

RELEASE IN
FULL

21ST CENTURY MEDICINE: *A New Model for Medical Education and Practice*

APPENDIX Table of Contents

Page No.

Recommendations from the Future of Family Medicine Project	A2
Joint Principles of the Patient-Centered Medical Home	A4
List of Members of the Consortium of Academic Health Centers for Integrative Medicine	A6
Institute for Systems Biology	A9
Definition of Evidence-Based Medicine	A12
Information about the Chronic Care Model	A15
Excerpts from Chapter 8, Textbook of Functional Medicine ..	A20
Pattern Recognition Form—Ulcerative Colitis	A22

HA 09/01/2015

21ST CENTURY MEDICINE: *A New Model for Medical Education and Practice*

Recommendations from the Future of Family Medicine Project

(<http://www.futurefamilymed.org/x24878.html>)

New Model of Family Medicine

Family medicine will redesign the work and workplaces of family physicians. This redesign will foster a New Model of Care based on the concept of a relationship-centered personal medical home, which serves as the focal point through which all individuals — regardless of age, gender, race, ethnicity, or socioeconomic status participate in health care. In this new medical home, patients receive a basket of services of acute, chronic, and preventive medical care services that are accessible, affordable, comprehensive, integrated, patient-centered, safe, scientifically valid, and satisfying to both patients and their physicians. This New Model will include technologies that enhance diagnosis and treatment for a large portion of problems that people bring to their family physicians. Business plans and reimbursement models will be developed to enable the reengineered practices of family physicians to thrive as personal medical homes, and resources will be developed to help patients make informed decisions about choosing a personal medical home. A financially self-sustaining national resource will be implemented to provide practices with ongoing support in transitioning to the New Model of Family Medicine.

Communications

A unified communications strategy will be developed to promote an awareness and understanding of the New Model of Family Medicine and the concept of a Personal Medical Home. As part of this strategy, a new symbol for family physicians will be created, and consistent terminology will be established for the specialty, ("family medicine" rather than "family practice" and "family physician" rather than "family practitioner"). In addition, a system will be developed to communicate and implement best practices within family medicine.

Electronic Health Records

Electronic health records that support the New Model of family medicine will be implemented. The electronic health record will enhance and integrate communication, diagnosis and treatment, measurement of processes and results, analysis of the effects of co-morbidity, recording and coding elements of whole-person care, and promoting ongoing, healing relationships between family physicians and their patients.

Family Medicine Education

Family medicine will oversee the training of family physicians who are committed to excellence, steeped in the core values of the discipline, expert in providing family medicine's basket of services within the New Model of Family Medicine, skilled at adapting to varying patient and community needs, and prepared to embrace new evidence-based technologies. Family medicine education will continue to include training in maternity care, the care of hospitalized patients, community and population health, and culturally effective and proficient care. Innovation in family medicine residency programs will be supported by the Residency Review Committee for Family Practice through 5-10 years of curricular flexibility to permit active experimentation and ongoing critical evaluation of competency-based education, expanded training programs and other strategies to prepare graduates for the New Model. In preparation for this process, every family medicine residency will implement electronic health records by 2006.

Life-Long Learning

The discipline of family medicine will develop a comprehensive, life-long learning program. This program will provide the tools for each family physician to create a continuous personal, professional, and clinical practice assessment and improvement plan that supports a succession of career stages. This personalized learning and professional development will include self-assessment and learning modules directed at individual physicians and group practices that incorporate science-based knowledge into educational interventions that foster improved patient outcomes. Family medicine residency programs and departments will incorporate continuing professional development into their curricula and will initiate and model the support process for life-long learning and maintenance of certification.

Enhancing the Science of Family Medicine

Participation in the generation of new knowledge will be integral to the activities of all family physicians and will be incorporated into family medicine training. Practice-based research will be integrated into the values, structures and processes of family medicine practice. Departments of family medicine will engage in highly collaborative research that produces new knowledge about the origins of disease and illness, how health is gained and lost, and how the provision of care can be improved. A national entity should be established to lead and fund research on the health and health care of whole people. Funding for the Agency for Healthcare Research and Quality should be increased to at least \$1 billion per year.

