiable areas we can target to improve health, while at the same time reduce costs and improve productivity.

IV. THE DOW MODEL

Dow has offered an employee occupational health program for 90 years and has had a focused health promotion program for more than 20 years. Dow has been recognized worldwide in the field of corporate health programs—particularly for its leadership, innovation and measurable outcomes. A few years ago, at the request of our CEO and executive team, we developed a business case analysis of our situation related to the health of Dow People. A simplified summary of the business case is:

- Dow has a very large economic impact associated with the health of our people,
- Translating this economic impact to cents/share demonstrates it as a significant priority,
- There is strong evidence that we have an opportunity to change the situation through improved quality, addressing waste and ineffectiveness in the system and through prevention,
- Health advocacy is a priority as reform agendas are vital to the future.

This business case drove development of a simple yet powerful corporate level health strategy. Our CEO, Andrew Liveris, continues to be a strong advocate both internally and externally to Dow on the importance of health.

Dow's health strategy is built on four pillars: (1) Prevention; (2) Quality and Effectiveness; (3) Health System Management; and (4) Advocacy.

The strategy includes all aspects of the impact of health for "Dow family" members (including employees, dependents and retirees). It is reflective of our belief in the alignment between the health of our people and the success of our company.

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[30] Steven Woolf, M.D., M.P.H., "A Closer Look at the Economic Argument for Disease Prevention," *Journal of the American Medical Association.* 2009;301(5):536–538 *http://jama.ama-assn.org/cgi/content/full/301/5/536.*

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Based upon a long-term commitment, we have set multi-year goals as well as annual objectives for each pillar of the strategy.

To put this in bottom-line value for our company, our initial business case estimates illustrated that if we could keep our U.S. direct dollars in the lower end of projected inflation vs. the higher end, this alone would be worth 7 cents per share, which would be over $50 million in 2008 (by comparing project spending at the lower inflation vs. average company experience). By 2013, if we can continue our progress to the "best performer" level, we anticipate we will have saved the Company a cumulative $420 million over 10 years, and will contribute 10 cents per share in 2013.

Through studies, we estimated that by improving our primary health risk factors by just 1 percentage point each per year, we would save $62 million in U.S.-direct health care costs over 10 years. In studying the literature, I believe there is a real opportunity for improvement in safety, quality and effectiveness in health care which will lead to better health outcomes and much higher value for the dollar spent. It is commonly noted as much as 30 percent of health expenditures are unnecessary. Sophisticated purchasing, strong accountability, innovation and collaboration in our communities all represent further opportunities.

Driven by our 2004 strategy, many of our recent program dimensions are still young, but we are encouraged by the indicators of the positive health impact we are seeing already. Let me share a few from just the last couple years.

- We have seen increases in the percent of Dow people who believe Dow sincerely cares about their health and well-being. Using global assessments, we again saw an improvement of 2 percent in 2007 versus 2005 in employee perceptions.
- Approximately 85 percent of global employees and 75 percent of U.S. employees voluntarily participate in health assessments. According to satisfaction surveys, 95 percent value this option—which is why we are able to attain such high participation rates without direct financial incentives to participate.
- About 75 percent of our people globally and 90 percent in the United States participate in one or more internal Dow health services each year.
- We are reducing health risks in our global employee population especially for our top three risk targets of tobacco use, physical activity and obesity. Between 2004 and September 2008, we saw a 15 percentage point reduction in high-risk people and an 18 percentage point increase in low-risk people in these three categories.
- Using an established baseline of global employees from 2004, we have seen a decrease in the high-risk level for four out of eight health-risk factors. Over this same period from 2004 through September 2008, we have increased the number of employees in the low-risk category in seven of the eight measures.
- Through increased awareness and enhanced benefits coverage, Dow's U.S. colorectal screening has improved 12 percent since January 2007 to 56 percent, slightly above the HEDIS (Healthcare Effectiveness Data and Information Set) benchmarks reported by the National Committee for Quality Assurance (NCQA) which represent national thresholds for commercially insured populations.
- Using U.S. data, we can illustrate the impact of just one of our key services, health advocacy case management, in total economic benefit ($11.7 million) and absenteeism days saved (9,232) in 2007.

Focusing on the prevention health aspect of our strategy, our comprehensive health promotion program incorporates the best practice design and implementation characteristics mentioned earlier: Awareness, Motivation Strategies to Engage Employees, Skill Building Programs, and Supportive Environments. It includes a variety of health-related company policies and initiatives. They include: health screening, consultation, referral and follow-up, health education through intranet and internet channels, small group programs, health/disease risk topic focused campaigns, on-site wellness centers, self-care and consumer education, and tools such as the launch of an electronic personal health record. In addition, we offer strong prevention coverage in our health benefit plans, as well as initiatives to create a supportive environment such as our Healthy Workplace Index released in 2007. Our global strategy features corporate efforts and local plans to ensure we meet the needs of Dow's diverse workforce; and it emphasizes shared responsibility between the company, local leadership and employees for improved health.

Reducing Tobacco Use: The Dow Corporate Smoking Policy was first enacted in the United States in 1993. It has been updated and since January 1, 2003, all Dow property and meetings are smoke-free. Outside of the United States, all Dow buildings and meetings have been smoke-free since January 1, 2004. The difference in the two policies represents the necessity for utilizing a multicultural approach. The global policy was written as a minimum standard with room for flexibility in

actualizing it. Our programming also leverages company-wide energy, while encouraging value-adding localization.

One example is Dow's annual No Tobacco Day, which urged tobacco users to make a commitment to quit using tobacco for at least one day. Communicated in 15 languages across all Dow sites globally, tobacco users were asked to commit online. Participants received motivational messages and the chance to win gift card prizes (valued approximately $50–$200). In the inaugural year, 6 percent of tobacco users (representing 27 different countries) committed to quit and 56 percent met the 24-hour challenge. At 6 months, 11 percent of surveyed participants remained tobacco-free. Site leaders from 30 sites also committed to making their work environment more supportive and sponsored activities like tobacco cessation workshops, tobacco-free worksites, free "cold turkey" lunches, educational sessions for employees' families, and free massages. In 2008, 434 Dow people from 21 countries committed to quit using tobacco during this event; 47 percent were successful for the 24-hour challenge.

Eliminating the negative impacts of tobacco use requires more than just a policy and program. As part of our comprehensive approach, we have strengthened our internal health counseling efforts and improved our U.S.-medical benefit plan to cover tobacco cessation consultation and pharmacotherapy at 100 percent, using evidence-based, best practice recommendations from the National Business Group on Health and U.S. Preventive Services Task Force. After more than 5 years of a stagnant tobacco use rate of 18 percent, tobacco use has dropped 2 percentage points to 16 percent, in the last 2 years.

Increasing Physical Activity: Dow implemented a global year-long physical activity challenge, MOVE for Good Health, to increase emphasis on regular physical activity at both an individual and organizational level. Nearly 5,000 people from 53 countries registered for MOVE and made sustained changes in their physical activity level:

- 89 percent of previously sedentary participants became active (i.e., were sedentary at baseline and now exercise at least once per week);
- 47 percent of high-moderate risk participants moved into low risk during the program (i.e., started at high or moderate risk and now exercise three or more times per week); and
- MOVE contributed to a 2008 Dow global population improvement in physical activity level—a 1 percentage point reduction in high risk (from 26 percent to 25 percent) and 1 percentage point increase in low risk (from 39 percent to 40 percent).

Since 2005, efforts to improve access to physical activity at Dow worksites, global physical activity challenges, and partnerships with groups like the U.S. President's Council on Physical Fitness and Sports have helped support a 7-percent increase in our low-risk population and a 10 percent reduction in high risk for physical activity in the United States alone. Globally the improvements were 14 percent and 11 percent, respectively.

Impacting Overweight and Obesity Issues: Dow is participating in National Heart, Lung, and Blood Institute (NHLBI) funded research to examine the health and economic benefits of worksite and environmental interventions on overweight and obesity. The environmental interventions, called *LightenUP*, aim to decrease unhealthy eating and increase physical activity among workers and include:

- Moderate-level treatments which introduce relatively inexpensive environmental changes to the physical environment, such as walking paths, healthy food choices, nutritional information in vending machines and cafeterias, and employee recognition;
- More intensive-level treatments encourage an organizational culture of healthy behaviors through leadership training, top management involvement, integration of behavior change programs into the company's established business practices and leadership accountability; and
- Control sites continued to receive the core health promotion programs, including individual-based programming (e.g. counseling), but did not receive the environmental interventions.

After 1 year of the study, researchers found employees who participated in the *LightenUP* interventions reduced their blood pressure risk and maintained a steady weight when compared to employees at control sites who received only individual-focused interventions. After 2 years, we are seeing an increase in physical activity, better nutrition habits, reduction in tobacco use, increase in leadership support and increase in employee awareness. These results suggest even moderate changes to the work environment can have a positive impact on employees by reducing at least one health risk and helping the well stay well. Preliminary analysis of our year three data indicates some significant results. It appears average weight loss at the

intervention sites was significantly greater than at control sites, as were the reductions in mean blood pressure and cholesterol levels. Intervention sites also achieved significantly greater improvements in diet and exercise. These results indicate adding environmental interventions to individual-level programs improve biometric and behavioral risk factors.

In addition, to addressing modifiable risk factors, Dow health promotion efforts engage employees, retirees and family members as active participants in their health care. Dow's Positive Action health care consumerism program increased awareness of the consumer's role, helped participants become more comfortable with the U.S.-health care system and taught valuable skills such as self-care and adequately preparing for a doctor's visit. In the 9 months following the program pilot, participants experienced fewer health care claims than non-participants, which equated to a half million dollars in savings to employees and approximately $300,000 in savings to Dow within the first year after the program.

The success of The Dow Chemical Company in establishing and maintaining a global culture of health can be seen as a systematic process. The support of leadership is unquestionably ingrained and the health of employees is directly linked to business goals and objectives. This approach and strong focus on prevention translates to comprehensive worksite health promotion which is uniquely tailored to Dow employees. I'm proud to report Dow is one of the few companies which have shown a global approach is not only possible but successful as well.

Community Impact

Beyond our employees and their families, Dow has a longstanding commitment to the health of the communities in which we operate, which can be traced back to Founder Herbert H. Dow.

Over the years, Dow has worked hard to establish:

- Employee health programs which are recognized for their excellence;
- Community advisory panels at all major production locations;
- Direct financial contributions to health needs in communities as an integral part of corporate giving;
- Medical departments at major sites which work closely with local community health services; and
- Public health value because we perform and publish important health research.

One example of community partnership is Dow's investment to help establish the Michigan Health Information Alliance, MIHIA, a multi-stakeholder collaborative covering 11 counties in central Michigan which is dedicated to improving the health of the people in the region through the innovative use of health information. MIHIA is also a Chartered Value Exchange as designated by the Department of Health and Human Services through the Agency for Healthcare Research and Quality. Aligned with the mission is a commitment to advance the cornerstones of value-driven health care through the development and implementation of interoperable health information technology, and the dissemination of price and quality information.

Another example is Dow's funding and leadership to build a community YMCA in Plaquemine, LA near one of our sites. In each case, Dow targeted its investment with community needs which also aligned with our Health Strategy—using the broader community to help create a more supportive environment for the health of Dow people and support the entire community.

Over the course of our efforts, we have learned many lessons which may be useful to any business undertaking workplace health programs:

- Establish the entire effort upon a principle of serving the best health outcomes for individuals and maintain integrity with this throughout every aspect of operation. It builds trust which is invaluable to long term success.
- The creation of a business case is essential to secure management commitment.
- Determine the total economic impact of all health-related costs both direct and indirect.
- Establishment of a corporate strategy is essential.
- It is imperative to have a long-term view and commitment for the health strategy.
- Companies should establish a measurement strategy to set priorities and track outcomes.
- Creation of internal partnerships of related functional groups is a success factor.
- Implementation strategies should include individuals and small groups.
- Inclusion of cultural considerations.
- Efforts must align to company business priorities.

• Understand the role of all stakeholders including labor organizations in achieving success.
• Ensure absolute privacy and confidentiality of all personal health data.
• Program/services design and implementation must be culturally sensitive.
• Companies should develop and adhere to a clearly documented operating discipline which is supported by all applicable functions within the organization.

These results affirm the value of our specific efforts and of corporate health programs generally. With a sustained focus, we will continue to have an impact on the health of our people, because corporate health strategies offer one of the best opportunities to effectively engage adults to maintain and improve health.

V. POLICY RECOMMENDATIONS

There are many steps government can take to encourage businesses to implement a workplace health program and reward those that have them. Health policy groups, business groups and their combined coalitions are working to provide constructive policy recommendations in this arena. For example, Dow has joined with a number of companies and associations, through the Workplace Wellness Alliance which is sponsored by the U.S. Chamber of Commerce and the Partnership for Prevention in an effort to encourage the Federal Government to enact legislation and regulations supporting employer-based wellness programs.

First, I believe a change in tax policy is needed to improve employee wellness and reduce obesity. The current tax treatment of wellness, fitness, health promotion, and weight management programs for employees poses a barrier and disincentive to more comprehensive employer-sponsored wellness programs.

While current tax law allows employers to deduct all of their costs toward employee wellness as business expenses, generally, the value of employer contributions to employees for these purposes must be reported as income subject to taxation by employees—including payment for fitness, nutrition, and weight management programs. Only employees for whom these programs and activities are required or prescribed as part of treatment for medical conditions—including medical obesity—do not have to report employer contributions as taxable income. Current tax law also does not allow employees to use pre-tax dollars to pay for fitness facility fees, exercise programs, nutrition classes, or weight management classes unless they are prescribed or required as part of treatment regimens for medical conditions. In other words, our current tax code provides tax incentives for medical care and treatment but does not provide tax incentives for maintaining health and wellness.

Furthermore, the complicated tax requirements create an administrative burden for employers who are trying to do the right thing by offering health and wellness programs to employees. Employers who pay for these services on behalf of their employees must determine for which employees their contributions are considered taxable income and for which employees they are not taxable, raising health information privacy issues along with the extra administrative burden.

The solution: Extending favorable tax treatment for employer-contributions to pay for employee health and wellness programs would remove a major barrier to more widespread adoption of these programs and lead to a healthier America.

Consider the following:

• Employees should be able to use pre-tax dollars (including through section 125 cafeteria plans, HSAs and FSAs) to pay for health and wellness activities, programs and purchases including fitness, nutrition, and weight-management programs.
• Employer contributions toward employee expenses for health and wellness, activities, programs and purchases should be excludable from income for tax purposes.
• People should be allowed to deduct any post-tax out-of-pocket expenses for health and wellness activities, programs, and purchases from their taxes (irrespective of whether it is for medical treatment or for wellness, health maintenance and disease prevention and whether or not their total health care expenses are below the 7.5 percent adjusted gross income threshold).

Additionally, I want to share recommendations from the Partnership for Prevention with you because they are based on the central premise which supports all workplace health programs: *keeping people healthy contains costs and increases productivity*. Many of the recommendations are geared towards the development, promotion and adoption of best practices workplace health programs.

1. Better communicate to employers the benefits of workplace health programs.

Innovative approaches are needed to communicate to employers the economic costs associated with poor health, the options available to reduce health risks, and the cost savings and productivity gains possible through workplace health programs.

Federal, State, and local health agencies, alone and in partnership with businesses, should leverage their extensive marketing and communication networks to share information about exemplar health programs to employers that have meager or nonexistent programs.

2. Increase funding for research to evaluate and improve workplace health programs.

There has been some government funding support for evaluating workplace health programs, but most research in this area has come from the private sector. As a result, our current data and understanding are limited. More government support is needed for studying the science underlying workplace-based programs and the effectiveness of these programs in improving health, lowering costs, and increasing productivity. We also need translational research so these programs can be adapted for businesses of all types and sizes.

3. Develop tools and resources to support employer workplace health programs.

Several tools and resources for workplace health promotion have already been developed and disseminated with the support of government funding, but more tools and resources are needed to help employers design, implement, and evaluate their programs. These tools will enable employers to establish their case for health promotion programs, identify partners, and evaluate their program's outcomes.

4. Pilot innovative health promotion programs at Federal, State, and local departments and agencies.

Most government agencies have not implemented evidence-based health programs for their own employees and dependents. By doing so, they can not only function as role models for private sector businesses but they can function as experimental employer laboratories providing models of successful program execution other public and private organizations can emulate.

5. Honor and reward America's healthiest organizations.

Government programs to recognize and reward innovative companies and organizations which have successfully implemented health promotion programs should be expanded. Greater recognition and prestige for businesses demonstrating effective leadership in health promotion will elevate their stature as innovators in the field. To stay competitive to attract and maintain top talent, other businesses will take notice and adopt or enhance their own workplace programs.

6. Create an employers' health promotion resource center.

A government-supported resource center would collect, develop, and disseminate objective, easy-to-use, and accessible workplace health promotion information and act as a clearinghouse for resources, tools, and expertise to support employer efforts. Employers could then judge the relative merits and cost-effectiveness of alternative health promotion models.

7. Establish a public-private technical advisory council.

Many large employers can afford to hire expert consultants who help them structure effective programs, but smaller employers often cannot. A public-private technical advisory council would draw upon the expertise of private consultants and experts in government who would volunteer their time to support employers wishing to implement health promotion programs. The council could be set up in a similar fashion as other government advisory panels, such as the U.S. Preventive Services Task Force.

8. Establish collective purchasing consortia for small employers.

Federal agencies should establish collective health promotion purchasing consortia, similar in design to multi-employer trusts, which would define common health and business objectives for employers in a given community, achieve consensus on health program designs, issue requests for proposal to vendors and health plans, support the establishment of performance guarantees related to the success of these programs, and help ensure evaluations which can be used to enhance programs.

9. Support establishment of workplace health program certification and accreditation programs.

Several established review and accreditation organizations, such as the National Committee for Quality Assurance, have introduced review processes focused on workplace health programs and their vendors to objectively assess their quality. Support of these accreditation and certification initiatives will help establish minimum standards for quality and performance against which vendors and others engaged in implementing workplace programs are held. In turn, these initiatives will spur program improvements and encourage more companies to enhance or initiate programs.

In addition to these "best practices" promoting recommendations, there are additional ways government can accelerate the adoption of workplace health programs. Tax incentives for introducing or expanding workplace health programs can accelerate the adoption of workplace programs. Such incentives are important because many businesses, particularly in the current economic environment, consider workplace health programs to be cost prohibitive. Tax incentives would encourage more employers to adopt workplace health programs as part of their business strategies.

VI. SUMMARY

As the Nation moves into the full-fledged debate about the future of health care, it is imperative we consider all possible options to keep Americans well. Worksite health programs, such as those implemented by Dow around the world, are key components of empowering people to take control of their health.

We know our employees are the foundation of our company. As we implement our Dow Health Strategy to seek the best health outcomes for our people, we keep the company in good health. Worksites offer one of the best opportunities to effectively engage adults to maintain and improve health, and Dow has demonstrated that establishing and maintaining a culture of health in the workplace is possible. We look forward to working with you and other public and private sector leaders to improve and expand workplace health promotion programs. With sustained focus we will continue to have a positive impact on the health of our people.

ABOUT DOW

Dow was founded in Michigan in 1897 and is one of the world's leading manufacturers of chemicals and plastics. We supply more than 3,300 products to customers in 160 countries around the world, including hundreds of specialty chemicals, plastics, agricultural and pharmaceutical raw materials for products essential to life. About half of our employees are in the United States, and we help provide health benefits to more than 34,000 retirees in the United States.

Senator MIKULSKI. Well, I want to thank the participants and also acknowledge again our resource people, all of whom submitted papers. I am going to ask unanimous consent that they be included in the record.

[The information previously referred to may be found in Additional Material.]

Senator MIKULSKI. Now let me talk about this something called "the committee" here, and then we will go to my questions. You might have a question of us, like where is everybody?"

[Laughter.]

That is a good question. Just a few days ago, Senator Reid announced that there would not be any votes today. So my colleagues extended their time in their States, where they are out listening, as I have during the last week, to our constituents.

What I want you to see up here is every one of the Democratic Senators has a staff person here. Of course, someone that I have collaborated with on these issues, Senator Harkin, has his team here, as does Senator Kennedy.

Also there, as you can see on the other side, there is Republican participation. So there is something called "the Committee."

This is also being recorded not only officially, as we do at every hearing, but the Senate recording studio, a bipartisan, nonpartisan

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group, is recording this. We will have videos and DVDs available for those who might want to use it for teaching and public policy or to review what we talked about.

We would like to get it over to the IOM because we think we are pretty hot.

[Laughter.]

Or pretty cool, depending. But we are anti-inflammation.

[Laughter.]

Now, when I discussed the idea of having this hearing with many of you and I discussed it generally with some of my committee, and also I know there was some staff reaction. We have a long way to go. Some of us knew a lot about it. Some of us knew very little about it. Some were worried was this just one more—was this some kind of gaga approach? Sister, you referred to from going to exotic and mainstream.

One of the testimonies talked about children. We focus sometimes on giving Ritalin to children who really have certain problems of agitation in the classroom, and nobody would bat an eye or ask a question. If concepts like deep breathing, yoga, even conflict resolution in the classroom were introduced, it would raise eyebrows not about what is going on in a negative sense, but what is this? It might even be regarded as laughable and dismissed.

Well, I don't think these things are a laughing matter. That is what the focus of this hearing is. I am going to ask some naysayer questions for a minute so that we can kind of get that out into the sunshine as we do it.

Now one of the things each and every one of the panelists—and I must say every one of these presentations was so content rich, but one was the recommendation for an Office of Wellness and Prevention at the White House, kind of like a wellness czar, which is a phrase I don't want to use.

My question would be this—and I throw it to anyone on the panel and even the resource committee to comment. Don't we have a surgeon general? If we don't, shouldn't we have a surgeon general? Shouldn't that be the job of the surgeon general to be the promoter of health and wellness? Why do we need another office?

Oh, don't we have a Centers for Disease Control? Isn't that what they are supposed to be, not only the forensic sleuths for undetected and undisclosed—you know, their fabulous work in finding Legionnaire's Disease and these others?

It is the Centers for Disease Control, and aren't they supposed to take what the gurus at NIH come up with and kind of get it out there and so on? Why do we need a new White House thingamajig? Shouldn't we have a surgeon general, and shouldn't we have a CDC? And aren't we just duplicating it or—I will stop there.

Dr. Gordon, you were right out of the box.

Dr. GORDON. I am ready to talk about that. You know, I think there may come a time when we won't need one. Right now, there needs to be a spotlight on this issue. The CDC and the surgeon general have very specific purviews, and they have very little authority over any other agency.

We need somebody, some office that is going to really keep an eye and make sure that what is put forward here in Congress, what is put forward by the Administration, actually is enacted.

We had experience with the White House commission recommendations, which we presented. They were graciously received. Except where the agency was deeply committed—and there was general agreement, I would say, certainly from the incoming surgeon general, Surgeon General Carmona. There was agreement, basic agreement from the CDC with many of the issues.

Only in those agencies where there was already a major commitment to act—for example, interestingly, the VA and the Department of Defense, those were the places where things really happened. And other agencies, there was no clout. There was no power. There was no ability to make—to really call those agencies to account.

So that even though the Department of Education had the wellness act for a wellness mandate from every State, it is just not happening. Even though there is a National Center for Complementary and Alternative Medicine at NIH, precious little of the funding goes to wellness.

I think it needs a higher position. It needs more energy behind it, to use a term that is perhaps appropriate here. It needs a kind of constant watchdog. That is a different function from either the surgeon general or the CDC.

Senator MIKULSKI. Dr. Jonas, did you want to comment? And then Bob.