Quality of Care

Close working partnerships will be developed between academic family medicine, community-based family physicians and other partners in order to address the quality goals specified in the IOM's Quality Chasm report. Family physicians and their practice partners will have support systems to measure and report regularly their performance on the 6 IOM aims of quality health care (safe, timely, effective, equitable, patient-centered, and efficient). Family medicine residency programs will track and report

regularly the performance of their residents during their training on the G IOM quality measures and will modify their training programs as necessary to improve performance.

Role of Family Medicine in Academic Health Centers

Departments of family medicine will individually and collectively analyze their position within the academic health center setting and will take steps to enhance their contribution to the advancement and rejuvenation of the AHC to meet the needs of the American people. A summit of policymakers and family medicine leaders in academia and private practice will be convened to review the role of and make recommendations on the future of family medicine in academia.

Ensuring a Sufficient Family Medicine Workforce

A comprehensive Family Medicine Career Development Program and other strategies will be implemented to recruit and train a culturally diverse family physician workforce that meets the needs of the evolving US population for integrated health care for whole people, families and communities. Departments of family medicine will continue to develop, implement, disseminate and evaluate best practices in expanding student interest in the specialty.

Leadership and Advocacy

Recommendation #10 from the Future of Family Medicine Report concerned Leadership and Advocacy. The Strategic Initiative calls for A Leadership Center for Family Medicine and Primary Care will be established which will develop strategies to promote family physicians and other primary care physicians as health policy and research leaders in their communities, in government, and in other influential groups. In their capacity as leaders, family physicians will convene leaders to identify and develop implementation strategies for several major policy initiatives, including assuring that every American has access to basic health care services. Family physicians will partner with others at the local, state and national levels to engage patients, clinicians and payers in advocating for a redesigned system of integrated, personalized, equitable and sustainable health care.

American Academy of Family Physicians (AAFP)
American Academy of Pediatrics (AAP)
American College of Physicians (ACP)
American Osteopathic Association (AOA)

JOINT PRINCIPLES OF THE PATIENT-CENTERED MEDICAL HOME

February 2007

Introduction

The Patient-Centered Medical Home (PC-MH) is an approach to providing comprehensive primary care for children, youth and adults. The PC-MH is a health care setting that facilitates partnerships between individual patients and their personal physicians, and when appropriate, the patient's family. The AAF, AAP, ACP, and AOA, representing approximately 533,000 physicians, have developed the following joint principles to describe the characteristics of the PC-MH.

Principles

Personal physician — each patient has an ongoing relationship with a personal physician trained to provide first contact, continuous and comprehensive care.

Physician directed medical practice — the personal physician leads a team of individuals at the practice level who collectively take responsibility for the ongoing care of patients.

Whole person orientation — the personal physician is responsible for providing for all the patient's health care needs or taking responsibility for appropriately arranging care with other qualified professionals. This includes care for all stages of life: acute care; chronic care; preventive services; and end of life care.

Care is coordinated and/or integrated across all elements of the complex health care system (e.g., subspecialty care, hospitals, home health agencies, nursing homes) and the patient's community (e.g., family, public and private community-based services). Care is facilitated by registries, information technology, health information exchange and other means to assure that patients get the indicated care when and where they need and want it in a culturally and linguistically appropriate manner.

Quality and safety are hallmarks of the medical home:

- Practices advocate for their patients to support the attainment of optimal, patient-centered outcomes that are defined by a care planning process driven by a compassionate, robust partnership between physicians, patients, and the patient's family.
- Evidence-based medicine and clinical decision-support tools guide decision making.
- Physicians in the practice accept accountability for continuous quality improvement through voluntary engagement in performance measurement and improvement.

- ❖ Patients actively participate in decision-making and feedback is sought to ensure patients' expectations are being met.
- ❖ Information technology is utilized appropriately to support optimal patient care, performance measurement, patient education, and enhanced communication.
- ❖ Practices go through a voluntary recognition process by an appropriate non-governmental entity to demonstrate that they have the capabilities to provide patient centered services consistent with the medical home model.
- ❖ Patients and families participate in quality improvement activities at the practice level.