Dr. JONAS. Yes, I would agree with that. When we were first writing this Wellness Initiative for the Nation, we had a small group called the SWAT team, the Systems Wellness Advancement Team. It was made up of——

Senator MIKULSKI. Yes, you can tell you are a military guy.

Dr. JONAS. We had a lot of fun with——

[Laughter.]

Senator MIKULSKI. We can have operations and all of these——

Dr. JONAS. These were senior health policy folks, ma'am, who looked at this. We also then had a community discussion and put out the first ideas. One of the first ideas was putting this within a health reform office.

As Dr. Baase indicated, the focus quickly then got on healthcare reform, some of the same things you mentioned at the beginning, and did not address the issues that were required in health. This caused us to change those recommendations from community recommendations to look at something that really could address issues across agencies, which are going to be necessary if we are going to truly produce a culture and an industry that promotes wellness.

Senator MIKULSKI. Bob.

Mr. DUGGAN. I noticed the surgeon general is a surgeon, and CDC is about disease. I noticed, I think we are talking about a massive cultural change, and that requires language change. I noticed the other day—I don't know if he has been confirmed—the new Secretary of Agriculture, Secretary Vilsack. He spoke about food and his own growing up and his own issues with obesity. It was in the Baltimore papers.

I thought isn't it interesting? He is speaking as if he were "secretary of wellness" because he was talking about—and this is a culture change. I think in order to take the movement that has been happening across the country at a grassroots level around this, it

needs a language shift to be put forward by the Congress and by the White House so that it has a place to belong rather than in opposition to problems in the healthcare system.

I believe our healthcare system will actually function well when we take most of these wellness issues and return them to the communities.

Senator MIKULSKI. Did any of our resource people want to comment?

Dr. Berman. Could we give Dr. Berman a microphone there? Thank you.

Dr. BERMAN. It is Brian Berman, professor of family medicine, University of Maryland.

I think we have these different agencies. They do exist. It is possible that the job could be done, but we need a fundamental shift in our thinking, like I think all the panel has been emphasizing. It really can't be business as usual.

A number of examples of that. We have now this stimulatory package, and there is $8.5 billion that has gone to the NIH. Well-deserved, well-needed. Just 1.5 percent of money that is spent on research goes for health services research getting clinical studies into practice.

We have a lot of the evidence that is there. The Cochrane collaboration that has been around for quite a while—now we have in our database 25,000 randomized control trials in the database of complementary medicine, over 700 systematic reviews. There is a lot of evidence there, but it needs to get into clinical practice.

With that type of research, at 1.5 percent of the overall research dollars, there has to be a re-dressing of that imbalance.

Senator MIKULSKI. Thank you.

Let the record show that those words were spoken by Dr. Brian Berman of the University of Maryland.

Let me summarize what I think the point that you all have made, which is, sure, we need a surgeon general. And yes, we need the agency for the—oh, wait a minute. That is the Senate bell. It is not an air raid drill. You don't have to go under the desk.

[Laughter.]

It is the pause that refreshes. That as we fashion—first of all, this is a historical moment. Second, we have presidential leadership that says we have got to make healthcare available to more Americans and we have got to do it in a way that achieves health outcome goals and also is affordable and sustainable.

We have got to get it right the first time. This can't be kind of trial and error that we might do demonstration projects. And in that process, as that is being developed, there needs to be a place at the White House with the President's healthcare czar that focuses on, no matter what we do, that prevention and wellness are part of that. They are not viewed as one more silo, that it is integrated throughout the entire system.

That prevention is not a new silo, and prevention is not synonymous with one more test, though I think we would all agree mammograms have a role. Evaluation for diabetes and those with genetic propensity, testing is important. That wellness is not a silo, and prevention is not a silo.

It has got to be integrated, and that person has to be right at the table working on what is going to be not a reform effort, but a transformational effort that involves both providers, clinicians, the people who are going to pay for it, etc. Is that it?

Once that is done, the surgeon general might be one of the main implementers. Yes, we do need to refresh and reinvigorate our Centers for Disease Control, but they are not the ones that are going to do the policy. They will be the implementers. This office needs to be at the table at this moment in history, just like the healthcare czar might eventually go away and then be integrated.

Integrative health has to be integrated in the system, but you need somebody in charge always being this voice at the table. Does that kind of summarize it in a nutshell?

Dr. GORDON. Absolutely.

Senator MIKULSKI. Now let me go to the concept of integrative healthcare because the way it might be heard here at this hearing is that it is being synonymous with complementary medicine or even alternative medicine. Is that the case, or is that just one of the tools of integrative health?

Who would like to answer that question? Dr. Gordon and then Dr. Kreitzer, if you want to jump in?

Dr. GORDON. Sure, I will be happy to start. I think that there is a point that self-care is the true primary care, and it is the integrative care. It is the care of the whole person in which the whole person is completely involved and to which he or she is committed. That is the basis.

Self-care includes what we eat, how we exercise, how we deal with stress, our relationships with other people, our environment, where we work, where we go to school. That has to be absolutely fundamental in this transformation.

Once that happens and once we work on our consciousness and we become aware of the consequences of what we do for ourselves for good or ill, once we become aware of how our mind works and how our thoughts work and where we get in our own way and where we cause problems for other people, at that point, we are clear-headed enough—whether we are clinicians in practice or we are kids in school—to begin to make much wiser choices. We are much less burdened by old worn-out ideas.

Senator MIKULSKI. I want to come back to self-care.

Dr. Kreitzer, do you want to comment on that?

Dr. KREITZER. I agree with Dr. Gordon that self-care is certainly a cornerstone.

Senator MIKULSKI. Now remember the question that I asked. He is talking about self-care. Maybe self-care is integrative care. I asked the question, because this is the hearing on integrative healthcare. The Institute of Medicine is having one on integrative medicine, the way—and again, I will go to the way Senator Harkin and I saw this, which is integrative healthcare is even broader than integrative medicine, which goes to the office that you all wanted.

Dr. KREITZER. Yes. For the last 3 years, I actually served as the vice chair of the Consortium of Academic Health Centers for Integrative Medicine, a group of 42 medical schools that have programs in integrative medicine. They would define, Senator Mikulski, that

that is relationship based. It is holistic care. That it includes working with all therapeutic approaches, including complementary and alternative medicine.

I think many of us prefer the term "integrative health" because we feel like that is broader than the discipline of medicine that reflects a narrower perspective. But certainly, as I look at what the pillars——

Senator MIKULSKI. Is it synonymous with alternative and complementary medicine, or is it different?

Dr. KREITZER. It is broader. It includes complementary and alternative medicine, a broad array of therapeutic approaches that include those practitioners as well as some of those therapies. It also includes conventional care.

Talking about integrative health is blending the best of healing practices and traditions. I just have to say that I think labels can be very powerful, but that they can be misleading. For many years, we called this whole field "alternative," and then we began to use the word "complementary." Now often the term is used "integrative."

I think those labels, to some extent, have lost a lot of meaning. People, consumers are interested in healthcare that works, and they want to be able to access the best of healing traditions. They don't really care so much what the label is.

Senator MIKULSKI. Bob, hold up a minute. I want to go back to Dr. Gordon.

First of all, let me tell you what I think you just said because it goes to the silo thinking. If we start with where you all began in your testimony, No. 1, that what we have now is an insurance-based—whether the insurance is public insurance or private insurance, it is an insurance-based, disease-focused, silo functional.

For everything, you go to one doctor. You get one set of tests. You go to another doctor, etc. And that it is very silo thinking. In fact, the system is not—we don't demand of the healthcare system what we demand now of our new health technology.

We demand of our new health information technology that it be interoperable, and what integrative healthcare is, is that it is interoperable, and all aspects are focused on the patient, and every aspect is working for the positive outcome because the person is not a test. If you say, well, who is Barbara Mikulski? You say, a 4 foot 11—and then we could take the other data from there—person.

[Laughter.]

You had my blood work, my cholesterol test, my mammogram, etc. That is not Barbara Mikulski. Those are aspects that need to go into me being able to be a vigorous, functioning Senator. But there is a lot more to it.

Isn't that it, Dr. Kreitzer?

Dr. KREITZER. Yes.

Senator MIKULSKI. Right. Well, can I come back now, though, to self-care? Because this will be another naysayer question, and I would like to clarify it.

Well, it is great to talk about self-care, but self-care doesn't cure diabetes. What do you do if you have got lung cancer, where does self-care come in? Don't you need drugs? Don't you need doctors?

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You know, what is the self-care? It sounds a little woo-woo, like if you drink ginger juice, you won't need bifocals anymore.

Dr. GORDON. It is a great question. In fact, self-care can cure most diabetes. That is the answer. That changing your diet, changing your patterns of exercise, dealing with stress better will take care of most Type 2 diabetes, which is the predominant form of diabetes.

What I am saying is self-care is central because it is integrative. Integer means whole. We are working with whole people. Self-care is part of treating lung cancer.

A very interesting study was done years ago on people with lung cancer. What they found is that those people who felt they were doing better, who had a more positive attitude, who were more engaged with their care not only felt better, but they lived longer than those people with absolutely the same diagnoses and stage of disease who felt more pessimistic and didn't take care of themselves.

Self-care is part of all care. If you learn how to relax and do some breathing exercises before you have surgery, you will need less anesthesia. You will have fewer complications. You will get out of the recovery room faster. You will get out of the hospital faster. And you will need fewer drugs.

Self-care is primary. All the other care, of course, it is necessary in many situations, but we have totally reversed it. We go to the pills right away. Somebody comes in with a little bit of diabetes. They are put on drugs right away, and nobody is really working with them on diet, on exercise, on dealing with stress.

We have got everything upside down and inside out, and we have to come back to basics. Hippocrates said in extreme situations, extreme remedies. When necessary, you use the drugs and surgery. You don't rush to them right away. It doesn't work, and it makes us sicker in the long run.

Senator MIKULSKI. Bob, and then Dr. Jonas.

Mr. DUGGAN. As someone outside of the system, basically not coming from the medical model, I am very aware that the labels CAM and alternative and integrated were put onto us to put us in a silo to relate to the other silos.

I am thinking of what you are saying about diabetes and how it can be managed by an individual. That individual with diabetes usually has three or four other symptoms going on, whether they are pathologies or not. Yet they will be sent to one practitioner for this, or one technique for this, and they are divided up.

Whereas, a patient is the only one who knows how the five or six sets of symptoms go together. It is only talked about as integrated medicine from the perspective of techniques because of history.

I am remembering when I had pneumonia when I was 5 or 6, long before we went to doctors, everybody in the neighborhood knew how to tend me through pneumonia. It was part of the wisdom of the neighborhood. Gradually, as I have gotten older, my body has been carved up into different specialties—to go to a headache doctor or go to an acupuncturist or go to someone.

My body was not broken up that way when I was a young person. I can remember back to a time when the wisdom lived in the

community, and all of the symptoms my body put out were part of my integrating how I stayed well. It is the history of CAM or alternative, integrated is a way to attempt to silo something that in the living patient is not separable.

Senator MIKULSKI. Well, I am going to come back then because we are going to go to Minnesota and the so-called healthcare home. I want to hear about it from the workplace because there is already consensus building within the Congress that as we do our legislation, we are going to be focusing on either having a medical home or a health home, and how do we then follow the patient through?

We have had extensive hearings already based on other IOM work and so on.

Dr. BAASE. I wanted to respond to the self-care question for a moment. I think self-care exists. It is not a matter of us saying we have it or we don't have it or we want it or we don't. It is going to be there, no matter whether we decide or not because it is just a fundamental reality. It is whether or not we acknowledge it and help it to be more successful and utilize it as part of the effectiveness of our whole system.

I mean, self-care happens, and unfortunately, we are not acknowledging it all the time that people have this role and they make decisions. Even in the current sort of illness system, people make decisions every day. They decide when to access the healthcare system. They decide how they are going to follow or agreements that they might have made or not and what they are going to do for their own care.

Self-care happens at every stage of a person's life, and it is happening in concert with the system. We just need to really embrace it, acknowledge it, and improve it.

Senator MIKULSKI. Well, I am going to move on now to the concept of a health home or a medical home right now. For the earlier discussions in this committee, we have talked about a medical home. I want to talk about the Minnesota effort and then the Dow effort.

What we have talked about already was the idea that we would move to universal coverage, regardless of what the model is. People would be based in a medical home that would start with primary care, get some type of assessment, and then they would be followed through if they needed.

Usually they would trigger that because of some presenting—or it could be just pediatrics. It could be prenatal care. It could be a variety of things.

One of my questions was, well, who is going to be the case manager? While I have heard about the nurses today, which I value, I am going to put my social work hat on because I have a master's degree in social work. Often what is left out of the integrative healthcare debate is the role of social work. Social work must be a part of this.

We believe you start with the individual. The individual goes within a family in a community. If you don't recognize that the individual is living within a family and community, you are not recognizing reality, because they either help or hinder what is going to happen.

If you live in a community with clean water, clean air, and a low level of violence, you have a pretty good chance of making it to the eighth grade. Many of our communities don't have those odds with them, particularly in some of our urban areas.

So let us go back. What we are talking about then is some type of access that is followed through. Once again, my question is: Who is going to be in charge of the follow-through and how do they follow through?

My question is how does this work? Usually, whether you are discharged from a hospital or your primary care doctor sees you, the doctor gives you a prescription, and they will give you a plan, and then they say you have to go on a diet and exercise. Then you get one sheet of paper that tells you about fruits and vegetables. Maybe you can afford to buy them. Maybe you can afford not to buy them, etc., though the affluent tend to be.

My question is what is this idea of a medical home? How would we make sure that people really could comply or participate in the program, and who is going to see that they do it? And who is in charge of this thing called diet and exercise that runs through every single program that comes up, and particularly in the management of chronic illness?

I don't know if I was clear in my question.

Dr. KREITZER. Well, I can tell you, Senator Mikulski, that even the decision to call it a healthcare home rather than a medical home reflected the desire to shift the focus from a disease orientation, and there was an understanding that while often we think of primary care as being provided by physicians, that in addition to nurse practitioners, that there certainly are pharmacists, there are social workers, there are physician assistants. There are others who could be that first provider point of contact, and those people are very appropriate to provide that coordinating function that you are talking about.

I think the concept, very much, of a healthcare home is to have primary care coordinated in a comprehensive and integrated way. What you raised in your question about who is in charge of this diet and exercise piece——

Senator MIKULSKI. Well, who is in charge?

Dr. KREITZER. Right.

Senator MIKULSKI. Then, No. 2, the person in charge is usually the primary care doctor. I don't know of any primary doctor that is going to call you up and say, you know, "Did you eat your fruits and vegetables today, and what are some of the issues to help you with the program?"

Dr. KREITZER. Well, two things, Senator Mikulski. I would say, for one, often it is better to have that first line of care a nurse practitioner or somebody else who actually has the time to spend with patients, who is actually really taught in their education much more about how to work with patients, how to activate patients, how to coach patients.

Why not in a healthcare system as a first line of defense, so to speak, have practitioners that can really take time with patients to do that? Physicians generally in a primary care setting have 10 minutes or less to spend with patients. They don't have the time

to do that health education or even that counseling over chronic disease.

It is a team effort.

Senator MIKULSKI. Tell us how it works.

Dr. KREITZER. Well, the Minnesota healthcare home legislation was just passed, and so they are just implementing healthcare homes. The way that it will work is that in a healthcare home, a nurse practitioner or a physician assistant or a medical doctor will be the one responsible for providing that care coordination. Many of the demonstration projects there are actually teams.

While there might be a person in charge of coordinating, we are seeing more and more use of health coaches. We are seeing health coaches employed not only by managed care, by hospitals, by industry, and health coaches are people that can really have a health professional background. They are part of the team.

They can sit down with patients and really explore what are the barriers to making changes in their life? What are the goals that they want to achieve? And help them really develop a plan. It is much more than just passing out a sheet of paper and saying, "Eat better and exercise."

People really need help looking at their lives, and how are they going to do it? How are they going to make those changes?

Senator MIKULSKI. Well, who is going to pay for that?

Dr. KREITZER. Well, that is the issue that we are all talking about today. Right now, people pay for a function like health coaching out of pocket, and that is not generally something that is reimbursed.

Senator MIKULSKI. Who is going to pay for it in Minnesota?

Dr. KREITZER. In Minnesota, health coaches are paid for out-of-pocket. Under the legislation that was passed, nurse practitioners will be reimbursed when they serve as healthcare home coordinator.

Senator MIKULSKI. That is one of the real factors that we would need to think about. Whether you call it a health home or a medical home, which is really the gateway.

Dr. KREITZER. Right.

Senator MIKULSKI. And then the gateway to assessing where people are, then they would follow through.

We heard of a great program in Howard County, MD, but before we go to that, isn't this kind of what you did at Dow? Could you tell us what you do, how this works at Dow?

The results that you gave were stunning in terms of it, and how it also has an impact on shareholder value because Dow is not in the business of being a demonstration project in healthcare. It is a profit-making company.

Could you tell us what this is and what this health assessment and health advocacy and case management and all is?

Dr. BAASE. Well, we started this off with a mission to improve the health of our people. In fact, we set ourselves what we thought was an audacious goal to say that we would improve the health of our people by at least 10 percent in 10 years as measured by health risk factors and prevalence of conditions.

What we use as a health assessment process, every single employee is invited in to participate voluntarily in the health assess-

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ment process. At that, there is a comprehensive assessment questionnaire and set of tests, and then there is an individual health improvement planning session, which is done with that individual as a counseling effort.

From there, they are referred and followed up to a whole team of professionals. They can be referred to a dietician, an exercise physiologist. They are not just given a sheet of paper with a list of vegetables on it or something, there is a team base. We also work very closely within the community with the person's primary care provider, their family doctor or whatever. So we coordinate in that care.

That is just for keeping people healthy. If people happen to have an illness or a health challenge of some type, we have this health advocacy coach model, and we use our nursing staff, as well as all the rest of our staff, who work with that individual. Again, it is voluntary. We contact them if they are ill or out of work and say, "Can we help you, provide services?"

I want to reinforce a point that you made about social workers and the community. We use our own staff for this because they live in the community, and part of their responsibility is to know all of the services and the professionals in that community so that we can serve as an advocate and coach with an individual to find their best path to healing and health with them.

We use all the knowledge of the local community, and that is the process that we use for both health assessment and referral. In addition to that, there is a culture aspect. I think you are familiar with the Guide to Clinical Preventive Services probably. There is another guide called the Guide to Community Preventive Services, which talks about population health and what is the evidence base for improving the health in large populations?

We use that to try to create, use peers and policies and even workplace health advocates within natural workgroups to be the spearhead. We do leader training to try to educate our leaders how they can be better role models and advocates of health and what they can do. That is a great service to improve and expand the culture that really enables people to live in a healthy way.

Senator MIKULSKI. That is fascinating. Is the Dow healthcare for its employees a self-funded entity?

Dr. BAASE. Yes, we are.

Senator MIKULSKI. So, you essentially are like your own insurance company. Is that correct?

Dr. BAASE. Yes. We actually pay all the bills.

Senator MIKULSKI. First of all, you are a global corporation. You embody some of the things that Dr. Jonas said about why prevention and wellness worked in the military; because it is a corporate structure. In some ways, I don't mean command and control in a negative sense, but you can establish policies throughout the corporate community and have those specific programs, specific resources, a model and a corporate culture that both supports it and encourages it.

Would you say that was partially not only for availability, but for a corporate culture that encourages both early participation and ongoing participation? Am I getting that right?

Dr. BAASE. Yes. That is true. We focus on individuals and individual counseling and support, small groups, as well as the corporate culture. I think the culture is a very important factor.

You mentioned and others have mentioned how the community and the environment that people are in can have a big impact, and one thing that became clear to us a while back was if we are really trying to transform the health of this population, instead of just saying, "well, the culture has a big influence," we need to become far more sophisticated in understanding that aspect and how to intentionally harness culture to be a positive force and make that a piece of the whole strategy.

We have also done something extremely unique in that the health professionals in our staff—our physicians, our nurses, our dieticians, our exercise staff—all of our professionals have their personal bonus pay tied to the success of our population.

If our population gets healthier, then they are eligible for that portion of their bonus. If the population health status does not improve, then they would not get that. We voluntarily said our purpose here is to support people in being healthier, and we should measure and hold ourselves accountable for that.

We do a great deal of measurement on our population, but we also feel a great sense of accountability and, I will say, a lot of personal passion in caring for the people. Based upon that, the employees and their families really trust and understand that we are there for their best interest.

Senator MIKULSKI. Well, this is pretty bold, and I am going to also turn to Dr. Goetzel and his views on a business model here. Then we will come to the community model in Howard County.

First of all, could you tell me what the health assessment is?

Dr. BAASE. Sure. It is a health history questionnaire, which covers all the same things you would typically see—family history, personal history, your health habits. It has within it the typical health risk assessment questions about your behaviors, and then we also do biometrics—height, weight, blood pressure, lipid profile.

Senator MIKULSKI. But you are not the primary care? In other words, Dow is not running an HMO?

Dr. BAASE. No.

Senator MIKULSKI. An in-house HMO?

Dr. BAASE. No.

Senator MIKULSKI. The Dow employees have their own primary care physician and their own network of specialists. Is that correct?

Dr. BAASE. Yes. That is correct.

Senator MIKULSKI. Yet inside the corporation, inside the corporate doors, there is this assessment. Are you, you meaning Dow, in touch also with the primary care?

Dr. BAASE. Yes.

Senator MIKULSKI. So you have their medical history? You have their traditional medical program, as we would know it?

Dr. BAASE. Our employees are in a traditional PPO model for their healthcare. We have an onsite occupational health clinic operating as well. Within those clinics, we provide these other assessment services and additional clinical care.

We coordinate, though, that care with their primary care physicians. We are very clear about the fact that we are not the primary

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care physician. We give people copies of their tests, suggest they share those with their provider——

Senator MIKULSKI. Well, let me give you an example, and it is something that I also did at Howard County. Let us say that you have an employee, and he has been a faithful employee. All of a sudden he is beginning to develop rates of absenteeism. He has gained about 50 pounds. He comes in to talk to maybe one of your health assessors.

We find out that he has just gotten divorced. His blood pressure is coming off the roof, and he feels his life is falling apart. He is crazy about being in Dow because he has got a job and he feels he has some security and a base being there.

What would happen to somebody like him there?

Dr. BAASE. Well, it would be a consultation with one of our health staff. He would be offered the Employee Assistance Program services for counseling, sounds like some distress, and would look at the medical history and would ask him what is going on with their primary care provider or other physicians and how we could coordinate and provide support.

We would make sure that they were aware of all the services that were available to them through their benefit plan and other company services, and what is available in the community. Then, depending on how that individual wanted to see things happen, we may, with their permission, coordinate more directly with their primary care.

We would ask for a release of information to have a personal discussion with their physician to see how we could all work together and bring our resources and the communication with that provider or any other providers together. We would work with the individual.

Senator MIKULSKI. How would you stick with him? Where would the advocacy and case management come in? What you are describing here?

Dr. BAASE. Yes. That is——

Senator MIKULSKI. You would just stick with him. Then he would say, "Look, you know, I can only do what I can do. I am going to take my pills." OK? That is not a bad thing if you have high blood pressure.

Yet on the job, as you say, there are leaders. There are supervisors, and they still know ongoing stress, etc. Would you then—and we understand freedom of choice and all that. You would stick with him then through counseling and offer it? Is this where the culture comes in, to say, "Joe, we are with you. This might not be the right time, but this is where we are."

Dr. BAASE. Absolutely.

Senator MIKULSKI. And repeatedly maybe reach out in an appropriate way?

Dr. BAASE. Yes. I mean, we don't believe that health is something you edict or mandate to people, but they actually sort of move through their own processes, and we help to facilitate that and to partner with people as best we can. We don't set rules about what they must do or must not do.

Senator MIKULSKI. Well, I have given you an extreme example, but what you are saying is they have their physicians. This is what

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is coming up also in the whole idea of a medical home, and I am kind of doing this more like a conversation, and I know the hearing is taking a little bit longer.

What you are saying is you have your physicians, and you have your traditional framework. Along with this, in order to make and maximize, there needs to be this involvement and this case management for other resources. Some would be healthcare, and it might be, "Look, why don't you get into our exercise program, or how about the company bowling league?"

Now that is exercise, and it is companionship. Maybe that is what he needs right at that particular moment, to get out with some other people, work off some of that stress, or maybe it is a martial arts program or something that the guys are into. Is that the kind of thing you are talking about?

Dr. BAASE. Yes, absolutely. We would try to understand with that person's life what is going to work best with them.

Senator MIKULSKI. Yes. Sister? Did you have your hand up?

Sister KERR. Thank you. I wanted to relate to that and also go back to your silo question that I have been thinking about.

What I wanted to say in this particular case, one of the things I think we are asking about, as we move from the individual to family to community, etc., part of the new thinking may be that, for example, Cathy's program or all of us, we may have new forms of education that we use in the media.

It could be programs that we put into the schools, you know, that is not just for Dow. I have always said if we exercised before the nightly news, we would change America's morbidity in 6 months, or teaching Qigong on the schools. Dr. Oz has done more than the surgeon general that I know of on Oprah.

There are a lot of things that we haven't—Emeril is on the Green Channel now on television talking about organic foods and how to cook them. We haven't gotten quite creative yet, I think, on what all we could do.

Going back to the silo conflict, and I am not sure I have enough time or clarity to say this. I think we are still caught in a moment, and everybody is sort of sick of this word "paradigm." We are about a paradigm shift on every level.

Mary Jo mentioned that we have so many similar problems in healthcare as Wall Street. We have come out of the model of opposition and competition, and part of that is reflected in healthcare with specialists and that we don't really believe things are interrelated. The new paradigm is saying we must focus on relationship and cooperation.

I think things like why FDA hadn't talked to CDC and the surgeons didn't talk to the dietary department, it is because we don't believe that old song, you know, "The head bone is connected to the neck bone," and all that stuff.

This patriarchal model and this inability to know how to relate is because we really are doing something new. We haven't had the committee in healthcare that said we have got to have the people from agriculture come. We have got to have the moms come. We need to see why the poor children who are hyper, we have got to find out about the lifestyle and do they—just had a patient this

week. They just stopped red dye number 20, and behavior changed like that.

I am trying to just say that it is new what we are trying to do, and we are not practiced at it yet. We don't really believe everybody should be talking together, or we say it is impossible. It is because we haven't practiced is my belief.

It is a part of the change of an ecological model, like when I taught children in ecology in Italy, as a matter of fact. They were so on to clearing the streams of debris and bad water, but they had no connection that they were 80 percent water. And so, maybe all Coca-Cola didn't make sense to put into your body.

We—and I am pointing to me. We haven't quite got it yet how to do it. That is why we are here today. It is exciting, and we are going to figure it out.

Senator MIKULSKI. Well, but you see, that is exactly what we are looking at. One, this Dow model is really very interesting. The Minnesota approach—I don't want to call it the Minnesota model. There is the famous Minnesota model that has been so wonderful in terms of addictions and compulsive behavior, but this Minnesota approach.

Then this hearing—this committee conducted a hearing in Howard County, MD, in which a very dynamic county executive and a bold health commissioner said that they were going to insure the uninsured and did a big step forward. When we held our hearing, we found out, No. 1, that at least 10 to 15 percent of the people who came were eligible for other programs, and they could be connected. And then there were other initiatives.

What was so amazing was not only that Howard County moved to cover people, which is the traditional word being used here now in the insurance debate, but then they saw the person or the family all the way through and continue to see them. Be involved with them either through physicians, nurses, or health coaches to ensure that they were able to participate in those things that were most helpful to them.

We also listened to some of the people who benefited from the program, and they talked about what it meant to have somebody feel that the system was on their side, that they were part of a system and that in that system that everybody was on their side and that they had a point of contact that stuck with them repeatedly to either give them new information, new direction, or help them find a way to get back—while they were being followed and also what we would regard as traditional medical approaches.

These people had very serious medical problems. They had doctors. They had specialists. They had pharmaceutical interventions, even some surgical. The most important thing that they felt, in addition to medical care as we know it, was that someone was on their side, and there were other things from the neurological person problem that had physical therapy and exercise.

Mr. Duggan was an active participant and has been a spokesperson on this whole idea of a health coach, which you have talked about, which is an out-of-pocket expense, which automatically rules out a lot of people.

Dow provides health coaching. They have maybe another name for it, but that is because they are not the doctor. They are the

coach and the advocate. Essentially, what Dow says to its employees, "We are on your side. Whatever you have got going on in your life, if you have some challenges, we are here to help you."

Have I summarized the Dow culture in terms of this?

Bob.

Mr. DUGGAN. As you know, I was sitting in the audience at that hearing you held in Howard County, and I was so struck by the two women, both of whom, as you said, had severe, severe social, medical problems. Their comment was that suddenly when they came into the program, they were being held by a culture. They spoke more about the way they were greeted, the way people tended them, the sense of support.

One of them said, "I felt like I won the lottery because I finally found a whole network of support." Those were very touching words, and I am struck—you are talking about cultural shift. This is a massive cultural shift that Dr. Beilenson and County Executive Ulman are doing there.

We have 50 years of telling people to go to an expert, and I was struck when you mentioned social work. The dangerous moment is at the first moment when somebody brings a problem to the system. If they meet an acupuncturist, they are going to get acupuncture. If they meet a surgeon, they are probably going to get surgery. If they meet a social worker, they are going to be listening to another story.

This first moment is the critical moment, and are they being held with a trust that they are going to be partnered in their own healing and somebody is really going to be with them? When you talk about diabetes, it is who is going to go and walk with them? Who is going to go and follow them through?

I want to say about health coaches, I hear what you are talking about. It is very different with a health coach that will tell you, "You should do this." It is very different.

Senator MIKULSKI. You mean a school-marmish prompter or, in other words, the health coach is not a compliance officer?

Mr. DUGGAN. That is right. That is right. They are a relationship who evokes what you know about your healing and makes available the supports of a broad community, from surgeons to physicians to massage to yoga to tai chi, and can guide you in what best serves you.

That is the development of this broad cultural shift. Right now, the first point of contact is somebody who is medically oriented.

Senator MIKULSKI. Well, Bob, share with us what the health coach does in Howard County because it is so specific and I think points out exactly what you are saying.

Mr. DUGGAN. Well, Peter Beilenson—Dr. Beilenson, the health commissioner—has invited us to train the coaches and the nurses and the doctors so everybody is speaking in the same way. I am going to use a very specific aspect of it because it is complex.

Every person I have ever met and our students meet has five or six or seven symptoms. The body is very wise. When you listen to the whole range of symptoms, and I say to somebody, "What do you know about those symptoms," people begin to say to us, "Oh, I know how I generate my headache. I know how I generate my asthma."

It will be questioning about what you know already about all the symptoms. Yes, treating the pathology, but what we know is if the person tends to learn about their symptoms they invariably say to me—well, we have data, it is very interesting data that from four different studies—Claire Cassidy did a good bit of it years ago—you can get 91 percent relief of symptoms, but not get patient satisfaction.

Patient satisfaction in the studies was geared to "I now understand how I generate my symptoms." Once they get that, they then are able to more manage their diabetes, more manage whatever disease factor they have. That is the building of a culture, which says, "I will listen to you."

A major complaint in American healthcare is nobody listens. First day of diagnosis class in every form of healing is the patient knows what is going on. We have to get back to that culture, which reinforces exactly what you are saying. In many ways, a social worker is more trained to take in that whole dimension than many of the rest of us.

I want to applaud what I hear happening at Dow because it is built in. That is the other thing about what Peter Beilenson is doing. He is gambling, as the health officer, that providing wellness coaches who will enable a person to live well, that is going to cut costs and transfer the return on investment for healthcare expenditures in Howard County, much as you are doing in a corporation where it will return 10 cents on a share 2 years from now.

Senator MIKULSKI. Well, thank you. Those were excellent comments.

I want to now turn to our resource people because it is now about 10 minutes before 4 p.m., and we are going to have to draw the hearing to a close.

I know, Dr. Kemper, you come here with a great background in pediatrics. You gave us a great paper, and I think you want to talk about the concept of what you see as integrative healthcare? Did you want to comment?

Dr. KEMPER. Yes, thank you.

You asked earlier whether integrative healthcare was the same as complementary medicine, and I think you have heard clearly no. Integrative healthcare is really an integrated system, as they have at Dow, that looks, first of all, at the goals. The goal is health. What are the components that get there, building from the ground up, starting with a healthy environment?

If we destroy the planet, what we do about health insurance will be irrelevant. We have to have a healthy environment. That is a physical environment. We have to get mercury out of the fish that we eat by cleaning up the coal industry. These things are all interrelated, and an integrated healthcare system looks at a healthy physical environment, a healthy social environment.

It means that children, if we want children not to be obese and not to have attention deficit disorder, we have to give them access to sidewalks, bike paths, recess, and fruits and vegetables, and stop marketing unhealthy fast foods to them and let them go through drive-through restaurants where they are filling up on things that they have seen advertised on TV, which they watch for hours be-

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cause it is safer than letting them play outside in many neighborhoods.

An integrative healthcare system means healthy physical environment, healthy social environment, healthy lifestyle habits. Healthy habits in the context of a healthy habitat. Those healthy habits, as everybody has mentioned, nutrition——

Senator MIKULSKI. Can you repeat that? It is healthy?

Dr. KEMPER. Healthy habits.

Senator MIKULSKI. Children have to be in a healthy habitat.

Dr. KEMPER. Healthy habitat.

Senator MIKULSKI. And then help them with healthy habits. That is a lot to say, but very good.

Dr. KEMPER. We have to have healthy habits in a healthy habitat, yes. Those habits include nutrition and fitness and sleep and also include stress management and emotional self-management.

Also, as Dr. Gordon mentioned, caring for one another, our social relationships, building a peaceful environment so that we don't have the conflict that is ongoing, the crime, the turning to less skillful ways to manage our stress. Things like smoking tobacco, alcohol, drugs, ways that people are using in unskillful, unhealthy ways to manage their stress.

If we give kids the tools they need to learn to manage those emotions and manage those relationships, they will be much better able to manage their own health. We have to give them a healthy environment in which to do that and support for their families. Social policies that promote breast feeding for at least the first year of life.

Ways to make it easy for children to get their immunizations from any licensed healthcare provider instead of restricting it to a few. On top of that, a primary healthcare home with good coaching, as you have heard about, and then also it includes, of course, hospitals and doctors.

I think for too long, the care of the American public has been topsy-turvy with the most resources going to the most expensive kinds of care instead of the most resources going to a healthy habitat and healthy habits.

Senator MIKULSKI. Well, that is an excellent, excellent summary.

I wonder if we could elaborate on that, but I want to come to Mr. Goetzel. You have written a lot about the business models involved here, and we have heard about Dow. Could you share with us how you would see really developing this along legislative lines, and what would be the barriers of participation for businesses?

Dr. GOETZEL. Sure. I am an applied social psychologist, but I work with a lot of economists. The research that we do and we have been doing for the last 20 years has been focused on corporate initiatives in approving health and well-being of their employee populations and their dependents.

We have worked with Dr. Baase for many, many years, and we are now involved in a 5-year research study that is funded by the NIH that is looking at environmental and social supports for obesity management at Dow.

What is interesting about the work we do is that we, of course, focus on health and health improvement and reduction in risk factors and improving behaviors. We are also focused on the econom-

ics, looking at healthcare utilization and costs, looking at absenteeism, and looking at on-the-job productivity.

My comment and contribution to this discussion today is that when we are assessing any of these intervention programs, we ought to be very concerned about the economics, the financial impact, and the cost effectiveness of alternative methods.

There is not enough comparative effectiveness research done in real world settings, in particular in corporate settings, to see what works, what doesn't, and where do you get the biggest bang for the buck.

Senator MIKULSKI. Well, one of the things I am going to ask Dr. Baase to have the people at Dow give us are what are the current legal impediments? Are they in the tax code? In other words, what exists now—by the way Government does business that would be a deterrent or a hindrance for corporations to do this type of health promotion thing?

Our Finance committee is doing a great job. We will come back to the tax code, to do that. What you talked about is workplaces offer an ideal setting for health promotion, and that is also what Dr. Baase said. You have consulted with companies that have names like Dow, Johnson & Johnson, Procter & Gamble, General Electric. These are really big companies, and they are global, but many are in a variety of our communities.

The fact that we could take a look at this would be something. Do you see that as, we lack the will? Do we not have the right legislative framework? Is it the lack of leadership? What would be the obstacles that would stand in our way, where we would want to incentivize the private sector at the workplace to do some of this?

If we look at where people are—our children are in school and that is a good place to begin, with children. People go to work. That is a really good place to do that. Plus, you have a sense of community. Most people commute long hours. How do they get home and do exercise?

Dr. GOETZEL. Yes, we know quite a bit. However, it is not very well adopted and implemented at workplaces. Even though a recent study done by the Office of Disease Prevention and Health Promotion found that 90 percent of American businesses say they have health promotion programs in place, but only 6.9 percent have the essential ingredients to have those programs be successful.

They really have not been taught. They have not learned. They have not applied the kind of learning that we have accumulated, from working with Dow and General Electric and Johnson & Johnson and some other companies. There really isn't a kind of dissemination and application of that knowledge into the workplace.

That is a wonderful opportunity, 150 million to 160 million people go to work every day, and it is a microcosm of society. You can harness the energy, the education, the communication channels, the culture. All the things that Dow is doing, you can do that in all workplaces across the United States.

Senator MIKULSKI. What about one of the biggest employers called the Federal Government?

Dr. GOETZEL. Exactly right. Shoemakers' sons and daughters are not doing what they ought to be doing. They are not adopting these health promotion practices.

Now there are some wonderful notable new exceptions to that. King County in Seattle, WA, and they have done a remarkable job in providing these programs for their employees. Ron Sims, who was the county executive, is now moving to Washington as a deputy director for housing and urban development.

We have done studies showing that over time they have improved the health risk profile of the population and reduced costs in a significant way. That is one example. There are other examples, but not enough, not as many as we would like to see at the Federal, State, and local levels.

Senator MIKULSKI. We often think of Government as providing services. As you know, the national governors are meeting in Washington. They have had a variety of conversations with the President. We don't think of like, say, State government as employees. I know our governor, Governor O'Malley, would.

I think this is a topic we would like to pursue more because, first of all, I think the Federal Government should be the model employer. We should not have wage discrimination. We should have equal opportunity to think that all people have abilities, etc.

Also we are a major buyer of healthcare. So that the Federal Employee Healthcare Program, from the standpoint of traditional Western medicine, is pretty good. I am talking about, say, the standard option program. Yet, if you would go into many of the agencies, you would see what you see everywhere—stress, obesity, people who have children with some very serious challenges, even if we look at the "A words" like asthma and autism.

I think it is something that we should talk about with the Federal Government, but also with the State government because, as you turn to the private sector, the profit-making sector, you need to be able to say, "practice what you preach." This could be a way, as we look at implementing healthcare and also some of these demonstration projects would be another way to go.

We would like to really be able to talk more about it. What you see are the incentives and the disincentives to do that.

I want to turn now to Dr. Berman, who, in addition to his outstanding work in research, his home is the University of Maryland. It is an academic center, and it has a variety of schools from medicine, nursing, pharmacy, dentistry, and the School of Social Work.

Dr. Berman, I wonder what you and Susan Berman could share with us, your experience in trying to move the—what has been your experience with the University of Maryland, and is that even a good question?

Dr. BERMAN. It is an excellent question. It helped a lot when you came that day to the VA hospital, and the president of the university saw the support.

Senator MIKULSKI. We are coming back.

Dr. BERMAN. Good. We have seen the change since we came there in 1991 until now. It has been a sea change, just like this whole field, that has occurred. It has been a little microcosm of that, and now it is completely an integrative approach into many of the clinical departments and the basic departments, so much so that it is in both the acute care side as well as the chronic side.

An example of that is we have been working with the shock trauma center for several years and have treated over 1,000 people in

the trauma center, which, as you know, is one of the largest trauma centers in the country and in the world. They came to us because we had been working together as colleagues for so many years and were sort of accepted.

They said we have a problem that a subset of our patients with trauma there have a hyper-inflammatory state. If we can't do something with our methods, they are the ones who go into septic shock and die, and what do you have to offer?

We just began to work together. There was a little bit of skepticism, I would say, from some of the people downtown. And just gradually, they saw some difference, first with the acupuncture with pain and inflammation and differences in traumatic brain injury and began to work on some projects earlier on to treat within the first 24 hours, or living lab.

The biggest shift that I have seen is when the nurses there—we were teaching some mind-body courses in the School of Social Work. Some of the nurses from shock trauma took this training program and then brought it back and then, through a series of efforts, started to bring it into the bedside.

The stories that have come out of there have shifted everybody's thinking in the trauma center, right from Tom Scalea, the head of the trauma center, all the way through to the patient level. Because, in a way, it really is empowering people right at the bedside.

Just one example of that is when a 19-year-old soldier came back from the war, and he had lost all of his limbs. He was in the trauma center. He really had, he said, no reason to live, and there he was. One of the nurses that we had taught Reiki and sound and visualization mind-body therapies began to work with him a little bit.

Within a few days, he came back and said to the group, "Thank you for giving me a reason for living." He went from there from strength to strength, and I was just told the other day that he had some artificial limbs, and he went skiing last week.

There are similar stories like this that are emerging that the university is seeing. They are seeing the impact, and so it is spreading through the oncology and the heart center there, that they are very much involved. It is not a big deal. It is part of the standard care.

That is also, of course, supported by some of the evidence and the research that we are working on together, both from clinical trials and basic science.

Senator MIKULSKI. Well, that is a powerful story, and I know each and every one at this table also could give very powerful stories.

One of the hearings that we are going to have is going to be lessons learned from the military and from the VA. We think they have a lot to teach us in terms of their experience from what this committee has already looked at; like health information technology; a techno tool for case management; to these interventions; particularly in integrative medicine that have dealt with mind-body healing where the trauma is so serious.

We are not the VA Committee. We don't—we are not stepping on anyone's toes, but we have a lot to learn from them. And the severity of illness and also for our military who served in Iraq and Af-

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ghanistan, some have the permanent wounds of war like you have described. As Dr. Gordon, who has worked in Gaza and other war-torn places, and Dr. Jonas and all of you, people will carry the permanent impact of war.

There is a lot to learn from what we are doing in intervening, and so we are going to be holding a special hearing just on that.

Then we will be holding another hearing on women, who often pay more for health insurance, and the topic of the hearing will be women who are overcharged, overmedicated, and underserved. It is meant to be a very provocative hearing.

This hearing has been provocative in its own way because I think it has provoked a lot of thinking. I think when we look back on the history of the healthcare debate in the year 2009, when we were really willing to do something about it, this hearing is going to be one of the benchmark hearings as we laid out these concepts about what needs to be done.

I think we are all very clear that integrative healthcare is the way to go. It is individualized and patient focused. It looks at the person within the workplace and in the family and within the community. In providing and improving the health outcomes for people, you can't have silos.

Also healthcare is not a linear system. It is not seeing a primary care doc, being referred to the right test, to get the right prescription, and so on. That is part of it, and we don't minimize that, and we need to do that. That might or might not help people get well and stay well, and then there are all the other things that go into it. Those other things that go into it also deal with those things that you must take personal responsibility for, particularly diet and exercise.

In taking personal responsibility, you can't feel that you are in it by yourself. You have to feel that there is help and someone on your side, whether it is an individual coach, whether it is the resources that the private sector or the employer offers. And there are those things that you can take ownership for yourself, that you have been taught to reduce stress, and also for children as well, which I think is great. We talked about children.

Diet and exercise are things that are involved in stress reduction. That, in and of itself, would deal with two big things—stress reduction and the management of chronic illness. Because most chronic illness is diabetes, cardiovascular, high blood pressure, those are the big three in our country.

There is also recidivism if someone has had an acute care episode. If you come into a hospital for either a heart attack, blood sugar hitting 300 or 400, or a fall that requires orthopedic intervention, at the end, you come out and there are all kinds of follow-up.

One of the big areas of healthcare cost is the lack of follow-through when someone leaves a hospital and they come right back and sometimes they return with not only the same problems, but pretty significant infections.

I think we have learned a lot. I think I have learned the principles. I don't think I am doing too bad as a social worker, and so I think we have learned a lot. What we have also seen is that there are examples going on. We want to learn, know more about Min-

nesota. We want to learn more about the Howard County model and the involvement of Tai Sophia.

A corporation like Dow Chemical has been involved. The University of Maryland that pioneered, really, trauma medicine in this country with Dr. Cowley is doing even more advanced work looking at it. From our business model to also our pediatricians who were here.

I think we have a lot to show for the record, and Washington is going to be a very exciting place not only for what our President is doing, but I think this hearing, the IOM summit, and then the hearing that Senator Harkin and I will have on Thursday will be very good.

We look forward to ongoing conversations with you, and we are going to try to integrate your work into our work.

Thank you, and the committee is adjourned until next Thursday.

[Additional material follows.]

ADDITIONAL MATERIAL

PREPARED STATEMENT OF HERBERT BENSON, M.D., DIRECTOR EMERITUS, BENSON-HENRY INSTITUTE FOR MIND BODY MEDICINE, MASSACHUSETTS GENERAL HOSPITAL, MIND BODY MEDICAL INSTITUTE ASSOCIATE PROFESSOR OF MEDICINE, HARVARD MEDICAL SCHOOL; AND GREGORY L. FRICCHIONE, M.D., DIRECTOR, BENSON-HENRY INSTITUTE FOR MIND BODY MEDICINE, MASSACHUSETTS GENERAL HOSPITAL, ASSOCIATE PROFESSOR OF PSYCHIATRY, HARVARD MEDICAL SCHOOL

Stress is pervasive and widespread. The prevention and treatment of the harmful effects of stress on health and well-being to all ages is vital and an important feature of the integrative components of healthcare reform.

Over 60 percent of visits to healthcare providers in the United States are related to stress and its manifestations.[1] It has a profound adverse influence on physical and mental health, on performance and efficiency in the workplace, and on education of our young people.

There are currently no effective pharmaceutical treatments or procedural and surgical approaches that can counteract these harmful effects. This testimony will provide the evidence for the necessity of Health Care Reform to include scientifically proven and patient acceptable approaches to alleviate the deleterious affects of stress.