Enhanced access to care is available through systems such as open scheduling, expanded hours and new options for communication between patients, their personal physician, and practice staff.

Payment appropriately recognizes the added value provided to patients who have a patient centered medical home. The payment structure should be based on the following framework.

- ❖ It should reflect the value of physician and non-physician staff patient-centered care management work that falls outside of the face-to-face visit.
- ❖ It should pay for services associated with coordination of care both within a given practice and between consultants, ancillary providers, and community resources.
- ❖ It should support adoption and use of health information technology for quality improvement.
- ❖ It should support provision of enhanced communication access such as secure e-mail and telephone consultation.
- ❖ It should recognize the value of physician work associated with remote monitoring of clinical data using technology.
- ❖ It should allow for separate fee-for-service payments for face-to-face visits. (Payments for care management services that fall outside of the face-to-face visit, as described above, should not result in a reduction in the payments for face-to-face visits).
- ❖ It should recognize case mix differences in the patient population being treated within the practice.
- ❖ It should allow physicians to share in savings from reduced hospitalizations associated with physician-guided care management in the office setting.
- ❖ It should allow for additional payments for achieving measurable and continuous quality improvements.

Background of the Medical Home Concept

The American Academy of Pediatrics (AAP) introduced the medical home concept in 1997, initially referring to a central location for archiving a child's medical record. In its 2002 policy statement, the AAP expanded the medical home concept to include these operational characteristics: accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective care. The American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP) have since developed their own models for improving patient care called the "medical home" (AAFP 2004) or "advanced medical home" (ACP 2006).

For More Information:

American Academy of Family Physicians (<http://www.futurefamilync.org>)

LIST OF MEMBERS OF THE CONSORTIUM OF ACADEMIC HEALTH CENTERS FOR INTEGRATIVE MEDICINE (CAHCIM)

United States

Arizona

University of Arizona

Program in Integrative Medicine

www.integrativemedicine.arizona.edu

California

Stanford University

Stanford Center for Integrative Medicine

[http://www.stanfordhospital.com/](http://www.stanfordhospital.com/clinicsmedServices/)

[clinics/complementaryMedicine/default](http://www.stanfordhospital.com/clinics/complementaryMedicine/default)

[clinics/complementaryMedicine/default](http://www.stanfordhospital.com/clinics/complementaryMedicine/default)