STRESS AND THE FIGHT OR FLIGHT RESPONSE

Nearly 100 years ago, Walter B. Cannon described the "fight or flight" response to stress, identifying a consistent set of physiologic changes that occur when animals, including humans, are exposed to stress.[2 3] The characterization of this response was revised and expanded on 40 years later by the physiologist Hans Selye, who termed this response the "general adaptation response" to stress.[4] Several decades later, Sterling and McEwin proposed that "allostasis" is necessary to adapt to stress.[5]

Any situation that requires behavioral adjustment is stressful, and the fight or flight response is evoked. Situations that are stressful include worries about; health and well-being; family; financial considerations; and terror situations. We characteristically do not run or fight, yet secrete into our blood streams epinephrine and norepinephrine. This response is not utilized to run or to fight and causes or exacerbates a number of conditions that include coronary artery disease, headaches, insomnia, incontinence, chronic low back pain, disease and treatment-related symptoms of cancer, and improving postsurgical outcomes, hypertension and arthritis.[6]

THE RELAXATION RESPONSE

Over 40 years ago an opposite mind body state, also consisting of coordinated and reproducible physiological changes, was characterized by Herbert Benson.[7 8 9] Defined as the "relaxation response,"[9] this state is identified by decreases in oxygen consumption,[8 10 11 12] respiratory rate, and blood pressure.[7] There is reduced responsivity to norepinephrine[13 14 15] and on fMRI activation of specific brain areas[14] as well as increased cortical thickness.[15]

To the extent that any disorder is caused or exacerbated by stress, the relaxation response has proven to be a successful intervention. Its elicitation has been successful in disorders that include: headache,[16 17 18] decreased alcohol intake,[19] decreased blood pressure in hypertensive patients,[20 21 22 23 24 25 26 27] premature ventricular contractions,[28] anxiety,[29 30] cardiac surgery,[31] femoral arteriography,[32] premenstrual symptoms,[33] infertility,[34 35 36] and insomnia.[37 38]

MIND BODY EFFECTS AND INTEGRATIVE HEALTH

Since the time of René Descartes over 2 hundred years ago, the mind has been considered separate from the body in Western civilization. "It's all in your head" became pejorative representing diseases that do not have bodily manifestations.

The relaxation response with its above noted physiologic, biochemical, and neurological changes is a mind body effect. It is normally elicited through the repetition of a word, sound, prayer, or phrase and everyday thoughts are disregarded when they come to mind.[9] Hence the mind affects the body.

A recent 2008 publication[39] describes how gene expression is induced by the relaxation response. It provides conclusive evidence supporting the mind body connection. It also reports the first evidence that the relaxation response elicits specific gene expression changes in both short-term and long-term practitioners. Techniques used to evoke the relaxation response included several types of meditation, yoga, Tai Chi, repetitive prayer, guided imagery, and Qi Gong. Specifically, there are anti-oxi-

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dation effects as well as anti-inflammatory changes. Hence, the mind *is not separate* from the body. This recognition is an essential feature of integrative health.

THE MIND BODY-RESILIENCY PROGRAMS OF THE BENSON-HENRY INSTITUTE AT MASSACHUSETTS GENERAL HOSPITAL

The clinical programs developed at the Benson-Henry Institute are directed at the integration of the relaxation response with cognitive restructuring, with positive psychology, with a patient's existing beliefs and expectations (remembered wellness),[40] and with exercise regimens and appropriate dietary changes.

The programs include treatments for many conditions and are entitled, the "Resiliency Programs of the Benson-Henry Institute". Disease conditions include:

- Autoimmune disorders,
- Symptoms of cancer,
- Chronic pain,
- Gastrointestinal disorders,
- Headache,
- Heart disease,
- Hypertension,
- Infertility,
- Insomnia,
- Menopause,
- Stress reduction,
- Weight management, and
- Any stress-related medical condition.

The Institute also has wellness programs for mothers that offer solutions for managing the stresses of parenthood. It also offers relaxation response training and yoga for well hospital employees.

For more than 35 years, the approaches of the Benson-Henry have improved the lives of thousands of people whose conditions were caused or made worse by stress. It also has trained many thousands of healthcare professionals in its therapeutic and wellness programs under the aegis of Harvard Medical School's Department of Continuing Education and continues to do so.

MIND BODY INTEGRATIVE HEALTH IN THE WORKPLACE

As noted in the 2005 *Harvard Business Review* article[41]:

> Managers apply pressure to themselves and their teams in the belief that it will make them more productive. After all, stress is an intrinsic part of work and a critical element of achievement; without a certain amount of it, we would never perform at all.
>
> Yet the dangers of burnout are real. Studies cited by the National Institute for Occupational Safety and Health (NIOSH) indicate that some 40 percent of all workers today feel overworked, pressured, and squeezed to the point of anxiety, depression, and disease. And the problem is getting worse, thanks to intensified competition, rapid market changes, and an unending stream of terrible news about natural disasters, terrorism, and the state of the economy. The cost to employers is appalling: Corporate health insurance premiums in the United States shot up by 11.2 percent in 2004—quadruple the rate of inflation—according to survey figures from the Henry J. Kaiser Family Foundation. Today, the American Institute of Stress reports, roughly 60 percent of doctor visits stem from stress-related complaints and illnesses: In total, American businesses lose $300 billion annually to lowered productivity, absenteeism, health-care, and related costs stemming from stress.

The above *Harvard Business Review* article was published in 2005. The business environment today in 2009 is notably more stressful! Mind body integrative health approaches should be given even more consideration. Their integration could have important disease prevention manifestations.

The Benson-Henry Institute has trained individuals in many different corporations to apply its anti-stress wellness programs to healthy individuals. Its programs are easily replicable and can be disseminated widely.

MIND BODY INTEGRATIVE HEALTH IN EDUCATION

Stress is pervasive in our educational system resulting in absenteeism, poor academic performance, alcohol and drug abuse, depression, and suicide. The stress management programs of the Benson-Henry Institute Education Initiative were developed to address these needs.

The Education Initiative program of the Benson-Henry Institute has been in existence for several decades. It is a two-phase "train the trainer" model. In phase one, the Educational Initiative provides school staff with mind body skills for their own use. The second phase demonstrates ways to bring these interventions directly to students.

In 1994, its stress management programs were applied to a high school population in Lake Placid, NY. Exposure to this curriculum resulted in significant increases in self-esteem and a tendency toward "greater locus of control scores."[42]

In 2000, the Institute's mind body education curriculum was studied in middle school students living in South Central Los Angeles, CA. Teachers were trained in how to teach relaxation response exercises and self-care strategies. Four measures of academic outcomes were analyzed. Students who had more than two exposures to semester-long classes in which teachers had been trained in the curriculum had higher grade point averages, work habits scores and cooperation scores than students who had two or fewer exposures. Students who had more exposures to the curriculum demonstrated an improvement in academic scores over the course of a 2-year period.[43]

In 2002, the Institute investigated the results of six 90-minute group training sessions at Harvard University. A 6-week mind body intervention yielded significant reductions in psychological distress, state anxiety, and perceived stress.[44]

A recently completed, unpublished controlled investigation in a suburban Boston high school found that high school students partaking in the Institute's curriculum had significant improvements in perceived stress, state anxiety, trait anxiety, and stress management behaviors.

The Educational Initiative is easily replicable and has been disseminated throughout the United States.

CONCLUSION

As noted above, over 60 percent of visits to health care professionals are related to stress, and stress also has profound adverse effects in the work-place as well as in schools.

There are no current effective pharmaceutical or procedural and surgical treatments in the current medical system to counter-act the harmful effects of stress. Stress management programs developed at the Benson-Henry Institute have been addressing the needs of patients with stress-related disease. They are well-received, carry few risks, and are easily replicable in most health care settings. They're also easily adaptable to a wellness model as evidenced by the Institute's workplace and educational programs.

Healthcare reform should integrate scientifically proven mind body stress management programs. To do so, it may be necessary to utilize White House and Congressional level approaches rather than simply attempting to modify the extant disease-treatment based system.

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PREPARED STATEMENT OF BRIAN M. BERMAN, M.D., PROFESSOR OF FAMILY AND COMMUNITY MEDICINE, DIRECTOR, THE CENTER FOR INTEGRATIVE MEDICINE, UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND SUSAN HARTNOLL BERMAN, EXECUTIVE DIRECTOR, THE INSTITUTE FOR INTEGRATIVE HEALTH

I would like to thank Senator Mikulski and the members of the Committee on Health, Education, Labor, and Pensions for this opportunity to submit testimony on the role of integrative health in health care reform. My name is Brian Berman, I am a professor of family and community medicine at the University of Maryland School of Medicine and the director and founder of the University of Maryland Center for Integrative Medicine. The Center is a National Institutes of Health Center of Excellence for Research in integrative medicine and has been evaluating the scientific foundation of complementary therapies and an integrative approach to patient care for the past 18 years. I am chair of the Cochrane Collaboration's Complementary Medicine Field whose work involves collecting and systematically reviewing the worldwide scientific literature in complementary medicine.

I also would like to thank Senator Mikulski and the members of the Committee on Health, Education, Labor, and Pensions for this opportunity to submit testimony on the role of integrative health in health care reform. My name is Susan Hartnoll Berman. I am the executive director of the Institute for Integrative Health, a nonprofit organization that fosters interdisciplinary collaboration and innovative thinking that will catalyze new ideas in healthcare.

The United States spends more on health care than any other developed country and yet we rank near the bottom on most standard measures of health status. Chronic diseases, which account for 75 percent of health care expenditures, are precipitated by modifiable risk factors, yet a mere 3 percent of our health care resources are dedicated to prevention and health promotion. At the same time, services with no measurable benefit consume 30 percent of Medicare dollars and many high tech tests are paid for without proof of efficacy. Clearly, maintaining the status quo risks further catastrophic financial strain on our country and its citizens and will do little to improve the health of our Nation.

An integrative approach to health care holds potential for reducing costs, improving treatment and prevention of disease, and refocusing on health promotion. The core principles of this approach include:

- Maximizing the ability of individuals to take responsibility for their own health;
- Focusing on patient-centered, whole person care;
- Strengthening the healing partnership between health care providers and patients;
- Emphasizing prevention and health promotion;
- Embracing the connection between mind, body and spirit; and
- Making use of all appropriate, evidence-based therapeutic approaches.

There are a number of specific strategies inherent in an integrative approach that I believe could be transformative for bringing better health to all Americans.

IMPROVE CONSUMER ACCESS TO HEALTH INFORMATION

Health information technology, including electronic health records and interactive, web technology, can play a key role in enabling consumers to manage their own health information, become educated, and communicate with practitioners beyond the clinic-based encounter. We need electronic health records that have the functionality to capture all clinical encounters, including those with complementary practitioners, in order to overcome fragmentation, facilitate coordination of care and services (including preventive service reminders) and reduce errors. Judicious and secure use of the web would allow people to interface with their medical records and health care team, link to good information, identify local resources, and connect to social networks and counseling for help with weight loss, smoking cessation and wellness promotion activities. With the explicit development of consumer-friendly summaries of research findings by organizations such as the Cochrane Collaboration, high quality information can inform personal as well as professional decision-making on all health care options. Currently, there are over 600 systematic reviews on integrative medicine in the Cochrane database of systematic reviews. Efforts to conduct more reviews and consumer summaries are on-going and need to be accelerated in order to get the information to the public.

SUPPORT BETTER REIMBURSEMENT FOR PRIMARY CARE AND PREVENTION, COVERING A BROADER RANGE OF HEALTH CARE PRACTITIONERS AND HEALTH CARE MODALITIES

Primary care plays a vital role in promoting healthier lifestyles and identifying conditions early enough to limit severe health consequences. Within our current system, reimbursement rates for time-intensive primary care visits are significantly lower than those for specialty care visits. This has negative ramifications for both health and costs. Primary care physicians, such as family medicine doctors, have less time to get to know their patients or spend time on education and, with poorer reimbursement and increased time spent on paperwork, there has been a marked decline in the number of doctors going into primary care. This has resulted in a shortage nationwide, with a lack of care in many communities as well as over-reliance on specialists. We are also largely ignoring a valuable pool of health professionals who can provide primary care at lower costs. Removing insurance barriers to coverage of non-physician health providers would boost primary and preventive care. These providers include nurse practitioners, physician's assistants and health coaches or navigators as well as various complementary care providers including naturopathic physicians, who tend to focus on wellness.

We need to increase the public's access to complementary medicine therapies where there is evidence to support them. There is a growing body of scientific literature on complementary therapies (the Cochrane database now has over 23,500 complementary medicine clinical trials), and yet most people, including vulnerable populations such as the elderly, must pay out-of-pocket for services like acupuncture. Clinical trials and systematic reviews point to the safety and effectiveness of acupuncture for chronic pain conditions such as osteoarthritis and low back pain, and studies at our Center at the University of Maryland show cost savings and improvement in quality of life. Likewise, mind/body approaches, such as mindfulness meditation and yoga, are being shown to reduce chronic stress and related disorders, and enhance resilience. Through proactive use of these approaches we could substantially decrease the incidence of prevalent health disorders such as heart disease and diabetes which are some of the biggest burdens to our society. If Medicare increases primary care coverage and reimburses for acupuncture, mind/body therapies and other complementary medicine modalities, it will help push private insurers to do the same. For this to happen, an important step is to introduce a coding solution like the ABC codes into the HCPCS coding system. The existing coding does not adequately represent the services delivered by the vast majority of licensed health care practitioners (2.7 million nurses, 150,000 nurse practitioners and all of the complementary medicine providers) therefore accurate actuarial data cannot be generated to sort out what works from what does not. ABC codes have been successfully piloted in several of the State Medicaid programs and demonstrated real cost savings, but they have still not been adopted.

INVEST IN RESEARCH THAT HAS DIRECT IMPACT ON TRANSLATING KNOWLEDGE INTO PREVENTION, DIAGNOSIS AND TREATMENT OF DISEASE

Recent infusion of substantial funding into the National Institutes of Health as part of the American Recovery and Reinvestment Act of 2009 is much needed and should be dispersed with a mind to how we can improve the quality of our health care system. Currently, the predominant focus of NIH is on basic science research.

While there is a strong emphasis on translational research, this typically refers to the "bench to bedside" enterprise of harnessing basic science research to produce new drugs, devices and treatment options for patients. However, there is a second type of translational research that the Institute of Medicine's Clinical Research Roundtable describes as "the translation of results from clinical studies into everyday clinical practice." This enterprise is of particular interest to health services researchers and more directly addresses issues raised in the IOM's 2001 *Crossing the Quality Chasm* report by focusing on improving access to care, reorganizing and coordinating systems of care, helping clinicians and patients to change behaviors and make more informed choices, and strengthening the patient-clinician relationship. Both translational research approaches are vital, but health services research represents only 1.5 percent of biomedical research funding and yet for many diseases it could save more lives. If we redress this imbalance we will also focus more directly on behaviors that are conducive of health and well-being.

In addition, we need to increase funding for practice-based research networks and studies in clinical as well as community settings to test practical strategies to improve the quality of preventive and chronic illness care. We also need to fund research of multi-modality approaches to complex chronic problems, like lower back pain for example, where single therapeutic approaches have had minimal effect and a combination of modalities such as exercise, acupuncture, mind/body approaches, and anti-inflammatory medications may need to be used at the same time. Collaboration between our Center and the University of Maryland Shock Trauma Center also suggests combining modalities such as mind/body therapies and acupuncture with standard care may be useful in acute conditions, such as trauma, particularly for reducing pain and inflammation. We also need comparative effectiveness studies that involve head-to-head trials between interventions and this should include complementary therapies. For example, studies of osteoarthritis of the knee show the effect size of acupuncture to be equal to the effect size of many of the standard arthritis pharmaceuticals, but with a much improved safety profile.

TRANSFORM HEALTH CARE AT THE FRONT LINE

Health is influenced by factors in five areas—environment, behavior, genetics, social circumstances and health care. To have a truly effective health care system we must, therefore, involve all stakeholders in our communities at all stages of the life spectrum. There are some exemplary wellness initiatives being pursued along these lines in the State of Maryland that I would like to draw attention to in closing. One of these is at the Lockheed Martin corporation which is responsible for half a million lives and the other is the Howard County Health Department's Healthy Howard Initiative. Both have instigated a comprehensive "citizen-centered" (rather than "patient-centered"), community-based integrative approach that promotes health and wellness for their constituents. Key elements of both these initiatives include encouraging healthy communities (e.g., cafeterias and restaurants with no trans fats, no smoking policies, emphasis on exercise in the workplace or schools), health plans for all their constituents (in Howard County this includes those who are uninsured) with an emphasis on wellness promotion, incentives for individuals, such as lower deductibles if they engage in healthy behaviors (e.g. attending yoga classes or weight loss programs), and incentives for health professionals to engage in early intervention, preventive activities. We now need health care policies that will in turn provide incentives to businesses, communities and counties nationwide to adopt similar programs.

Substantial improvement in the health of all Americans can be achieved if we have the courage to reset our health care compass. Our health care system needs to shift from a predominant emphasis on disease management to one of prevention and, ultimately, promotion of optimal health across the lifespan. This won't be an easy task, but answering President Obama's call for a new era of responsibility, we should seize the opportunity and pursue the potential of integrative health. Thank you.

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INTEGRATIVE MEDICINE RESEARCH: CONTEXT AND PRIORITIES

Abstract.—*Integrative medicine research is important for the understanding of and effective, timely implementation of this new paradigm of health care. Integrative medicine is prospective and holistic, while patient-centered and personalized at the same time, focusing on health and well-being in addition to disease management. The scope of research thus extends beyond evaluation of specific therapies, including*

complementary and alternative medicine modalities, for safety and effectiveness in treating specific diseases. Integrative medicine research also includes evaluation of multi-modality whole system intervention, practitioner-patient relationship and partnership, patient goals and priorities in his sense of well-being, promotion of patient self-care and resilience, personalization of diagnostic and therapeutic measures to individual patients and the environmental/societal consequence of health care. In this paper, we describe the state of science of integrative medicine research, research needs, and the opportunities offered by cutting edge research tools. We will propose a framework for setting priorities in integrative medicine research, list areas for discussion, and pose a few questions on future research agenda.

INTRODUCTION

Integrative medicine refers to a new paradigm of health care that is prospective and holistic, while patient-centered and personalized at the same time, focusing on health and well-being, in addition to disease management. The *scope of research* within integrative medicine as discussed in this paper is not only the evaluation of specific Complementary and Alternative Medicine (CAM) therapies for safety and effectiveness in treating specific medical problems (the Institute of Medicine published its report *Complementary and Alternative Medicine in the United States* in 2005). Integrative medicine research also includes multidisciplinary whole systems interventions; clinician-patient interactions; patient goals and priorities; the value of meaning; patient self-care; environmental factors and social policies affecting health quality; and system factors affecting availability of resources that promote health, health behaviors, or health care. Research must also address patient-centered care in the context of family, culture, and community. The research agenda for integrative medicine is by nature broad and comprehensive, rather than being focused solely on the effects and mechanism of selected therapies.

There is a lack of a critical mass of research evidence about integrative medicine and the effect of this approach on health care; this lack hampers understanding and effective, timely implementation. One challenge for research even in the limited realm of therapeutic effectiveness concerns the definition of "effectiveness." Is it simply a change of a physiological parameter like blood pressure or survival time? Or an improved overall sense of well-being? Or can there simultaneously be multiple definitions, multiple goals? Who should define them—policymakers, clinicians, patients, or families? Another challenge is that interventions in integrative medicine are often multi-faceted with complex unknown interactions among the components. Therapies delivered as a multi-factorial "system" rather than a simple treatment regimen present challenges to design studies that are rigorous yet provide results that are meaningful in real-life clinical practice. Similarly, while traditional biomedical research focuses on one particular disease outcome, integrative care often addresses multiple health concerns within a single individual; new research models may need to be developed to address the challenges inherent in many simultaneous treatments for multiple health concerns. For example, inclusion of all patient-important outcomes in consideration to create the best evidence has been incorporated in the Grades of Recommendation Assessment, Development and Evaluation Working Group (Guyatt et al. 2008).

These challenges offer a fertile ground for the development of innovations to advance science. In this paper, we describe the state of science of integrative medicine research, research needs, and the opportunities offered by cutting edge research tools. We will propose a framework for setting priorities in integrative medicine research, list areas for discussion, and pose a few questions on the future research agenda.

CONTEXT: STATE OF THE SCIENCE, RESEARCH NEEDS, AND INTEGRATION WITH CUTTING EDGE RESEARCH TOOLS

RESEARCH METHODOLOGY

Study Design

Integrative medicine researchers have broadly adopted the paradigm of evidence-based medicine (EBM)—the randomized controlled trial (RCT). There is no disagree-

*The responsibility for the content of this paper rests with the authors and does not necessarily represent the views or endorsement of the Institute of Medicine or its committees and convening bodies. The paper is one of several commissioned by the Institute of Medicine as background for the Summit on Integrative Medicine and the Health of the Public. Reflective of the varied range of issues and interpretations related to integrative medicine, the papers developed represent a broad range of perspectives.

ment that the RCT method helps reduce multiple sources of bias. Although RCTs are often viewed as the gold standard, it is not possible to conduct RCTs for each research question we have, due to logistic, economic, or ethical concerns. RCTs do not include patients who do not fit rigorous entry criteria (such as those unwilling to be randomized), which limits generalizability. RCTs also only provide population or group estimates of *likely* outcomes rather than assurances of individual outcomes with treatment. While the strongest conclusions and inferences can be reached when there is concordance between research using different methods (e.g., RCT and prospective cohort methods), such concordance is not always found, such as the different conclusions reached by cohort versus RCT studies of hormone replacement therapy (Chlebowski et al. 2003; Wassertheil-Smoller et al. 2003), antioxidant supplements to prevent cancer (Bardia et al. 2008) or decreased risk of dementia/cancer in patients using statins (Shepherd et al. 2002). Observational studies have provided important insights such as the role of smoking, radiation, hormone levels, and high meat diets in the development of different kinds of cancer, lipids and coronary disease, hypertension and stroke, and sleeping position and sudden infant death syndrome (Rothwell and Bhatia, 2007). *Researchers need to recognize that different kinds of research serve complementary functions in developing balanced and mature evidence (Avorn, 2007).*

Outcome Assessment Tools

Optimal health in integrative medicine refers to a state of well-being of the whole person—physical, mental, social, and spiritual (Gaudet and Snyderman, 2002; Maizes and Caspi, 1999; Singer et al. 2005; Snyderman and Weil, 2002). With this multi-dimensional definition of health in mind, outcome measurements in integrative medicine research would need to expand beyond reduction of a specific symptom or reversal of a specific disease process (Bell et al. 2002; Long, 2002).

Integrative medicine researchers can make use of outcome measurement methods developed in other disciplines of medicine, especially those emphasizing functional performance in addition to structural integrity and those taking into consideration the psychological and societal impact of disease (Coons et al. 2000), such as rheumatology (Ward, 2004), neurology (Miller and Kinkel, 2008; von Steinbuechel et al. 2005), geriatrics (Burns et al. 2000; Demers et al. 2000), rehabilitation (Andresen and Meyers, 2000; Donnelly and Carswell, 2002), and pain and palliative care (Turk et al. 2002). They form a foundation from which integrative medicine researchers can build a truly global outcome measurement system.

Another important aspect in outcome measurement is the role of the patient. In patient-centered care, what patients perceive is equally, or perhaps more, important than what physiological parameters tell us. Integral to this process is incorporating individual patient preferences in considering appropriate study outcomes (Guyatt et al. 2000). Information about patient preferences can be obtained from decision analyses, cost-effectiveness analyses, studies of social values, one-on-one interviews, focus groups, and interviews of citizen juries and other novel sources (Ryan et al. 2001). The value of patient-reported outcome measures is increasingly being recognized by the medical community (Clauser et al. 2007; Lipscomb et al. 2007). Integrative medicine researchers can incorporate what was learned into their own studies and develop new methods tailored to their own practice models (Hull et al. 2006; Sagar, 2008; Verhoef et al. 2006a).

Application of Information Technology

The impact of information technology (IT) on integrative medicine is enormous. Easy and instant access to a vast amount of health-related information on the Internet via search engines such as Google and Wikis plays a large role in patients' senses of empowerment. This decentralization of information makes practitioners not the sole source of information. Meanwhile the information, not uncommonly inaccurate, false, or contradictory, overwhelms, confuses, and frustrates patients. On the other hand, information technology provides researchers with numerous tools which have not been utilized adequately.

IT can be used to enhance research in its capacity as a communication tool in many ways.

1. E-mails improve communications between providers and patients (Mandl et al. 1998; Roeder and Martin, 2000). Would e-mail communications encourage a patient's stake in self-care, facilitate timely management of emerging medical problems, or reduce unnecessary utilization of health care resources? Would e-mail communications help monitor patient responses and adverse events, improve patient compliance, and refine patient-centered outcome evaluation in clinical studies? These are interesting research questions.

2. Online support groups, bulletin boards, chat rooms, blogs, and social network sites are frequented by patients to exchange notes on their diseases and health care providers. These media, by their nature, are part of the social context of a patient health care experience. They can be used to learn patients' perspectives of the medical problems. Participation of providers in those discussions, medicolegal issues notwithstanding, could promote provider-patient partnership. They also serve a venue to reach a large number of patients eligible for research studies.

3. The raw computing power available to researchers has made certain previously impossible research feasible now. This is most obvious in bioinformatics and personalized medicine. IT enables the processing of the astronomical amount of information generated from genomic studies and establishing links between genomic variations and clinical outcomes.

4. Image processing technologies can be used to standardize and quantify some of the diagnostic techniques in traditional medicine. For example, image digitalization and analysis of the appearance of the tongue and complexion in Traditional Chinese Medicine would help eliminate evaluator biases (Dong et al. 2008; Pang et al. 2004; Zhang et al. 2005).

5. Web 2.0 technology (Giustini, 2006) provides a social, collective, and collaborative platform that simplifies data creation, integration, sharing, and reuse. It fosters collective intelligence to create and discover new knowledge (Zhang et al. 2008b). When expanded beyond the research community, it also presents a platform in education to other health care providers and the public (Bender et al. 2008; Eysenbach, 2008).

6. Finally, artificial intelligence has potentials in contributing to whole-system research (Patel et al. 2008; Ramesh et al. 2004). Many traditional medical systems rely on pattern recognition for diagnosis. For example, diagnoses in Ayurvedic medicine or Traditional Chinese Medicine are established by a constellation of findings during patient interviews and physical examinations that are seemingly unrelated when viewed through the eyes of Western medicine. However, recognition of those patterns may represent empirical knowledge on clinical manifestations of some yet nondelineated pathophysiological links (Zhang et al. 2008a).

EPIDEMIOLOGICAL STUDIES

The large numbers of epidemiological studies in integrative medicine have been on the use of CAM (Barnes et al. 2004; Eisenberg et al. 1998; Eisenberg et al. 1993; Ritchie et al. 2005; Wilson et al. 2006; Yussman et al. 2004). Several population-based surveys have included a CAM component including: the 1999 and 2002 National Health Interview Survey; 1994 Robert Wood Johnson Foundation National Access to Care Survey; 2001 Michigan State Behavioral Risk Factor Surveillance System; 1997 National Health Expenditures Survey; 2001–2003 National Comorbidity Survey Replication; and 1996 Medical Expenditure Panel Survey (Ni et al. 2002; Paramore, 1997; Rafferty et al. 2002; Ritchie et al. 2005; Wang et al. 2005). Much of what we know about CAM utilization comes from these surveys, and continued collection of this data is essential to further understanding of the field. Research describing integrative medicine programs including how they were established, the services offered, and the training and research projects they are conducting are emerging (Boon and Kachan, 2008; Deng, 2008; Katz et al. 2003).

It would be beneficial to the field if a standardized survey could be created to gather data about CAM and integrative medicine use. This standardized survey could then be made publicly available to all researchers conducting population-based surveys. This may be the most efficient way to collect descriptive data about integrative medicine's utilization, cost-effectiveness, and the characteristics and satisfaction of the individuals who use it. Continuation of the CAM supplement to the National Health Interview Survey (NHIS) is a minimal requirement to maintain an understanding of the utilization of CAM in the United States. *Efforts should be made to review and update the supplemental questions in the NHIS to be sure that they reflect changes and trends in the field, such as including questions specifically about integrative medicine and CAM treatments recommended by conventional providers.*

BASIC SCIENCE RESEARCH

Mechanistic Studies of Specific CAM Modalities

Mechanistic studies have begun to elucidate biomedical mechanisms to explain clinical effects of CAM therapies. For biologically based therapies such as botanicals, the research generally identifies the (presumed) active constituent(s) of the study agents and the physiological pathways through which those constituents affect physical systems (Ribnicky et al. 2008). This approach is highlighted in the NIH Botan-

ical Research Centers Program, where researchers "identify and characterize botanicals, assess bioavailability and bioactivity, explore mechanisms of action, conduct preclinical and clinical evaluations, and help select botanicals to be tested in clinical trials" (Barnes et al. 2008b). Isolating active compounds and their derivatives has led to the development of many pharmaceuticals currently used in clinical practice, such as the taxanes and camptothecins in cancer chemotherapy (Wall and Wani, 1995). However, the complex composition of botanicals may contain multiple compounds that synergize for a greater total activity than individual constituents (Raskin et al. 2002; Rong et al. 2008; Schmidt et al. 2008; Ye et al. 2007). Studying natural products with complex composition presents challenges, such as standardization and quality control, unknown active constituents, multiple potential biological targets, and complex interactions among the constituents (Khan, 2006; Yeung et al. 2008). Newer experimental paradigms are needed to assess the differential effects of complex mixtures versus simple compounds. Similar to conventional pharmacotherapy, this research needs to also take into account the effects of secondary metabolites of botanicals on biological materials.

Mechanistic studies of energy medicine, manipulative practices, and mind-body therapies involve delineation of the physiological pathways modulated by them. For example, research in "psychoendoneuroimmunology," focuses on an interdisciplinary study of interactions among behaviors, the conscious mind, the utonomic nervous system, hormones, and immune functions (Kiecolt-Glaser and Glaser, 1995; McEwen, 2007). Through such research, the relationships between stress and disease, especially stress and immune function, are being explored (Ehlert et al. 2001; Gaillard, 2001; Kiecolt-Glaser and Glaser, 1992; McEwen, 2008; Miller and Cohen, 2001). The neuroendocrine stress response and immune systems have a bidirectional relationship that can affect susceptibility to inflammatory diseases. Individual variability in neuroendocrine responsiveness may contribute towards the efficacy of mind-body therapies (Marques-Deak et al. 2005).

The brain plays a central role as a target of stress and stress therapy. Neuroplasticity, a dynamic process that constantly alters the neurochemical, structural, and functional components of the nervous system related to experience would be a worthwhile target to study with mind-body interventions. Some of the examples of the effect of mind-body approaches on brain structure include the increase in prefrontal cortex volume following cognitive behavioral therapies in patients with chronic fatigue syndrome (de Lange et al. 2008) and increase in pre-frontal cortex and right insula volume with meditation (Lazar et al. 2005). The role of neurotrophins, particularly Brain Derived Neurotrophic Factor (BDNF) as a mediator for neuroplasticity is beginning to emerge and needs to be further characterized with respect to mind body intervention (Hennigan et al. 2007). The brain is a malleable organ and the lack of resilience may be a key aspect of anxiety and mood disorders, as well as other systemic problems.

Like psychotherapy, many behavioral and mind-body interventions require active patient participation, which cannot be reproduced in animal studies. Advances in functional neuroimaging technology such as functional Magnetic Resonance Imaging (fMRI) or Positron Emission Tomography (PET) can demonstrate changes in activity in regions of the brain in real-time and enable us to study the complex neuronal matrix involved in real-world emotional and social experience (Eisenberger et al. 2007). The technology has been used to study mind-body therapies or energy-medicine modalities in recent years (Lewith et al. 2006). For example, anterior cingulate cortex and dorsolateral prefrontal areas appear involved in meditation (Cahn and Polich, 2006). Activities in the thalamus, insula, and cingulate cortex, areas involved in processing of pain signals, are modulated by meditation (Kakigi et al. 2005; Orme-Johnson et al. 2006) and acupuncture (Cho et al. 2006; Dhond et al. 2007). The specific neurobiologic changes that might mediate the placebo effect could offer innovative therapeutic insights. A recent example of this is the effect of placebo on endogenous opioid release in core affective brain regions (Wager et al. 2007). The efficacy of placebo effect on enhancing frontal modulation of nociceptive sensory and/or affect processing and individual variability in placebo responsiveness as a predictor of efficacy of mind-body interventions is an interesting area for future exploration (Benedetti et al. 2005; Oken, 2008).

Because physiological pathways are increasingly understood to be nonlinear and multidimensional, traditional laboratory approaches tend to be too simplistic to capture the complexity of real clinical situations. Advanced mathematical and statistical modeling techniques will be important to advance research in the complex systems of integrative medicine. Sensitive and noninvasive methods that can measure multiple biomarkers are likely to help identify pathways that may be selectively affected by different interventions. A good example of this strategy is the use of sweat

patch method for measuring neural and immune biomarkers in sweat (Cizza et al. 2008; Marques-Deak et al. 2006).

Application of Genomic Science To Personalized Health Care

Some technologies developed in genomic sciences can be harnessed to enhance integrative medicine research, in particular towards personalized health care. Genomics refers to the study of all the genes of a cell, or tissue, at the DNA (*genome*), mRNA (*transcriptome*), or protein (*proteome*) levels. It is well known that individuals respond differently to risk exposure and interventions. More knowledge of the DNA sequence of the human genome and the function of individual genes and their variants makes it possible to identify individuals at risk for a particular medical condition or responsive to a particular intervention.

Variations at nearly 100 regions of the genome have been associated with an increased risk for diseases with a complex genetic background, such as diabetes, inflammatory bowel disease, cancer, and heart disease (Chanock and Hunter, 2008). For example, single nucleotide polymorphisms (SNPs) in a region of the long arm of chromosome 15 were identified as strongly associated with lung cancer (Amos et al. 2008; Hung et al. 2008; Thorgeirsson et al. 2008). This region contains nicotinic acetylcholine receptor subunit genes. Genetic variants in nicotinic receptor genes were found to be linked to nicotine dependence and smoking behavior, which may explain why some patients are particularly resistant to smoking cessation measures (Berrettini et al. 2008; Saccone et al. 2007).

Another example is how individuals respond differently to nutrients (*nutrigenomics*) (Trujillo et al. 2006). Individuals with one genetic variant of an intestinal fatty acid-binding protein gene have significantly greater decreases in plasma total and low-density lipoprotein (LDL)-cholesterol and apoB when consuming a diet rich in soluble fiber (Hegele et al. 1997). Better understanding of nutrigenomics would help us in understanding the "individuality" of one's response to bioactive food components (Milner, 2008). The Institute of Medicine has held a workshop to review the state of nutritional genomics research and to provide guidance for further development and translation of this knowledge into nutrition practice and policy (Stover and Caudill, 2008).

The ever-expanding database in *pharmacogenetics* helps us understand why individuals respond quite differently to the same biological intervention. For instance, the best responses to erlotinib treatment in patients with nonsmall-cell lung cancer are seen in those who have mutations in epidermal growth-factor receptor, the target of erlotinib (Rosell et al. 2006). Differences in response to drugs or dietary supplements may also come from varied metabolism (Kadiev et al. 2008). CYP2D6 is one of the major drug-metabolizing enzymes involved in converting codeine to morphine. CYP2D6 gene is highly polymorphic, with more than 100 allelic variants in the population. Depending on the allele combinations, a patient can be a poor, intermediate, extensive, or ultra-rapid metabolizer. Extensive metabolizers may have markedly increased risk of side effects while poor metabolizers would experience poor efficacy of the drug (Somogyi et al. 2007).

Epigenetics refers to the study of heritable changes in gene function that occur without a change in the DNA sequence (Riddihough and Pennisi, 2001). Such changes can occur via mechanisms such as DNA methylation, chromatin structural modifications, and RNA interference (Jenuwein and Allis, 2001; Okamura and Lai, 2008; Reik et al. 2001). Inspired by the Human Genome Project, researchers are working to provide high-resolution reference epigenome maps and speed progress in epigenetic research (the Alliance for the Human Epigenome and Disease) (Jones, 2008). Epigenetics takes into consideration the effects of the environment on gene expression patterns that can be passed along to daughter cells, setting the stage for disease preventive interventions to have a lasting effect. For example, epigenetic alterations often are involved in the earliest stages of tumor progression, and usually precede genetic changes in the cell and tumor transformation (Toyota and Issa, 2005). These findings may lead to novel cancer prevention strategies early in the cancer pathogenesis process (Sawan et al. 2008), including use of botanical agents or nutritional approaches (Kirk et al. 2008).

Although these technologies are exciting and promising, they are expensive and require additional development before their results can be translated into effective clinical care. At this point, the science to make personalized treatment decisions is available at a level of confidence only for a handful of diseases. *Much work needs to be done to achieve the ideal of personalized integrative medicine based on genomic technologies.*

Therapeutic Clinical Trials and Meta-Analysis

To date, the majority of clinical trials in the field of integrative medicine have focused on evaluating single components from the system for efficacy in treating a specific medical condition (e.g., St. John's Wort for depression, a specific set of acupuncture points for headaches, a protocol of chiropractic adjustments for low-back pain, or melatonin for insomnia). It is beyond the scope of this paper to provide a summary of all the clinical trials conducted in the field, but a search of Medline resulted in nearly 6,500 randomized controlled trials under the medical subject heading of complementary therapies, which was only created in 2002. In some cases, there have been enough studies on a particular treatment and condition to result in a systematic review or meta-analysis (nearly 3,000 systematic reviews and 400 meta-analyses are found in Medline when using the complementary therapies subject heading). The Cochrane Database of Systematic Reviews has published more than 600 articles related to complementary therapies as of November 2008. Readers are referred to those reviews for a summary of findings in clinical trials (Bausewein et al. 2008; Bjelakovic et al. 2008; Dickinson et al. 2008; He et al. 2007; Horneber et al. 2008; Maratos et al. 2008; Priebe et al. 2008; Zhu et al. 2008).

A common limitation of several nonpharmacologic interventions is difficulty with blinding, with the related issue of finding a credible control intervention. Some of the approaches used in the fields of surgery and psychology that might be applicable here include blinding participants to the study hypothesis, use of sham training approaches, sham procedures, similar attention-control interventions, and blinding of outcome assessors (Boutron et al. 2007). Incorporating elements of the CONSORT statement for the nonpharmacologic treatments at the time of clinical trial design might help with the quality of study design (Boutron et al. 2008). *Taking a broad, patient-centered approach and including mixed outcomes that evaluate the basic mechanisms (such as modern imaging studies) and combining them with safety, economic, and patient relevant outcomes data will likely increase the strength of the evidence even if the study can only be designed as a single-blind (investigator) trial.* A related issue is the importance of maintaining objective neutrality on the part of the investigators. This is particularly so for nonpharmacologic interventions because, for example, part of the effect of a treatment modality such as the acupuncture part of the effect may be related to the context and process of Traditional Chinese Medicine (TCM) (Paterson and Dieppe, 2005).

Identification and inclusion of generalizable molecular markers that have been correlated with stress and are responsive to stress management (such as telomerase activity and telomere maintenance capacity in human immune-system cells) will likely increase the credibility of study findings and provide more objective surrogate outcome measures (Epel et al. 2004; Ornish et al. 2008). Incorporation of noninvasive methods to measure immune system outcome measures will not increase the disease burden while obtaining additional rich data (Cizza et al. 2008; Marques-Deak et al. 2006).

A challenging issue in studying biologically based therapies, such as dietary supplements, is an ability to secure a consistent study agent with multiple and sometimes unknown active constituents (Harkey et al. 2001). Careful selection of the study population and endpoints is crucial for the success of the trial. A structured, well-thought-out approach needs to be developed so that the limited resources available are optimally utilized for testing interventions with a high potential for efficacy (Vickers, 2007), particularly in light of several recent expensive negative trials with dietary supplements (Atwood et al. 2008; Bent et al. 2006; Clegg et al. 2006; Shelton et al. 2001; Taylor et al. 2003).

Attention need to be paid to the scope and overall design of the study with the intent to balance internal validity with external generalizability. For example, for dietary supplements, phase I/II trials that might be helpful towards dose establishment and assessment of safety before embarking on expensive phase III trials (Vickers, 2006; Vickers et al. 2006). For mind-body, energy-based, and manual interventions, the initial focus should be on creating a structured and reproducible intervention, consistent with how they are practiced in real life along with an appropriate control group.

Combining data for a meta-analysis can be particularly challenging in the field of integrative medicine. For example, there are hundreds of forms of Qi Gong and each is used traditionally for different reasons; there are several traditions of acupuncture and many different needling techniques; herbal preparations can vary greatly depending on the growing conditions and extraction methods. The appropriateness of merging such a diverse group of therapies in meta-analysis and the resultant conclusions is subject to debate.

Whole Systems Research and Multi-Modality Studies

A new trend in integrative medicine research is the push for "whole systems" research, which strives to examine the effect of a multi-modality health care approach to provide individualized treatment, since this will more accurately evaluate the health care currently being provided to patients. There are several commentaries in the literature urging integrative medicine researchers to consider research methods beyond the RCT (Boon et al. 2007; Cardini et al. 2006; Fonnebo et al. 2007; Ritenbaugh et al. 2003). One example of whole systems research is the study by Ritenbaugh et al. who examined the effect of whole system TCM versus naturopathic medicine versus standard of care for the treatment of tempromandibular disorders (Ritenbaugh et al. 2008). In this study, improvement was seen in temporomandibular disorders when participants were randomized to whole systems treatment interventions beyond that seen in the standard care group (Ritenbaugh et al. 2008).

Several investigators have discussed the need to use more complex methods of analysis so that these systems of health care can be examined, rather than the efficacy of each part of the system (Bell and Koithan, 2006; Ritenbaugh et al. 2003; Verhoef et al. 2005). Some suggest using network and complex system analysis as methods for assessing whole systems research; however, it is critical for researchers interested in these methods to work with skilled biostatisticians experienced with these more complex statistical methods (Bell and Koithan, 2006). Verhoef et al. encourage researchers to add qualitative measures to studies because they can provide a source of data for unexpected outcomes and a way to measure the broader effects of a whole system, such as integrative medicine (Verhoef et al. 2005). It is important for researchers in the field of integrative medicine to consider the range of effects the treatments may have for patients, and thus to measure a broad area of outcomes in order to detect these effects.

BEYOND THERAPEUTIC CLINICAL TRIALS

Individual Resilience and Hardiness

Of the three variables in the triangle of disease causation (agent, host, and environment), host factors remain suboptimally addressed in modern medicine. Other medical systems consider strengthening the host as a primary focus. Resilience and hardiness refer to positive abilities and skills of an individual in response to stress and adversity (Rutter, 1987). In adults, the components of "hardiness" include: commitment (ability to find meaning in events); control (belief in internal locus of control); and challenge (belief that challenging experiences provide an opportunity for learning and growth) (Kobasa, 1979). In children, three correlates of resilience have been noted: (1) personality disposition (e.g., humor, critical thinking skills, problem solving skills, self discipline, internal locus of control, self-esteem, positive outlook, positive expectancies, and effectiveness in work, play, and love) (Luthar, 1991; Rutter, 1985, 1987; Werner, 1989); (2) family ties and cohesion; and (3) external support systems (Garmezy, 1993). Exposure to stress and traumatic events is common, but, not all of those exposed develop post-traumatic stress disorder (PTSD) or other negative health outcomes. Hardiness is correlated with positive health outcomes (Bartone et al. 1989; Ford et al. 2000; Williams and Lawler, 2001). Individual aspects of resilience are also associated with positive outcomes (Livanou et al. 2002; Yi et al. 2008). For example, greater pre-event internal locus of control prevents PTSD in women giving birth (Soet et al. 2003) and maintaining treatment gains for patients with PTSD. Resilience is thus an important concept in the fields of physical, mental, and spiritual health. *Additional research is needed to enhance understanding of hardiness or resilience factors that protect an individual from developing physical and emotional illness in the face of stress, to identify optimal strategies in developing resilience within integrative medicine, and to identify social factors that can be modified to support hardiness to promote public health.*

Social Factors and Practitioner-Patient Relationship

Social support enhances resilience (Turner et al. 2003; Regehr et al. 2000; King et al. 1998; Perry et al. 1992). A strong network of friends was associated with improved survival in the elderly (Rodriguez-Laso et al. 2007; Giles et al. 2005). The effect of social support on physical health and longevity may be mediated through improved depressive symptoms, perception of a better quality of life, better health care access, improved compliance with treatments, positive effects on the immune system, a sense of engagement, continued learning, and a feeling of purpose in life (Ciechanowski et al. 2004; Cohen et al. 2007; Reichstadt et al. 2007; Schwartz, 2005). Providing social support to others might have an even greater impact on survival than receiving social support (Brown et al. 2003). Practitioners can offer mean-

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ingful social support that enhances health outcomes (Fogarty et al. 1999; Ganz, 2008). When individuals become a caregiver of a family member with a chronic disease, it is important to assess the strain and burden of this role and provide support and coping strategies to help maintain wellness of the caregiver (Honea et al. 2008; Raina et al. 2004; Weitzner et al. 2000).

Integrative medicine emphasizes the importance of the *relationship* between practitioner and patient to achieve optimal health and healing through shared decision-making (Merenstein et al. 2005; Quinn et al. 2003). There has already been an enormous body of research in the area of the doctor-patient relationship (and more broadly, the health professional and patient) and the process of care (e.g., access, length, practice patterns, cost). There has also been substantial research in related areas such as social support (Cohen et al. 2001; Runyan et al. 1998); communication (Grunfeld et al. 2008; Langewitz et al. 2002); patient-centered care (Anderson et al. 2003; Mead et al. 2002); empathy (Bikker et al. 2005; Mercer and Howie, 2006; Mercer et al. 2008); effective ways of promoting behavior change (Barkin et al. 2008; Bell and Cole, 2008; McCambridge et al. 2008); different types of clinical encounters (e.g., individual versus group; in-person versus telephone or internet) (Hersh et al. 2001; McConnochie et al. 2006; Modai et al. 2006); patient satisfaction (Esch et al. 2008; Marian et al. 2008; Mermod et al. 2008); trust (Hall, 2006; Hall et al. 2002); and team-building and shared governance (Hope et al. 2005; Sierchio, 2003). To date, *little of this research on the processes of relationship-based care has been synthesized and integrated into the field of integrative medicine.* For example, research on acupuncture now often includes placebo needles, but has not examined closely the process of building the relationship between therapist and patient or compared the processes of care provided by acupuncturists with that provided by other practitioners; nor have comparisons been made about the relationships among team members on traditional medical multidisciplinary teams (e.g., clinician, nurse, social worker, physical therapist, occupational therapist) with integrative teams (e.g., naturopathic practitioners, nutritionists, acupuncturists, massage therapists).

Patient's Participation In Self-Care

How to inspire, motivate, empower, and facilitate patient self-care is an important issue in integrative medicine. Self-care is a two-dimensional construct that includes processes for health in self-care practice and action capabilities (Hoy et al. 2007). The processes include life experience, learning processes, and ecological processes. Action capabilities include power and performance capabilities.