University of California, Irvine

Susan Samueli Center for Integrative Medicine

www.sscim.uci.edu

University of California, Los Angeles

Collaborative Centers for Integrative Medicine

www.uclamindbody.org

University of California, San Francisco

Osher Center for Integrative Medicine

www.osher.ucsf.edu

Colorado

University of Colorado at Denver School of Medicine

The Center for Integrative Medicine

www.uch.edu/integrativemed

Connecticut

University of Connecticut

School of Medicine

www.uchc.edu

Yale University

Integrative Medicine @ Yale

cam.yale.edu

Integrative Medicine Center at Griffin Hospital

www.imc-griffin.org

Hawaii

University of Hawaii-Manoa

John A. Burns School of Medicine

Department of Complementary and Alternative Medicine

www.jabsom.hawaii.edu/jabsom

Illinois

Northwestern University Feinberg School of Medicine

Northwestern Memorial Physician's Group Center for Integrative Medicine

www.nmpg.com

Kansas

University of Kansas

Program in Integrative Medicine

<http://integrativemed.kumc.edu/>

Maryland

Johns Hopkins University

School of Medicine

Center for Complementary and Alternative Medicine www.hopkinsmedicine.org/cam

University of Maryland

Center for Integrative Medicine

www.compmed.umm.edu

Massachusetts

Boston University School of Medicine

Program in Integrative Cross Cultural Care

www.bumc.bu.edu

Harvard Medical School

Osher Institute

www.osher.hms.harvard.edu

University of Massachusetts

Center for Mindfulness

www.umassmed.edu/cfm/index.aspx

Michigan

University of Michigan

Integrative Medicine

www.med.umich.edu/umim

Minnesota

Mayo Clinic

Complementary and Integrative Medicine Program

www.mayoclinic.org/general-internal-medicine-rst/cimc.html

Research

<http://mayorcsearch.mayo.edu/mayo/rcsarch/cimp/>

University of Minnesota

Center for Spirituality and Healing

www.csh.umn.edu

New Jersey

University of Medicine and Dentistry of New Jersey

Institute for Complementary & Alternative Medicine

www.umdntj.edu/icam

New Mexico

University of New Mexico

Health Science Center

hsa.unm.edu/som/ci/

New York

Albert Einstein College of Medicine of Yeshiva University

Continuum Center for Health and Healing

www.healthandhealingny.org

Columbia University

Richard and Hinda Rosenthal Center for Complementary & Alternative Medicine

www.rosenthal.hs.columbia.edu

North Carolina

Duke University

Duke Integrative Medicine

www.dukeintegrativemedicine.org

University of North Carolina at Chapel Hill

Program on Integrative Medicine

pim.med.unc.edu

Wake Forest University School of Medicine

Program for Holistic & Integrative Medicine

<http://www1.wfubmc.edu/phim/>

Oregon

Oregon Health and Science University

Women's Primary Care and Integrative Medicine

Center for Women's Health

www.ohsu.edu/cam

www.ohsuwomenshealth.com/services/doctors/integrative.html

Pennsylvania

Thomas Jefferson University

Jefferson Myrna Brind Center of Integrative Medicine

jeffline.jefferson.edu/jubeim

www.jeffersonhospital.org/cim

University of Pennsylvania

CAM at Penn

www.med.upenn.edu/penncam

University of Pittsburgh

Center for Integrative Medicine

<http://integrativemedicine.upmc.com>

Tennessee

Vanderbilt University

Vanderbilt Center for Integrative Health

www.vcih.org

Texas

University of Texas Medical Branch

UTMB Integrative Health Care

<http://cam.utmb.edu/>

Vermont

University of Vermont College of Medicine

Program in Integrative Medicine

www.med.uvm.edu/integrativemedicine

Washington

University of Washington

UW Integrative Health Program

www.uwcam.org

Washington, DC

George Washington University

Center for Integrative Medicine

www.integrativemedicinedc.com

Georgetown University

School of Medicine

<http://www8.georgetown.edu/departments/physiology/cam/index.html>

<http://som.georgetown.edu/>

Wisconsin

University of Wisconsin-Madison

UW Integrative Medicine Program

www.uwhealth.org/integrativemed

www.fammed.wisc.edu/integrative

Canada

Alberta

University of Alberta

Complementary and Alternative Research and Education (CARE)

www.care.ualberta.ca/

University of Calgary

Canadian Institute of Natural & Integrative Medicine

www.cinim.org

Ontario

McMaster University

Family Practice Centre of Integrative Health and Healing

www.fpci hh.com

INSTITUTE FOR SYSTEMS BIOLOGY, SEATTLE, WA

From their website: http://www.systemsbiology.org/Intro_to_ISB_and_Systems_Biology/Predictive_Preventive_Personalized_and_Participatory

The goal of systems biology is to fundamentally transform the practice of medicine, and ISB researchers have taken the leadership role in catalyzing this transformation. We are developing tools and techniques, and pursuing research that will usher in a new era of predictive, preventive, and personalized medicine.

Today's medicine is reactive: we wait until someone is sick before administering treatment. Medicine of the future will be predictive and preventive, examining the unique biology of an individual to assess their probability of developing various diseases and then designing appropriate treatments, even before the onset of a disease. Today's medicine is also myopic: we use only a few measurements to diagnose disease and are generally unable to make fine distinctions between individuals or between subtle variations of the same disease. Medicine of the future will use microphisticated measurements, as well as more measurements overall, thereby yielding accurate health assessments for truly personalized treatments.