The primary aim of inspiring, motivating, and empowering patients is towards a single goal—being able to bring about a positive behavior change. Several models have been developed to address behavior change. These include models based on attachment theory (Ciechanowski et al. 2001); the chronic care model (Bodenheimer et al. 2002); (Wagner, 1998); the extended parallel process model (Gore and Bracken, 2005); the health belief model (Champion, 1984; Jones et al. 1987); the problem solving model (Alley and Brown, 2002; Peter et al. 2006); the self management model (Price, 1993; Walker et al. 2003); social cognitive theory (Anderson et al. 2007; Hortz and Petosa, 2008); the transtheoretical model (Prochaska, 2006; Prochaska and Velicer, 1997); and the theory of reasoned action (Feeley, 2003; Hedeker et al. 1996). A common theme that emerges from a critical evaluation of all these models is that a planned intervention should ideally incorporate several essential components for successful behavior change. The two steps in this process involve assessment and action. Components of assessment include ascertaining the need for behavior change, resources, individual perception of need for change, and self efficacy. Most of these models were developed to address a specific medical condition. *There exists a need to test behavior change models within the context of multiple complex medical conditions that is representative of the patient population today.*

Comprehensive, integrative treatments recommendations, even for patients with a single diagnosis, involve lifestyle modifications as well as medications, resulting in *complex, multifaceted treatment plans* (Bell and Kravitz, 2008). Although most research on adherence has focused on medications, little is known about the impact of combining advice about medications with advice about other lifestyle factors on adherence to the pharmaceutical regimen. Lifestyle counseling appears to increase patient satisfaction, but its overall impact on cost of care and adherence is largely unknown (Harting et al. 2006; Johansson et al. 2005). Furthermore, adherence to specific recommendations may vary according to *patients' explanatory models* (Abraham et al. 2004). For example, patients who believe their hypertension is related to stress may be more adherent to recommendations about stress management, while patients who believe their blood pressure is purely a genetic or biochemical problem may be more adherent to pharmaceutical regimens (Hekler et al. 2008).

Similarly, patients may invoke biochemical, genetic, personality, stress, cognitive, karmic, spiritual, environmental, weather-related, astrological, or energetic explanations, or some combination of these factors for their symptoms and experiences. Different explanatory systems could have dramatically different impacts on patients' willingness to embark on or adhere to different treatment regimens. *Research on how to best match patients' explanatory models and disease pathophysiology with optimal treatment options and the impact of matching/mismatching on adherence, clinical outcomes, and satisfaction with care and cost of care is needed.*

The Global Village—Health Care And Societal Consequences

Integrative medicine looks beyond individual health behaviors to larger *environmental, social, and educational* factors affecting health. Research has begun to establish the critical role of the environment on human health (Diaz, 2007; Johnson et al. 2008; Usta et al. 2008; Wilkinson, 2008). Research will play an important role in determining the *most effective, efficient, and equitable strategies for translating new knowledge about environment into integrative clinical practice.* Providing conventional *health care also impacts the environment* (e.g., pharmaceuticals contaminating drinking water supplies; biological and technical waste disposal; incineration of mercury, PVC, and other products) which in turn affects human health (Barnes et al. 2008a; Gaudry and Skiehar, 2007; Hiltz, 2007; Rabiet et al. 2006; Tudor et al. 2008; Zakaria and Labib, 2003). Integrative medicine explicitly attempts to provide care that is "green" and health promoting; the extent to which integrative care is more environmentally friendly than conventional care is unknown. Furthermore, there is strong evidence that stress adversely affects health; yet little research has addressed ways in which health care institutions can effectively improve their environment, reducing stress for both clinicians and patients. Finally, it is well known that social support mitigates against the pernicious effects of many stressors, and some hospitals (such as pediatric hospitals) have made efforts to improve family support (e.g., individual rooms allowing family members to remain with patients), yet there has been little systematic research on the most cost-effective strategies to improve social support for patients, family members, clinicians, or staff within health care institutions or the impact of such changes on health outcomes. *Research is needed to address ways in which integrative health care providers and institutions can reduce their adverse environmental impacts and promote positive healing environments while providing high quality affordable, effective, comprehensive care.*

Furthermore, advances in media, communication, commerce, and transportation technologies have resulted in well-documented changes in health behaviors (e.g., decreases in fruit and vegetable intake, increases in sedentary behavior); access to health information and misinformation; and access to health services (e.g., internet counseling, international travel for surgical procedures, telemedicine) (Breckons et al. 2008; Ebrahim et al. 2007; Houpt et al. 2007; Khazaal et al., 2008; Nava et al. 2008; Trotter and Morgan, 2008; Tsitsika et al. 2008), and professional education. Integrative medicine has been a leader in providing online courses (e.g., through the University of Arizona Center for Integrative Medicine) (Beal et al. 2006; Hadley et al., 2007; Kemper et al. 2006). *Research is needed to determine the most cost-effective and equitable strategies to provide integrative medicine and health education using modern telecommunications including telephone, internet, webinars, and teleconferences for both individual and group models.*

Social policies also profoundly affect health, and *integrative medicine, as a holistic discipline, must include research to better understand the impact of health policies on overall health.* For example, public energy policies that promote the use of coal-fired power plants (resulting in mercury-contaminated fish); agricultural policies that promote monocultures of corn, wheat, and soy (resulting in inexpensive and obesogenic diets); educational policies that rely on income from vending machines in schools (providing unhealthy nutritional options); school lunch programs (providing less than optimal nutrition); transportation policies that promote automobile rather than public transportation (increasing sedentary behavior as well as promoting global climate change); and zoning policies that promote sprawl all have important health consequences. Little research has been conducted to evaluate the health consequences of variations in social policies about agriculture, transportation, education, or energy. Such studies might include regional comparisons in the United States or comparisons of the effects of policy variations between countries and over time on broad health outcomes.

Also, public policies that affect payments for certain kinds of health care providers (e.g., M.D., DO, DC) and a few kinds of therapy (e.g., prescription drugs and surgery) may have very different impacts on health outcomes, as compared to policies promoting payment for fitness club memberships, massage, and nutritional supplements. Little research to date has examined the effects of different reimbursement

plans on health outcomes. Furthermore, most fee-for-service plans provide professional payments based on RVUs and DRGs, rather than on health outcomes (e.g., whether or not they help patients feel better or function more productively). Our reimbursement schemes favor short, repeated visits in which patient health does not necessarily improve. Research showing the benefits of certain kinds of care (e.g., patient-centered, good communication skills, stress reduction coaching, lifestyle coaching) in the absence of policies supporting their financial viability appear unlikely to be sustainable. *Thus, research is needed regarding the effective translation of knowledge about the environment and behavior into effective social policies and reimbursement schemes.*

Setting Priorities for the Integrative Medicine Research Agenda

framework to set priorities

Given the large number of research areas that need to be addressed and limited resources, a systematic approach to prioritizing projects is needed. A model has been proposed that includes attention to high priority conditions, populations, therapies, and a comprehensive view of important outcomes (Kemper et al. 1999).

Conditions

Priority should be given to conditions and diseases that satisfy the criteria in Table 1: those that impose a heavy burden of suffering to patients and costs to society for which current therapies are insufficient and for which integrative approaches offer a reasonable likelihood of being helpful and are already in use. Examples include anxiety, asthma, attention deficit disorder, back pain, cancer, cardiovascular diseases, chronic and severe pain syndromes, depression, developmental disorders, insomnia, obesity/metabolic syndrome, recurrent respiratory infections, rheumatic and autoimmune disorders, and addictive disorders.

Table 1.—Criteria for Conditions, Diseases, and Risky Health Behaviors With High Priority for Integrative Medical Research

Those that:
Impose a heavy burden of: suffering on individuals, families or the community either because of their severity, chronicity, or prevalence; and
For which current mainstream therapies are unacceptable or insufficient because of: lack of proven efficacy, substantial side effects, cost, or lack of availability; or
Which integrative medicine offers a reasonable likelihood of being helpful based on: proven safety in animal models, and lengthy historical use or compelling results from case reports, case series, epidemiologic studies, case-control trials or cohort studies, or clear scientific rationale; and
Which families and practitioners are already using integrative approaches.

Therapies

Therapies requiring additional professional intervention are also priorities for research because of the substantial costs associated with professional care. Thus, research on the effectiveness, safety, and costs of chiropractic, acupuncture, electroencephalographic biofeedback, hypnosis, or other mind-body techniques requiring licensed professional therapists should be high priorities (Vas et al., 2006; Wasiak and McNeely, 2006; Thomas et al. 2005). CAM practitioners, including spiritual healers, who advocate abandoning conventional medical care (e.g., transfusions or immunizations) also require investigation into the scope of their effect on individual health practices and overall public health (e.g., increased rates of vaccine preventable illnesses). Research on interventions (e.g. certain natural products) that have already been supported by a substantial amount of preliminary data and are on the verge of definitive evidence for widespread clinical application should also enjoy priority, as such research is likely to be a high yield investment.

Types of Research Synthesis

Given the often conflicting data from medical research studies, overviews and data synthesizing analyses are critically important for translating research into practice. The Cochrane Collaboration and others have made important contributions to this field over the last 10 years, and additional analyses providing specific guidance to practicing clinicians, policymakers, and researchers is needed (Dorn et al. 2007; Gagnier et al. 2006; Lawson et al. 2005; Pham et al. 2005).

Outcomes

Outcomes include not only traditional measures of morbidity, mortality, cost of care, and patient satisfaction, but also the impact of care on family cohesiveness, cultural identity, spiritual beliefs, resilience, coping, and self-efficacy. The impact on the environment also should be considered. *Additional outcome measures may need to be developed to address the concept of health as optimal functioning rather than as the absence of disease and to address patient priorities, particularly when there are multiple co-existing priorities.*

Table 2.—Outcomes of Interest in Research on Integrative Medicine

Patient outcomes:
Mortality rates, years of life saved
Morbidity—physical, psychological, emotional and social symptoms; severity of illness
Health behaviors—dietary, exercise patterns; smoking, drinking, and drug use; unprotected sexual relations
Health care utilization, including self-care, CAM care, and conventional care
Satisfaction with care
Developmental milestones and behavior
Activities of daily living
Quality of life
Costs associated with care
Direct and indirect financial costs; opportunity costs of missed treatments; side effects—symptomatic and asymptomatic organ dysfunction, injuries, infection; adverse interactions with other therapies; X-ray and other toxic exposures
Social outcomes—Days of work/school missed; delinquency, incarceration
Family outcomes:
Days of work missed; out-of-pocket costs; impact on insurability
Psychosocial impact on families; emotional impact on sense of empowerment
Spiritual outcomes: coping, peace, serenity, harmony in relationships, a sense of meaning or purpose in life, self-efficacy, self-esteem.
Social outcomes: divorce, employment, bankruptcy
Community outcomes:
Sense of cohesiveness, cultural identity; social capital
Cost to society, rate of malpractice suits
Environmental impact: cost of remedy to society, environment, (overharvesting of herbs leading to extinction; climate change; pollution)
Provider outcomes:
Provider satisfaction with role
Burnout
Sense of effectiveness and part of healing community

The following sections discuss specific areas of research for discussion in setting priorities.

SPECTRUM OF LIFE CYCLE

Integrative medicine can be provided to patients across the demographic spectrum of age, gender, and race/ethnicity, and there may be disparities in the availability and quality of services to different populations (Demattia et al. 2006). Integrative care can also be provided for prevention, acute, and chronic illness as well as rehabilitation and palliation. Among the most vulnerable populations which have been least studied are children, adolescents, and patients suffering from genetic or congenital disorders. Other research populations that should be considered as high priorities include women across the life cycle, not only during pregnancy and breastfeeding, but also through the different phases of the menstrual cycle, at menarche and through menopause (particularly during pregnancy and breastfeeding periods), the frail elderly, patients with complex conditions and multiple comorbidities, patients at the end of life, those with limited access to care, and patients from diverse cultural/ethnic backgrounds. It is also important to study gender differences of the various interventions, not only in women, but also the differential effects of these interventions in men and women.

EPIDEMIOLOGICAL STUDIES

With the development of large integrative clinics at medical institutions across the country, epidemiological methods can be used to generate novel data. A number of these institutions have begun collecting outcomes data on their patients to allow for prospective studies of integrative medicine, "The Outcomes Research Project"

(Sierpina, 2008). In addition to outcomes data, it would be useful for these clinics to create registries of their patients to gather data on the specifics of the integrative treatments received by each patient. In order to conduct controlled cohort studies, it is essential that these centers identify an appropriate source of control patients whose use of CAM therapies and the use of integrative medicine clinics has been documented. If existing patient registries (such as the Cystic Fibrosis Foundation Patient Registry or the National Cancer Institute's Surveillance, Epidemiology and End Results Program) systematically collected data on integrative medicine, they could provide an excellent source of data for cohort studies to compare the benefits and/or risks of integrative medicine.

Another type of research that should be encouraged in the field of integrative medicine is health services research (Coulter and Khorsan, 2008; Herman et al. 2006). Descriptive studies are needed to determine how providers practice integrative medicine, what patients seek care from integrative medicine clinics, the benefit patients receive from integrative medicine, and the cost effectiveness of integrative medicine (Cardini et al. 2006; Coulter and Khorsan, 2008; Fonnebo et al. 2007; Herman et al. 2006). Some researchers suggest that before conducting studies of efficacy of individual components of integrative medicine, pragmatic research should demonstrate the effectiveness of this medicine in the real world setting. If the system of integrative medicine is found to be effective, future studies can then examine the components of the whole system to determine if they are efficacious individually or only in combination. Individual components found to be efficacious could be further explored to determine their biological mechanism (Coulter and Khorsan, 2008; Fonnebo et al., 2007).

Finally, epidemiological studies would be wise to gather data about CAM use. Some forms of CAM use may confound findings of cohort and case-control studies. Several large meta-analyses have documented that individual vitamins can impact all causes of mortality (Autier and Gandini, 2007; Melamed et al. 2008; Miller et al., 2005; Omenn et al. 1996). Examining the possible confounding effects of these treatments is not possible if the data are never collected by researchers. Use of CAM therapies also needs to be studied for clinical research participants in order to decrease risks of interactions (Welder et al. 2006).

BASIC SCIENCE, MECHANISTIC STUDIES

The value of basic science research in integrative medicine lays in its ability to increase knowledge and understanding of how fundamental biological processes work. Some argue that the danger of taking the molecular approach to the extreme loses sight of the complex, interactive nature of human diseases and behaviors. Integrative medicine researchers should guard against this. On the other hand, basic science research is essential to elevate the level of research and broaden the impact of integrative medicine.

Among the areas which should be considered as priorities are the following:

1. Genomic/proteomic/pharmacogenetic studies investigating the individuality of patients despite sharing the same disease process. Such knowledge can be used to develop a personalized health care approach to disease prevention and treatment;
2. System biology studies to identify and characterize the interactions between multiple components of the biological processes and the interactions between mind and body. Research in this area will create new appreciation of the interconnectiveness of various components in human health and lead to therapeutic strategies that take advantage of such knowledge; and
3. Research on how behavioral interventions can change biological processes at the molecular and cellular level. This would create more effective tools for further behavior modifications relevant to reversing human diseases.

DIAGNOSTIC TECHNIQUES

An area in need of further research is a critical assessment of the many novel laboratory assessments intended for evaluation of biomarkers indicative of disease risk, prognosis, or treatment options. Because of the novelty of these tests, little or no data exists about their sensitivity and specificity, making interpretation of results difficult. In some cases, the tests offered are not diagnostic but rather informative of the individual, with their clinical meaningfulness unknown. In these cases, detailed information on the calculation of the normal ranges is often lacking in the test descriptions. Some novel laboratory tests may become the new standard of diagnosis or tool for monitoring effectiveness of treatment. However until more research documents their validity and reliability, these tests will continue to be considered experimental.

Study Design

The paradigm of pragmatic (effectiveness) vs. explanatory (efficacy) studies is still relevant today, particularly in integrative medicine (Gartlehner et al. 2006; Schwartz and Lellouch, 1967). The pragmatic nature of a larger RCT, even one with few restrictions for enrollment, however, is still limited since the complex variables that go into individual decisionmaking often cannot be controlled in clinical trials setting (Karanicolas et al. 2008). For research to be integrative, it will be important to define the real world contexts in which the results are to be applied. Another important issue here is the selection of appropriate outcome measures. Wherever possible, patient relevant variables should be included in pragmatic trials, not just surrogate outcome measures (Montori et al. 2007). The basic elements of study design and conduct need to be addressed adequately (Bloom et al. 2000). Even with a good study design, a single neglected issue could seriously impact the validity of the results (Pittler and Ernst, 2004). For research to have a meaningful impact on integrative patient care, the investigator should focus on conducting well-designed studies with minimal bias, keeping particular aspects of the intervention in mind, while also being mindful of the appropriate stage of research (pragmatic vs. explanatory).

Personalized and Holistic Health Care

In keeping with the goal of patient-centered holistic care in integrative medicine, future research should consider going beyond studying individual modalities for specific disease indication. In a holistic view, many human diseases are connected through hub processes underlying the pathological processes. Some of these processes have been identified, others have not. This connection has been underappreciated in a reductionist research approach, but quite commonly reflected in the narratives of many traditional medical systems. Systems biology research has shown that one possible mechanism of such "human disease network" is shared disorder-gene associations (Cusick et al. 2005). A bipartite human metabolic disease association network has been created in which nodes are diseases and two diseases are linked if mutated enzymes associated with them catalyze adjacent metabolic reactions (Lee et al. 2008). The model shows *a network topology for disease comorbidity* (Goh et al. 2007). Integrative medicine research can similarly use mathematical models to explore other such connections based perhaps not on genes, but on other functional variables (Bell and Koithan, 2006; Verhoef et al. 2005; Verhoef et al. 2006b).

To emphasize patient-centered care, future integrative medicine research should take advantage of technological advancements to individualize intervention and outcome assessment (Snyderman and Langheier, 2006). Application of pharmacogenetics knowledge to herbal medicine trials may result in a better selection of the study population, hence reduce sample size and increase the effect size, leading to more efficient use of research resources and minimizing the number of falsely negative trials (Arab et al. 2006; Fernandes, 2008). Computerized patient-centered outcomes assessment networks would produce efficacy endpoints. These endpoints should take into consideration patients' priorities in wellness, be more clinically relevant, and be consistent with the goal of integrative medicine (Kaasa et al. 2008).

Patient expectations and beliefs about therapies are intricately linked to their explanatory models and sense of meaning (Cohen, 2003; Di Blasi et al. 2001). New methods and tools are being devised to assess patients' beliefs and attitudes, but these have not been widely implemented (Dennehy et al. 2002; Lewith et al. 2002; O'Callaghan and Jordan, 2003). Similarly, different practitioners' expectations, beliefs, values, and explanatory models are likely to affect the kinds of diagnostic evaluations, counseling, and treatments offered to patients (Armbruster et al. 2003; Curlin et al. 2007; Saal, 2002). In addition, patients may have different values and priorities in addressing their symptoms, and attention to these priorities may affect satisfaction with care and adherence to recommendations (Ammentorp et al. 2005). For example, different patients who have hypertension, allergies, insomnia, anxiety, and chronic pain may have different priorities for treatment—one may focus on hypertension while another may be more focused on pain or insomnia or anxiety. The same patient may have different priorities at different times or when accompanied to the visit with different family members who are affected by the patient's condition.

The complex issues inherent in providing patient-centered integrative care in the context of multiple conditions in patients with different priorities, values, expectations, and beliefs are poorly understood. It is possible that new research paradigms will be needed to address this lack of knowledge, not only for clinical outcomes, but for satisfaction with and cost of care for patients, as well as the impact on

practitioners (e.g., burnout and fatigue) and the public's health (e.g., overall health care costs, impact on work/school, activities of daily living).

Promoting Self Care and Individual Resilience

To encourage behavior changes and promote self care, the planned integrative action has to be multi-dimensional. Optimal use of skills in motivational interviewing for patients in the pre-contemplative or contemplative stages is likely to help (Hettema et al. 2005). Mind-body interventions that are likely to help develop resilience include mind-body modalities such as relaxation, hypnosis, visual imagery, meditation, yoga, tai chi, qi gong, cognitive-behavioral therapies, group support, autogenic training, and spirituality. In addition to these approaches, cultivating compassion, forgiveness, gratitude, and finding meaning and purpose to one's life are also important towards developing contentment and happiness and thus fostering resilience (Brass et al. 2003; Farrow et al. 2001). Optimal disease management, nutrition, physical exercise, and restorative sleep are also likely to foster resilience. Interventions primarily aimed to foster resilience are beginning to be tested in clinical trials. These studies mostly show promising results and have involved patients with diabetes (Bradshaw et al. 2007), are conducted as work site interventions (Waite and Richardson, 2004), include college students with academic stress (Steinhardt and Dolbier, 2008), or take place in school settings (Ruini et al. 2006). Early studies suggest that resilience might correlate with selective activation of the left prefrontal cortex (Davidson, 2000). This needs to be further validated. *Integrative models for behavioral change need to be developed and tested to motivate patients with multiple complex medical problems for a sustained change in behavior. Research into designing and testing resilience interventions incorporating the wisdom of alternative healing systems and further understanding the neurobiology of resilience has the potential to transform patient care.*

Practitioner-Patient Interaction and Partnership

A more integrative approach towards patient care entails incorporating biopsychosocial interdisciplinary content emphasizing compassion, communication, mindfulness, respect, and social responsibility (Wear and Castellani, 2000). A core aspect of integrative medicine is the importance of the *relationship* between practitioner and patient (Chang et al. 1983; Quinn et al. 2003) that has been incorporated into the evolving concept of "relationship-centered care." Relationship-centered care focuses on the importance of human relationships with experience of the patient being at the center of care. The onus of initiating this process rests on the practitioner. The two key skills for the practitioner to facilitate this form of care are to cultivate professionalism and humanism (Klein et al. 2003). *The impact of training clinician healers is beginning to be investigated (Miller et al. 2003; Novack et al. 1999) and is a ripe area for future research in integrative medicine.* Such an approach is likely to enhance the nonspecific therapeutic effect of a medical encounter.

In a clinical trial, patients improve for multiple reasons. These include spontaneous remission, natural course, regression to the mean, biased reporting, nonspecific therapeutic effects, and specific therapeutic effects. The nonspecific therapeutic effect, which may account for improvement in up to 60 percent of patients for some conditions (Kaptchuk et al. 2008), has been considered more a nuisance than a useful therapeutic effect because of the need to control within the context of placebo-controlled trials for pharmacologic treatments. However the efficacy observed in the placebo arm may sometimes be significantly superior to no treatment or standard medical care (Brinkhaus et al. 2006; Haake et al., 2007; Linde et al. 2005; Melchart et al. 2005). The skills of professionalism and humanism within an integrative encounter are likely to increase this nonspecific effect.

Instead of considering the placebo effect as of secondary importance, it might be more apt to consider the placebo effect as "contextual healing," an aspect of healing that has been produced, activated, or enhanced by the context of the clinical encounter (Miller and Kaptchuk, 2008). Variables that maximize contextual healing include the environment of the clinical setting, cognitive and affective communication of practitioners, and the ritual of administering the treatment (Kaptchuk, 2002). *Integrating research efforts towards harnessing the nonspecific therapeutic effect rather than controlling for it is likely to offer expanded tools and additional insight into patient care. In situations where it is important to separate the specific effect from "contextual healing," optimal effort needs to be placed towards validating a placebo control prior to pursuing large multi-center trials.*

Recommendations for Action

The ultimate goal of integrative medicine research is to guide clinical practice, thereby maximizing benefit and minimizing patient risks. When formulating clinical

guidelines, two factors are in play: strength of evidence and burden/risk to and effectiveness and clinical decisions have to be made with limited information, burden and risk to the patient need to be taken into account. Although the highest level of evidence is desirable for every health intervention, it is simply not possible to achieve this goal. Limited research resources have to be allocated according to priorities. Therefore, interventions or therapies with high risk or burden (economic/ time/ effort) to patients and society must meet a high standard in strength of evidence, often in the form of multiple RCTs, to be utilized in clinical practice.

Those with low or little risk/burden can be incorporated into practice even when the highest level of evidence is not available (McCrory et al. 2007). Such an approach can be summarized in a simple 2x2 table (Table 3) about how to decide whether or not to use a particular therapy based on safety and effectiveness. Implicit in this model is the notion that the clinician and patient both understand and agree on the problem; the goal of therapy; the evidence regarding safety and effectiveness of the therapy being considered; the extent to which it is accessible, affordable, and of high and consistent quality; and availability of similar information about alternative treatments (or a combination of treatments) under consideration.

In light of this relationship between research and clinical practice and the issues discussed in Sections on Context and on Setting Priorities, we make the following recommendations for action regarding integrative medicine research. We suggest the actors for each recommendation be discussed at the IOM Summit on Integrative Medicine and the Health of the Public. Key stakeholders need to be identified to make it a collaborative, multidisciplinary effort for each item—including researchers, patients, and policymakers.

1. Identify pressing areas of research in integrative medicine and define the level of evidence required for their clinical applications.
2. Establish a consortium of integrative medicine researchers to form consensus on how to implement the research priorities as follow-up to this summit.
3. Build an international information technology platform which standardizes and facilitates data acquisition, data banking, and communication between researchers to achieve synergy of productivity.
4. Demonstrate the value of integrative medicine in health maintenance and disease prevention to policy making bodies, especially in light of the current economic setting of burgeoning health care cost to society, so that more resources can be allocated to integrative medicine research.

Table 3.—Benefit and Risk Ratio and Selection of Therapies

		Effective	
		Yes	No
Safe	Yes	Use	Tolerate
	No	Monitor	Avoid

We propose the following questions to be discussed during the summit.

1. What are the three most important research questions in integrative medicine as a whole?
2. What should be the top three research priorities in integrative medicine in the setting of limited research resources?
3. What progress would you like to see made in integrative medicine research in the next 3–5 years?

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PREPARED STATEMENT OF RON Z. GOETZEL, PH.D., RESEARCH PROFESSOR AND DIRECTOR, INSTITUTE FOR HEALTH AND PRODUCTIVITY STUDIES, ROLLINS SCHOOL OF PUBLIC HEALTH, EMORY UNIVERSITY; VICE PRESIDENT, CONSULTING AND APPLIED RESEARCH, THOMSON HEALTHCARE

Good afternoon. I would like to thank the committee for inviting me to submit this written statement on the subject of the health and financial benefits of workplace health promotion and disease prevention programs. My name is Ron Goetzel. I have been involved in research focused on worksite health promotion programs for the past 20 years while employed at Johnson & Johnson, Thomson Reuters (formerly Medstat), Cornell University, and Emory University.

Over the past 20 years, my work has focused on large-scale evaluations of health promotion, disease prevention, demand and disease management programs. My evaluations have been conducted in partnership with large employers including Applied Materials, Boeing Company, Chevron, Citibank, The Dow Chemical Company, Johnson & Johnson, IBM, Procter & Gamble, Florida Power & Light, Duke University, Pepsi Bottling Group, Prudential Financial, Union Pacific Railroad, Sharp Health Care, Novartis, Highmark, General Electric, Ford, Motorola, Lucent, International Truck and Engine, First Tennessee Bank, and Texas Instruments.

DEFINING WORKSITE HEALTH PROMOTION

Before going any further, I'd like to define worksite health promotion programs for the committee. Worksite health promotion programs are employer initiatives directed at improving the health and well-being of workers and, in some cases, their dependents. They include programs designed to avert the occurrence of disease or the progression of disease from its early unrecognized stage to one that is more severe. At their core, worksite health promotion programs support primary, secondary, and tertiary prevention efforts.

Primary prevention efforts in the workplace are directed at employed populations that are generally healthy. Examples include programs that encourage exercise and fitness, healthy eating, weight management, stress management, use of safety belts in cars, moderate alcohol consumption, and recommended adult immunizations.

Health promotion also incorporates elements of secondary prevention directed at individuals already at high risk because of certain lifestyle practices (e.g., smoking, being sedentary, having poor nutrition, consuming excessive amounts of alcohol, and experiencing high stress) or abnormal biometric values (e.g., high blood pressure, high cholesterol, high blood glucose, being overweight or obese). Examples of secondary prevention include hypertension screenings and management programs, smoking cessation coaching, weight loss interventions, and reduction or elimination of financial barriers to obtaining evidence-based pharmaceutical treatments.

Health promotion sometimes also includes elements of tertiary prevention, often referred to as disease management, directed at individuals with existing ailments such as asthma, diabetes, cardiovascular disease, cancers, musculoskeletal disorders, and depression, with the aim of ameliorating the disease or retarding its progression. Such programs promote better compliance with medications and adherence to evidence-based clinical practice guidelines for outpatient treatment. Because patient self-management is stressed, health-promotion practices related to behavior change and risk reduction are often part of disease management protocols.

ESTABLISHING A BUSINESS CASE FOR HEALTH PROMOTION

The Centers for Disease Control and Prevention (CDC), in conjunction with its *Healthy People in Healthy Places* initiative, has observed that workplaces are to adults what schools are to children, because most working-age adults spend a substantial portion of their waking hours at work. The question for employers is whether well-conceived worksite health promotion programs can improve employees' health, reduce their risks for disease, control unnecessary health care utilization, limit illness-related absenteeism, and decrease health-related productivity losses.

There is growing evidence that the answer is "yes." Here is the logic for increased investment in health promotion:

1. Many of the diseases and disorders from which people suffer are preventable.
2. Modifiable health risk factors are precursors to a large number of these diseases and disorders.
3. Many modifiable health risks are associated with increased health care costs and reduced worker productivity, within a relatively short time window.
4. Modifiable health risks can be improved through theory-based health promotion and disease prevention programs.
5. Improvements in the health risk profile of a population can lead to reductions in health care costs and absenteeism, and heightened worker productivity.
6. Well-designed and well-implemented worksite health promotion and disease prevention programs can save money, and in our research actually produce a positive return on investment (ROI).

I would now like to highlight some of the salient studies supporting these points.

Many Diseases and Disorders are Preventable, Yet Costly

A large body of medical and epidemiological evidence shows the links between common, modifiable, behavioral risk factors and chronic disease.[1] Preventable illnesses make up approximately 70 percent of the total burden of disease and their associated costs.[1] Half of all deaths in the United States are caused by behavioral risk factors and behavior patterns that are modifiable.[2 3] In particular, the United States has been witnessing alarming increases in obesity, diabetes, and related disorders for many years.[4] These diseases strain the resources of the health care system, as individuals who experience them generate significantly higher health care costs.[5]

Modifiable Health Risks Increase Employer Costs

Analyses by Anderson, et al.[6] show that 10 modifiable health risk factors account for approximately 25 percent of all health care expenditures for employers. Moreover, employees with seven risk factors (tobacco use, hypertension, hypercholesterolemia, overweight/obesity, high blood glucose, high stress, and lack of physical activity) cost employers 228 percent more than those lacking those risk factors.[7] Workers with these risk factors are more likely to be high-cost employees in terms of absenteeism, disability, and reduced productivity.[8]

Workplaces Offer an Ideal Setting for Health Promotion

Most people agree that the workplace presents an ideal setting for introducing and maintaining health promotion programs. The workplace contains a concentrated

group of people, who share a common purpose and common culture. Communication and information exchange with workers are relatively straightforward. Individual goals and organizational goals, including those related to increasing productivity, are generally aligned with one another. Social support is available when behavior change efforts are attempted. Organizational norms can help guide certain behaviors and discourage others. Financial or other incentives can be introduced to encourage participation in programs. Measurement of program impact is often practical using available administrative data collection and analysis systems.

Worksite Health Promotion Can Positively Influence Employees' Health Risks

An important question to consider is whether worksite programs can change the risk profile of workers. Here again, the evidence points to a positive result. Catherine Heaney and I examined 47 peer-reviewed studies, over a 20-year period, focused on the impact of multi-component worksite health promotion programs on employee health and productivity outcomes.[9] We concluded that there was "indicative to acceptable" evidence supporting the effectiveness of multi-component worksite health promotion programs in achieving long-term behavior change and risk reduction among workers. The most effective programs offered individualized risk-reduction counseling, coaching and self-management training to the highest risk employees within the context of a healthy company culture and supportive work environment.[9]

More recently, the CDC Community Guide Task Force released the findings of a comprehensive and systematic literature review focused on the health and economic impacts of worksite health promotion.[10 11]

Health and productivity outcomes from worksite interventions were reported from 50 studies. The outcomes included a range of health behaviors, physiologic measurements, and productivity indicators linked to changes in health status. Although many of the changes in these outcomes were small when measured at an individual level, such changes at the population level were considered substantial.

Specifically, the Task Force found strong evidence of worksite health promotion program effectiveness in reducing tobacco use among participants, dietary fat consumption, high blood pressure, total serum cholesterol levels, the number of days absent from work because of illness or disability, and improvements in other general measures of worker productivity. Insufficient evidence of effectiveness was found for some desired program outcomes, such as increasing dietary intake of fruits and vegetables, reducing overweight and obesity, and improving physical fitness. But overall, the Community Guide review came up with very positive findings related to health and economic outcomes from workplace health promotion programs.

Worksite Health Promotion Can Achieve a Positive Return on Investment

There is now a growing body of evidence suggesting that worksite programs can also save money and even pay for themselves. Several literature reviews that weigh the results from experimental and quasi-experimental research studies suggest that programs grounded in behavior change theory, and ones that utilize tailored communications and individualized counseling for high-risk individuals, achieve cost savings and produce a positive return on investment.[12 13 14] The ROI research is grounded in evaluations of employer-sponsored health promotion programs. Studies often cited with the strongest research designs and large numbers of subjects included those performed at Johnson and Johnson,[15 16] Citibank,[17] Dupont,[18] the Bank of America,[19 20] Tenneco,[21] Duke University,[22] the California Public Retirees System,[23] Procter and Gamble,[24] and Chevron Corporation.[25] In a widely cited example of a rigorous ROI analysis, Citibank reported a savings of $8.9 million in medical expenditures from its health promotion program as compared to a $1.9 million investment, thus achieving an ROI of $4.56 to $1.00.[17] A recent contribution to the ROI literature can be found in a study published in the February 2008 issue of the *Journal of Occupational and Environmental Medicine* which reported a $1.65 to $1.00 ROI for a worksite program put in place at Highmark, a health plan in Pennsylvania.[26] Even accounting for certain inconsistencies in design and results, most of these worksite programs have produced positive financial results.

CONCLUSION

In summary, I have put forth some of the main arguments and supportive scientific evidence in favor of increased employer investment in health promotion programs. I believe that these programs will not only improve the health and productivity of U.S. workers but also save money in the long run.

Thank you again for your time and attention and I welcome your questions and comments.

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PREPARED STATEMENT OF KATHI J. KEMPER, M.D., M.P.H., FAAP; CARYL J. GUTH CHAIR FOR COMPLEMENTARY AND INTEGRATIVE MEDICINE; PROFESSOR OF PEDIATRICS; FAMILY AND COMMUNITY MEDICINE; SOCIAL SCIENCE HEALTH POLICY; REGENERATIVE MEDICINE; BIOETHICS AND SOCIETY, WAKE FOREST UNIVERSITY HEALTH SCIENCES

Chairwoman Mikulski, Senators Enzi, Burr, Hagan, and other distinguished members of the committee, thank you for the invitation to be here today.

I am Dr. Kathi Kemper, Caryl Guth Chair for Complementary and Integrative Medicine at Wake Forest University Baptist Medical Center, founder of the American Academy of Pediatrics Section for Complementary and Integrative Medicine, and the author of *The Holistic Pediatrician*.

This submitted testimony will briefly cover:

- a definition of integrative health;
- epidemiology of the use of complementary therapies (a subset of integrative care) in pediatrics; and
- review 10 principles of integrative care and how they might inform health care reform.

I have also submitted the 12/08 publication in *Pediatrics* on the use of CAM in pediatric populations and the White Paper on Research in Integrative Medicine prepared for this week's Summit on Integrative Medicine at the Institute of Medicine.

I. DEFINITION OF INTEGRATIVE HEALTH CARE

Integrative medicine is professional health care that is:

- Evidence-based
- Comprehensive
- Systematic, including not only the individual, but also the family, community and environment
- Patient and family-focused, and
- Emphasizes wellness, health promotion and disease/injury prevention.

In short, integrative medicine is good medicine. Integrative pediatrics is the practice of integrative medicine devoted to the care of infants, children and adolescents. Among all medical specialties, pediatrics is uniquely focused on health promotion and disease prevention. Pediatrics takes a long-term view of outcomes, uses very specific science-based strategies to enhance health behaviors and address behavioral challenges, and works closely with community institutions such as schools. Like family medicine, by definition, our work encompasses of the health of the family as well as the individual.

Like pharmaceuticals, immunizations, surgery and other conventional therapies, complementary and alternative therapies are subsets of the therapeutic arsenal available to integrative clinicians to serve patients' health needs. However, *a collection of disparate therapies does not constitute a true system of professional care* any more than our current collection of physicians, insurers, hospitals, governments, non-profit groups, and for-profit pharmaceutical and device makers constitutes a national health care system.

A functional system requires a shared vision; coordinated, sustainable strategies to move toward that vision; consequences for adherence to and deviations from strategically driven actions; data collection to monitor the process and outcomes; feed-

back; and timely, rational revisions to strategies, behaviors, monitoring systems and consequences. The fact that Americans spend more than any other country in the world on health and yet fail to achieve our national health goals reinforces the need for a new, systematic approach informed by integrative health care.

II. EPIDEMIOLOGY

The increasing numbers of Americans who use complementary and alternative medical (CAM) therapies (a subset of integrative medicine) supports the theory that conventional medicine is failing to meet citizens' goals for health, and that a more comprehensive, patient-centered approach that focuses on health outcomes rather than disease management is desirable.

The December 2008 report from the American Academy of Pediatrics and the December, 2008 report from the National Center for Complementary and Alternative Medicine (NCCAM) and the National Center for Health Statistics show that substantial numbers of American youth, like adults, use CAM therapies. CAM use is lowest in healthy populations. Excluding the use of prayer, folk remedies, multivitamins and recommended supplements, approximately 12 percent of children and youth receive CAM. The percentage in general pediatric clinics is approximately 20 percent. Rates are 50 percent–70 percent in youth with chronic conditions. A study published in 2008 from our pediatric rheumatology clinic at Wake Forest Baptist Medical Center showed that the rate of CAM use (92 percent) exceeded slightly the use of conventional therapies (88 percent).

An American Academy of Pediatrics survey of 745 pediatricians, published in 2004 showed that 87 percent of pediatricians had been asked about CAM, 75 percent were concerned about potential risks or side effects, 66 percent believed that CAM could enhance recovery or relieve symptoms, yet only 20 percent discussed CAM with their patients; 80 percent of pediatricians desired more training in these areas.

As in adult studies, only about 40 percent of patients and families who use CAM discuss it (or home or folk remedies) with their physician.

Despite the high rate of use of CAM therapies in pediatrics, pediatrics has not been a priority population for NIH NCCAM research funding (currently receiving less than 5 percent of such funding and lacking a pediatric member on its Advisory Council). Conventional training in the health professions has not included a requirement for training in pediatric integrative medicine. Training in pediatrics for other licensed health professionals, such as chiropractors, massage therapists and acupuncturists has been variable.

The most commonly used CAM therapies in pediatrics are prayer, dietary supplements, chiropractic and mind-body therapies.

Prayer is the most commonly used CAM therapy; various surveys show that it is used for health purposes by 45 percent–85 percent of pediatric patients/families. Substantial research shows that those who pray and participate in religious communities such as churches are healthier and engage in better health behaviors than those who do not. The high prevalence of use; the associations with health and health behaviors; the importance of prayer in American lives and communities; the fact that physicians seldom ask about prayer despite patients' desire for discussion on this topic; and the current lack of coordination between medical institutions and faith communities suggests several unmet needs regarding optimal integration of prayer, faith and professional health care.

Dietary supplements, including use of vitamins, minerals, herbal remedies, fish oils, probiotics and hormones, are the second most commonly used group of CAM therapies in pediatrics. These products are widely available over the counter and many are specifically marketed for pediatric patients.

Despite their widespread availability and use, there has been little *research* specifically in pediatrics on their safety and effectiveness. It is likely that some (such as the already mainstream use of folate to prevent neural tube defects and vitamin K to prevent hemorrhagic disease of the newborn, and newer approaches such as administering probiotics and enteric coated peppermint for GI patients) are safe and effective, whereas others (such as St. John's wort to treat attention deficit hyperactivity disorder or Echinacea to treat pediatric cold symptoms) are not. Given the relatively small pediatric market and the lack of patent incentives for natural products, it is unlikely that the private marketplace will pursue such research.

Furthermore, current *Federal regulations* (e.g., DSHEA), which treat these supplements more like food than medications, have left our children and youth with little protection from variability in quality and contamination with heavy metals (lead, cadmium), incorrect products or pharmaceuticals. Currently, the situation for parents who purchase dietary supplements for their children is best summarized by: "buyer beware."

Even when dietary supplements ARE helpful (such as many families for whom I care who report benefits from supplemental nutrients, omega-3 fatty acids, herbs like ginger, and probiotics), families are left to purchase them out of pocket because they are almost never covered by insurance. This creates an *economic disparity* in access to effective treatments. Furthermore, because natural products are usually less expensive than prescription medications, relying on medications (because they are covered by insurance) instead of less expensive dietary supplements drives up *health care costs*.

Chiropractic and other manipulative therapies are the third most commonly used CAM therapy in pediatrics, and the most common professionally provided CAM therapy. Surveys suggest that up to 10 percent of chiropractic patients are under 21 years old; insurance typically covers chiropractic care.

Despite this common use and cost, there has been little research on the costs and benefits of chiropractic therapy for pediatric patients in terms of its effectiveness for prevention or treatment. I am a big fan of chiropractors, having received great benefit from chiropractic treatment when I had a herniated disk. However, the data on success in treating adults with low back pain simply cannot be extrapolated to children with diverse health needs.

Many chiropractors market their services as primary care, yet States do not typically license chiropractors to provide *immunizations*, which represents a large lost opportunity to achieve public health goals for universal immunization. The discussions about HIT have not explicitly discussed chiropractors and other health professionals such as naturopaths, acupuncturists or massage therapists, yet they are an important and growing part of patient-centered and patient-driven care.

Chiropractic training in pediatrics is limited, and *communication and coordination* between chiropractors and medical doctors is poor. This may result in delays in seeking care, redundant X-rays or other diagnostic tests or conflicting professional recommendations.

Massage therapy is widely offered in U.S. hospitals to newborns, and a substantial body of research supports the use of massage to promote health in diverse pediatric conditions. However, Medicaid and other insurers rarely cover massage services. This means that access to this helpful service is limited to those who can afford to pay out-of-pocket, resulting in significant disparities in access to therapeutic massage.

Mind-Body Therapies such as progressive relaxation, deep breathing, meditation, yoga, biofeedback and guided imagery are the fourth most common category of CAM therapies used by families and youth. Most often, families use these practices *without* professional guidance due to shortages of pediatric mental health professionals and uneven insurance coverage for these services and products (again, resulting in disparities in access to effective services).

Mind-body therapies are useful in managing a variety of pediatric symptoms: pain, headaches, anxiety, insomnia, inattention, impulsivity, and stress-related symptoms. Unlike medications, which frequently have side effects and contra-indications (but which are nearly universally covered by insurance), mind-body therapies have *side benefits*. For example, learning to practice a stress management technique to reduce the frequency of migraine headaches can help a student manage test anxiety; an evaluation of the HeartMath emotional self-management program (which uses biofeedback among other techniques) in California schools showed a significant improvement in test anxiety and test scores.

Unlike medications, whose benefits typically end when someone stops taking it, the benefits of learning a skill endure for months and years after the initial training.

Many mental health disorders, such as anxiety, depression and substance abuse have their onset in pediatric ages. Given the alarming rates of mental, emotional and behavioral disorders that first appear during childhood and adolescence (costing the United States an estimated $247 billion according to a report from the Institute of Medicine), there is an urgent need to address the gap between what is known about preventing these disorders and what is actually done. Providing access to mind-body therapies that help youth learn to manage stress more skillfully than using tobacco, alcohol or drugs represents one such strategy.

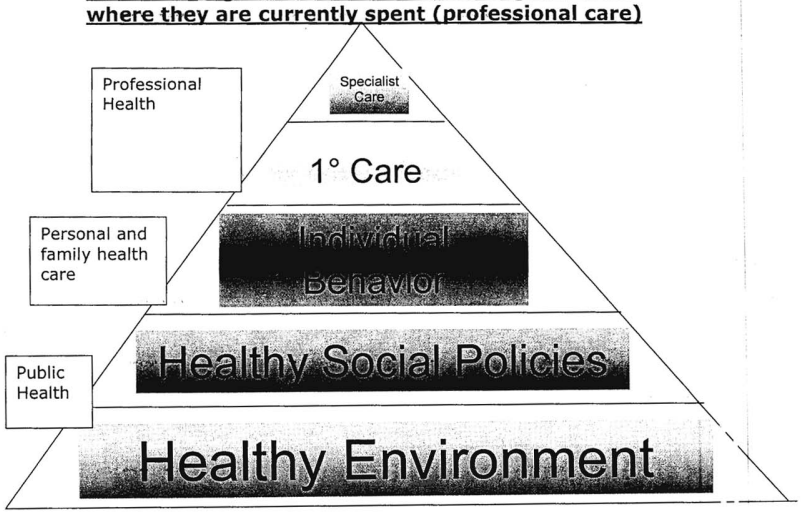
III. PRINCIPLES OF INTEGRATIVE HEALTHCARE

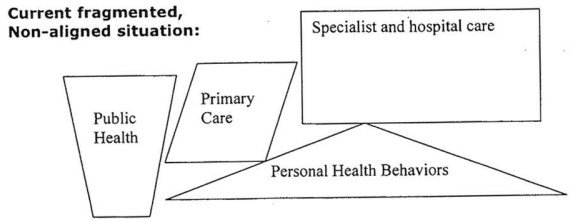
Integrative Healthcare includes several principles that are vital to cost-effective, equitable, efficient, timely, safe and sustainable health care for America's youth. They are consistent with much of what has been discussed at earlier HELP hearings this year on related topics. These principles are outlined below with figures following the text.

Principles alone are insufficient for forming policy; substantial *additional research* is needed to determine how best to *translate* what is known into an effective, coordinated system of health promotion across the tiers of physical environment, social environment, personal health behaviors, community care, primary care and specialist care. Please *see the supplementary white paper on Research Priorities in integrative Medicine*, which was prepared for this week's Institute of Medicine Summit on Integrative Medicine.

1. 1st Principle. Integrative healthcare is *holistic, systematic and ecological*. This means that it is concerned with health of the body, mind, emotions, spirit and relationships in the context of family, culture, community, and environment. Health in one aspect of one's being is intricately bound up with the others. Changes in one aspect of an individual or community affect others. Good physical and mental health requires *healthy habits in a healthy habitat*. (Figure 1) These should be the primary focus of our funding and our policy. Professional health care is also important, but it is not a replacement for the fundamentals of healthy habitats and habits.

Figure 1: Pyramid of Integrated and Aligned Health Promotion – Principle: focus resources where they will do the most good, the base of the triangle, not on where they are currently spent (professional care)





a. Integrative health care *endorses* the *public health principles* eloquently articulated by Dr. Fielding in his testimony at the hearing on 1/22/09. An unhealthy *physical habitat*—polluted water and air, contaminated foods, mercury-laden fish, lead in toys, a rapidly changing climate, school vending machines dispensing unhealthy foods and beverages, and lack of access to parks and recreation, safe neighborhoods, bike paths, recess, daylighting in schools—and *unhealthy social habitats*—poverty, discrimination, poor quality schools, violence, child abuse, media that portray smoking, unsafe sexual practices and misuse of alcohol and other drugs and that markets

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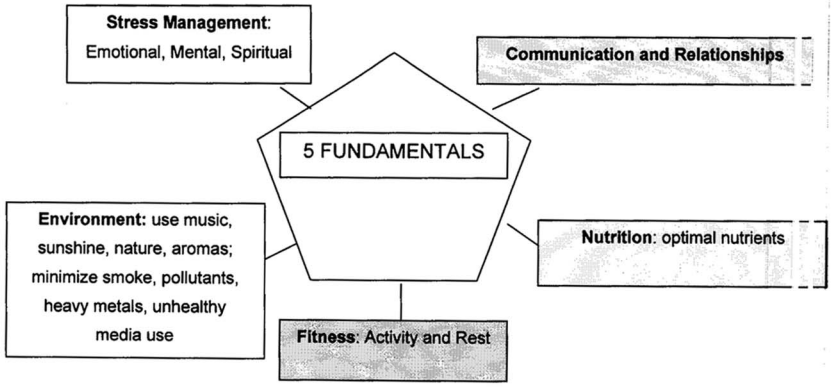
unhealthy products and promotes consumerism to children—impair our children's health. Social policies regarding agriculture, transportation, urban planning, foreign relations, education, energy, environment, and communications have profound impacts on health. **Health should be an explicit outcome when weighing the costs and benefits of Federal policies** even in these "non-health" related fields.

b. Building on the foundation of healthy habitats are *healthy habits*. Five fundamentals of healthy habits include: *optimal activity and sleep; nutrition; making healthy choices about personal environmental exposures; skillfully managing stress; and communicating effectively (See Figure 2)*. Because healthy habits are critical to good health, it is important for us to create social policies that make it easier to act wisely.[1] We also need timely, relevant information and systems to make it easy to make health decisions. Most health habits are established in childhood; promoting healthy habits between the ages of 10–24 has an especially high return on investment. Although much of the discussion has focused on nutrition and exercise, there is abundant evidence that children and youth desperately need to develop skills in managing stress and communicating effectively and productively in order to meet health and other needs.

Figure 2 – Five Fundamentals of Healthy Habits



c. Just as healthy habits do not exist in a vacuum, *professional health care* occurs within the context of *self-care* and *family care*. Patients and families with chronic conditions have often already sought information from friends, family, teachers, colleagues, and other health professionals, books, magazines and the Internet. Clinicians need to be proactive and *ask* what patients are already doing for their health and how well it is working.

Clinicians need to be skillful in *assisting patients to make behavior changes* consistent with their health goals, based on the science of effective behavior change, such as the skills of motivational interviewing (assessing goals, confidence, barriers, resources, exploring ambivalence and helping to set specific, measurable actions with clear consequences and plans for evaluation and reassessment). Clinicians also need to be able to advise patients and families about the best sources of evidence-based information on the internet and to steer them away from "snake oil salesmen" and those whose interests in profit exceed their dedication to patients' health.

2. *Second principle. "First, do no harm,"* means that when additional therapies (beyond healthy lifestyle) are needed to achieve an individual's health goals, priority should be given to those that are safe. Safe means not only low in side effects, but also low in direct and opportunity costs, and *least* harmful to the values, integrity, self-respect, autonomy and cultural identity of the child and family, as well as the

[1] For example, behaviors are often sensitive to price. Increasing the price of tobacco reduces smoking rates in teenagers. Research is needed to determine the impact of changes in the price, information (nutritional labeling) or additional taxes on unhealthy foods (e.g., taxing drive-through meals more than walk-in service) on obesity and other health outcomes. The price of many medical interventions (tests, therapies) are often not apparent to patients until the bill arrives; even many professionals do not know what tests and procedures cost; providing timely access to price information affects ordering and prescribing behavior. Similar information and incentives about using medical diagnostic tests, procedures and therapies may have dramatic impact on health costs and outcomes, and requires systematic research.

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sustainability of resources for future generations. Natural therapies and healthy behaviors are typically safer than pharmaceutical and surgical approaches, but existing financial incentives have limited their use in professional practice.

3. *Third Principle. Comprehensive, culturally competent care.* The spectrum of therapeutic options might be considered in four categories:

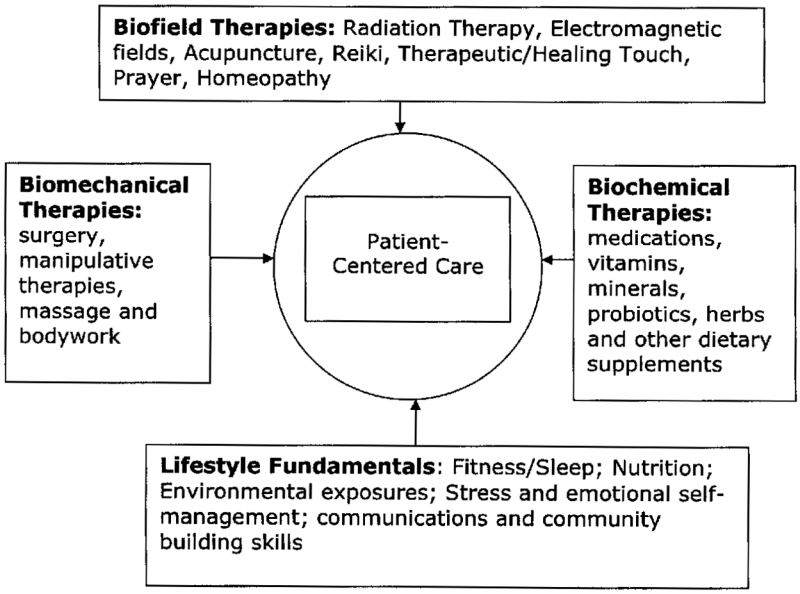
(a) Healthy lifestyle habits as described above;

(b) Biochemical therapies such as medications, but also including dietary supplements such as vitamins and minerals to correct deficiencies or address unique needs due to genetic, medical, behavioral or environmental factors;

(c) Biomechanical therapies such as surgery, and also massage, bodywork and manipulative therapies; and

(d) Bio-energetic or biofield therapies such as radiation therapy, electromagnetic therapies, acupuncture, Healing Touch, Therapeutic Touch and Reiki, prayer and homeopathy (Figure 3).

Figure 3 – Therapeutic Options



Integrative health care recognizes the importance of indigenous healing systems that employ multiple types of therapies such as Ayurvedic medicine, Traditional Chinese Medicine, Native American medicine, the traditional practices of Hawaiian healers, and folk healing traditions.

4. *Fourth Principle.* Integrative pediatric health care emphasizes *health promotion, wellness and prevention*. This means that it is explicitly focused on achieving positive goals, not simply the absence of disease. While some cynics have described a healthy person as "one who has not been sufficiently evaluated," integrative practitioners focus on physical, emotional, mental, spiritual and social health (Figure 4). A clear focus on health outcomes and their modifiable environmental and social determinants (not just the process of care) is necessary.

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Figure 4 – Physical, Mental and Spiritual Health Characteristics

Physical Fitness	Mental Health	Spiritual Well-being
Strength	Confidence and courage	Faith
Flexibility	Adaptability	Forgiveness
Endurance	Cheerfulness	Hope
Focus	Attention / Concentration	Love
Coordination	Harmony	Kindness
Resilience	Hardiness	Charity/generosity
Teamwork	Social Network/ communication skills/ connection to community	Connection with a Higher Power, Spirit or Nature

Many academic health centers (AHCs), including pediatric hospitals, derive much of their clinical revenue from providing high tech care for the sickest patients. For example, pediatric departments are frequently financially dependent, in part, on income from clinical care of premature infants. They lose money when prematurity rates are reduced (successful achievement of a public health goal lowers revenues for tertiary care institutions). This kind of *unintended perverse incentives* does not contribute to the promotion of our national health goals for children and youth.

5. Integrative health care is *patient-centered, service-oriented and committed to empowering individuals and families.* We appreciate the tremendous growth of scientific knowledge over the past century, yet we are humbled by the amount still to be learned, and we are in awe of the power of the innate healing ability.[2] We also recognize that *the patient and family are the experts on their own lives*. This means that it is the individual patient or client's goals, needs and values that frame decisions. Rather than looking at patients' compliance or adherence, *the focus is on how well current strategies, clinicians, therapies and systems of care meet the patients' goals*. Integrative care requires open dialogue, collaboration, reflection, analysis, and revision. The process recognizes that patients and families may hold multiple goals, conditions, values, explanatory models, and expectations simultaneously. These factors may change over time, requiring flexibility. Integrative medicine also recognizes that some therapies target specific symptoms or cure that then result in improved overall sense of well-being; other therapies target general well-being which may reduce the risk of several illnesses.

Because individualized, patient-centered care requires substantial information and dialogue, attention to efficiency, flexibility and innovation are important. Current models are time consuming and poorly reimbursed using conventional models. Focusing reimbursement on the most highly paid professionals (physicians) to provide care that could be equally effective at lower cost (using coaches, nurses, educators, nutritionists, fitness coaches, PAs, nurse practitioners, interactive Web sites, and others) is costly, inefficient, and unnecessary.

6. *Integrative health care emphasizes integrity, open-mindedness and fairness.* This means that integrative clinicians aspire to live healthfully and be *role models* of healthy lifestyles, promoting healing environments, and advocating for life-sustaining clean air, water, and other systems essential for optimal health. We advocate for health care that promotes a healthy planet (green health care). There is no national standard for training health professionals that focuses on personal health behavior. Nor are there national standards for health care institutions to become less polluting or "greener."

7. *Integrative health care is informed by scientific evidence* and human experience. We are deeply grateful for, rely on and support the vast and growing body of scientific understanding and evidence. We also recognize the *limitations of extrapolating results of population studies to individuals* who may differ substantially from those involved in clinical trials. This means that pay for performance is important,

[2] As every surgeon knows, we can put the pieces together, but the actual healing lies in the innate wisdom of the patient's body.

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but not sufficient. We must pay for outcomes. A broader scientific agenda is needed to better understand how to translate knowledge into patient-centered health promotion effectively, efficiently, equitably, safely and sustainably.

8. *Integrative care is multidisciplinary.* Learning to work with professionals of different backgrounds and skills requires enhanced communication and teamwork skills. Expanding the notion of multidisciplinary teams focuses on the importance of *communication and teamwork skills.* These skills should be developed throughout training in the health professions, when diverse clinicians could learn together a common core of skills such as effective counseling techniques, working together in teams, strategies for enhancing quality improvement, and working with community institutions, businesses, and public health systems to implement, evaluate and continuously improve diverse approaches to health promotion.

9. Integrative health care is *practical* as well as principled. Being practical means that we do what works for the patient, balancing effectiveness with risks (*Figure 5*). If antibiotics do not cure the common cold, they should not be prescribed, nor covered by insurance (for that use). If massage, acupuncture or biofeedback relieve symptoms and improve health outcomes safely and effectively for children and families, they should be accessible. If a non-physician acupuncturist is as effective as a physician acupuncturist, there should be no disparities in reimbursement for their services. If meditation classes help adolescents reduce stress, lower blood pressure and relieve pain, shouldn't there be access to those services as well as to medications?

Figure 5 - Balancing Effectiveness and Safety

		Effective	
		Yes	***No***
Safe	***Yes***	Use/Recommend	Tolerate
	No	Monitor closely	Advise against

10. Integrative health care recognizes that the opportunities of the *internet* era also presents challenges to the conventional model of care of State system of *credentialing* health professionals. There are no national standards for licensing all health professionals, including acupuncturists (now licensed in over 40 States), massage therapists (licensed in some places by municipality and others on a statewide basis), and naturopathic physicians (licensed in just over a dozen States). National systems are needed to ensure safe, responsible practices and access to cost-effective services across State lines (via internet counseling, coaching, and consulting).

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IV. SUMMARY OF RECOMMENDATIONS

Overall Federal health policies: Aim for alignment and integration between "non-health" policies, public health, personal habits and professional care to promote optimal pediatric health.

A. Research

1. Increase NIH NCCAM funding for pediatric research, particularly for therapies of potentially greater risk and common use such as *dietary supplements*; those that are commonly used and generate substantial costs, such as professional *chiropractic* care; and those of potentially great value and safety across the lifespan such as *mind/body stress and symptom* management practices.
2. Ensure that there is pediatric representation on the NIH NCCAM Advisory Council.
3. Conduct research on the cost-effectiveness of explicitly addressing health promotion in the context of churches and other religious, spiritual and faith communities.
4. Support research on the long-term, *comparative* costs and benefits of different therapies and strategies (including public policies and novel delivery models) to achieve health goals. Include opportunity costs, and costs to self-esteem, cultural identity, integrity and autonomy. Include citizen groups, bioethicists, and economists as well as diverse health professionals in planning such research.
5. Expand the scientific agenda to better understand how to *improve systems of care and translate knowledge into practice*.
6. Develop *new scientific models* to better extrapolate from research conducted on narrow populations to diverse, unique individual patients with multiple, changing health goals and needs. This is particularly important for pediatric patients whose development results in ongoing changes in needs.

B. Professional Training

1. Foster training for pediatric health professionals to:
   - *discuss* CAM use with patients and families;
   - *ask* about use of folk remedies and spiritual and religious beliefs and practices related to health;
   - *provide evidence-based information* about CAM therapies to ensure safe practices in these vulnerable populations;
   - *record* use of natural therapies in patients' health records;
   - *report* suspected adverse effects to FDA Medwatch and other appropriate agencies; and
   - *Communicate* with and *coordinate* care between clinicians, churches, schools, and other community institutions.
2. Increase the number of health professionals who can provide mind-body therapies, and coach children and youth to successful stress management practices and positive communication skills.
3. Support professional education to develop expertise in effective, sustainable changes in health behaviors, such as motivational interviewing.
4. Ensure that training for pediatric health professionals includes common core training in healthy lifestyles (including stress management and skillful communication to build interpersonal relationships) and natural therapies. Professional training should foster early and ongoing awareness and practice of healthy lifestyles.
5. Ensure that training for health professionals develops an awareness of and respect for the diverse therapies and cultural traditions that affect health.
6. Provide appropriate *incentives* and *penalties* for professional training programs to achieve these goals.

C. Community Information and Education

1. Ensure that families have access to the best current clinical evidence regarding the safety and effectiveness of natural health products commonly used by children and youth.
2. Promote evidence-based health education and activities in schools.
3. Provide health education, coaching and support using cost-effective strategies, e.g., peer support, community nurses, health coaches, nutritionists, fitness counselors, meditation teachers, or counselors.

D. Safety and Regulations

1. Review and consider revising FDA regulations concerning dietary supplements, particularly those marketed to children, to ensure that families have access to safe, high quality, reliable products.

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2. Review and consider regulations to allow chiropractors and other health professionals commonly seen by pediatric patients to provide immunizations.

3. Develop active surveillance systems to detect and respond to adverse effects from therapies for children and youth.

4. Review and evaluate professional licensing across all 50 States and devise models of reimbursement to cover efficient, safe, accessible, high quality, timely interstate, *on-line health services*, consulting counseling or coaching.

E. Access to, Provision of and Reimbursement for Clinical Integrative Services

1. When evidence suggests that natural therapies, services and products are as or more safe and effective as other therapies for promoting health and decreasing symptoms in infants, children and adolescents, encourage insurers to cover these services.

2. Incentivize professional integrative health care that provides adequate counseling and coaching to promote healthy habits for children and youth and provides health care services that offer safe and effective patient-centered care of good value, minimizing disparities to access, particularly for vulnerable populations such as infants, children and adolescents.

3. Encourage healthy lifestyles among health professionals to provide effective role models.

4. Incentivize productive, timely communication and coordination among chiropractors, acupuncturists, psychologists, massage therapists, naturopathic physicians and other licensed health professionals who care for children and youth.

5. Develop, implement and evaluate potentially more cost-effective models for delivering care, such as peer support and counseling, public health nurses, care in groups, by telephone and webinars, videoconferences and teleconferences as well as in individual visits.

6. Develop new models that promote continued expansion and dissemination of new knowledge and understanding through AHCs without fostering financial dependence on expensive, disease management based on generating RVUs (i.e., change pay for visits to pay for performance and outcomes). Make it financially worthwhile for AHCs to focus on health promotion, and work with the public health sector to achieve population health goals.

F. Federal Policies Which Are Not Directly Health-Related

1. Systematically review and, as needed, revise Federal policies that directly or indirectly affect the health of children and youth. These include (but are not limited to) transportation, agriculture, energy, education, environment, commerce, and communication.

2. Support Federal policies that promote healthy physical, social and psychological environments for children and youth such as expanding the Family Medical Leave Act.

3. Incentivize "green" health care for large institutions including health facilities. This means not only reducing electricity and water usage, increasing recycling and using green cleaning practices; it also means promoting efficient transportation and reimbursing for professional care provided by telephone, internet or webinar to minimize generation of green house gases involved in travel. Using new technology to provide professional care would also enhance access to those in rural areas and those who lack transportation.

G. Other

1. Incentivize citizens' personal habits that are health promoting such as breastfeeding; provide information to allow families to make healthy choices for their children (such as nutrition information about restaurant meals for children).

2. Develop *information technology* (already discussed at length in these hearings) to more efficiently gather and process information (e.g., Dr. Kelly Kelleher has demonstrated that mothers can enter data, history, habits, etc., into on-line health risk appraisal forms for automated scoring and analysis prior to seeing their pediatrician. This simple IT solution effectively enhances clinicians' recognition of and response to families' concerns about behavioral health issues).

The system we have is perfectly designed to achieve the results we are now experiencing. If we want different results, we need to change the system. We need to start with a clear vision of a healthy nation and plan an integrated system, including alignment with other national goals, to develop sensible, sustainable strategies. Just as a health behavior such as exercise is health promoting and has benefits on numerous outcomes (e.g., weight, heart disease, mental health), sound policies should have diverse benefits. Healthy people are productive people who are best able to solve our national and global problems.

I believe the 10 principles of pediatric integrative health care—focusing on health promotion and disease/injury prevention through patient-centered, comprehensive, evidence-based policies that promote a healthy environment, personal health habits, and professional care—can help us achieve national health goals effectively, efficiently, equitably, safely and sustainably.

Thank you for the opportunity to present this testimony.

PREPARED STATEMENT OF SIMON MILLS, M.A., FNIMH, MCPP

I have been active in the field of "integrated" health care for over 30 years. I currently lead a U.K. government grant "Integrated Self-care in Family Practice" which is developing ways to support patients' self-reliance in their health care and recently set up the first Masters program in Integrated Health at a medical school in the U.K. My bio has also been submitted.

This submission reflects the different cultures within U.K. and Europe and the role that integrated health has played against the backdrop of change in healthcare provision. Health services in the U.K. and Europe are often described as "socialized." It is indeed the case that European Member States all provide relatively more central funds for health care. However all are also looking for ways to spend less on health care and integrated health is seen as a way in which the public may take a bigger share of costs as well as responsibilities for their health.

Most of the following relates to the United Kingdom where the term "integrated health" has more currency. It is generally taken to mean the integration of complementary and alternative medicine (CAM) with the mainstream. It should be noted however that health care in much of continental Europe has been relatively integrated in this way for decades. A German or French physician will regularly prescribe "phytomedicines" (aka "herbal medicinal products"). Medicines like ginkgo, hawthorn, valerian, horse chestnut, St. John's wort, saw palmetto are routinely prescribed for major clinical conditions like dementia, heart disease, insomnia, venous disease, depression and prostate disease (respectively) in preference to synthetic medicines. Each of the products concerned will be manufactured to pharmaceutical standards so are reliable and well-documented. (I refer to my experience as Secretary of ESCOP, a network of researchers and practitioners across Europe that publishes formal drug dossiers for the Herbal Medicinal Products Committee of the European Medicines Agency—*www.escop.com*.) In most cases such prescription is no longer reimbursed from central funds so the continuing use of these medicines is directly in response to self-financed public demand. All European pharmacies will also have large and prominent stocks of herbal pharmaceuticals which are entirely in the self-medication sector. There are also many homoeopathic treatments available from pharmacies, and physicians and other European health professionals may be associated with the provision of therapies like aromatherapy, hydrotherapy, naturopathy, and "Anthroposophic" medicine. That such provision is available clearly reflects a different cultural expectation among the population.

In the U.K. integrated health has emerged out of the flowering of alternative and then complementary medicine from the 1970s. Unlike most of Europe the U.K. maintained common law principles in the provision of health care so that it is possible to practise most CAM therapies without a licence (the extremely low professional liability insurance cover for most CAM practitioners—generally less than U.S. $200 per annum—suggests that this has not been a public hazard). In this benign climate there has been extensive professional development in these therapies and two, osteopathy and chiropractice were State licensed in the 1990s and acupuncture and herbal practice are likely to achieve the same status very soon. However none of these therapies has, or is likely to be, provided through the State-funded National Health Service.

There is however evidence that the use of CAM may reduce central costs. In a recent government pilot study in Northern Ireland,[1] 713 patients with a range of ages and demographic backgrounds and either physical or mental health conditions were referred to various CAM therapies via nine family medicine practices.

- around 80 percent of patients reported an improvement in their physical or mental health;
- in 65 percent of patient cases, family physicians documented a health improvement;
- 94 percent of patients said they would recommend CAM to another patient with their condition;
- half of family physicians reported prescribing less medication and all reported that patients had indicated to them that they needed less; and

[1] *http://www.dhsspsni.gov.uk/index/hss/complementary-alternative-medicine.htm.*

• 65 percent of family physicians reported seeing the patient less following the CAM referral.

Such data, supported in other studies, may offset criticisms that the relatively poor evidence base for CAM therapies means that integration with mainstream medicine is not appropriate.

There is no doubt that the public has taken to CAM therapies and that individuals are willing to pay for them outside free National Health Service provision. Various surveys suggest that up to half the population has tried a CAM treatment and that around 20 percent are regular users.

A leading supporter for integration has been HRH The Prince of Wales who as heir to the Throne has significant influence on public debate. He has set up the Prince's Foundation for Integrated Health whose Web site (*fih.org.uk*) is a major resource on this subject. In its definition the Foundation highlights several key features of the phenomenon.

WHAT IS INTEGRATED HEALTH?

Responsibility for our health isn't something we can simply delegate to doctors and medicine. Most aspects of health are a reflection of the way we live our whole lives.

But once somebody is ill, treating their problem with an integrated approach means bringing together mainstream medical science with the best of other traditions.

Integrated health is a response to the changing patterns of disease in the early 21st century.

The patients now taking up around 80 percent of the time and resources of the health service are those experiencing a slow slide into chronic conditions—such as allergies, back pain, stress or heart disease. Unaddressed, these illnesses can accumulate into crippling conditions.

We know too that empowerment is good for patients. . . . when patients are equal partners in the management of their own health, it can actually have an affect on their clinical outcomes.

Of course, even the most fortunate person will in the end experience the effects of degeneration, old age and approaching death. So finally, integrated health looks beyond physical health to the factors that can give us solace, courage and dignity in difficult times.

This approach presents challenges for the general public and healthcare practitioners. Patients cannot just wait passively for others to find solutions. Doctors have to listen to their patients and seek more creative solutions.

To conclude integrated health in the U.K. is seen as an approach that may shift the locus of control from the physician to the patient, and one that the public is willing to pay for. These are reasons to commend it for serious consideration by policymakers in the U.S.A.

[Whereupon, at 4:15 p.m., the hearing was adjourned.]

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