Improved personal measurements and personalized treatments are the keys to improving health care. Diseases arise from either genetic abnormalities, detrimental environmental factors (poor diet, infectious organisms, or toxins), or a combination of these. We know certain genetic patterns can make a person unusually susceptible to factors in their environment. We also know certain defective genes will increase the probability of an individual having certain health problems. For example, a woman with a single copy of the mutant breast cancer 1 gene (BRCA-1) has a 70 percent chance of developing breast cancer by the time she's 60 years old. Unfortunately, today there is no practical way for each of us to determine our genetic makeup and, more important, to understand the likely health consequences. However, in the future individuals will be able to easily obtain such information, and then work closely with their health practitioner to develop a predictive, preventive and personalized health-care program.

Prediction. The technologies and tools of systems biology will provide medical practitioners with two exciting sources of health-related diagnostic data: By examining an individual's complete genetic makeup, a physician will be able to generate comprehensive predictions about the patient's health prospects. And by examining protein markers which naturally occur in an individual's blood, a physician will be able to accurately determine a person's health status, including both the current effects of any abnormal genes and the current reactions to any environmental toxins or infectious pathogens.

Prevention. The new approach to medicine, based on each individual's genetic makeup, will help us determine the probability of an individual contracting certain diseases, as well as reveal how an individual may respond to various treatments, thereby providing guidance for developing customized therapeutic drugs. Thus another use of the technologies and tools of systems biology will be to develop preventive treatments for individuals, based on their potential health problems, as indicated by their genetic makeup and current blood-protein markers.

The goal of this new approach to medicine will be to use the most fundamental health-related information—an individual's genetic makeup plus current health status (as identified by blood protein markers)—to prescribe appropriate preventive drugs. For example, given your genetic makeup, you may have a 10% chance of developing breast cancer by age 50, but if you start taking a certain drug at age 35, that chance could drop to 5% at age 50.

In fact, scientists at ISB are currently involved in several research programs involving blood diagnosis of complex diseases, including type 1 diabetes, breast cancer, and prostate cancer. Cancer is the second leading cause of death in the United States, with prostate cancer accounting for one third of all cancer cases among men, and breast cancer accounting for approximately half of all cancer cases among women. ISB scientists are currently researching protein markers which occur in blood to better identify the onset, metastatic potential, and probable course of these cancers in individuals, with the eventual goal of developing more effective treatments.

The common theme running through all of this research and its application to medicine—the predictive and preventive potential of systems biology—is **personalization**. On average, each human differs from another by less than one percent of their genetic makeup. But these genetic differences give rise to our physical differences, including our potential predisposition to various diseases. So the ability to examine each individual's unique genetic makeup and thereby customize our approach to medical treatment is at the heart of this new era of predictive, preventive, personalized medicine.

As a result of this personalization, medicine will become **participatory**. Patients will actively participate in personal choices about illness and well-being. Participatory medicine will require the development of powerful new approaches for securely handling enormous amounts of personal information and for educating both patients and their physicians.

http://www.systemsbiology.org/Systems_Biology_in_Depth/Premise_of_Systems_Biology

The true test of a good system model is successful prediction of the system's behavior under targeted alterations (genetic or environmental perturbations) of experimental conditions. But the very properties that make biological systems interesting and worthwhile to study—their emergent properties, robustness, stability, modularity and adaptability to change, also make their behavior hard to predict at the molecular level. Confounding factors include functional redundancy (i.e., a given process might be accomplished by several different molecular mechanisms), and the stochasticity of cell populations (what is measured, e.g., gene expression, could be an average of a wide range of discrete responses among individual cells).

Systems biologists approach this conundrum by adopting the following principles:

1. Global approaches should be taken to data collection and analyses. Ideally, high-throughput platforms are used to collect as many measurements under multiple sets of well-defined experimental conditions. Technologies for performing quantitative, multi-parameter measurements on a single sample need to be developed. To add value to the analyses of data

obtained from multiplex technologies such as chips and panels of gene deletion mutants or RNAi gene knockouts, global approaches will incorporate relevant findings from curated databases and the published literature.

2. Information derived from diverse data types should be integrated. Systems biology derives power from the leveraging of pre-existing biochemical and cell biology knowledge with the various interaction network models inferred from the global datasets. Even though each source of data type might be sparse, noisy, or contain systematic errors, a meaningful pattern among the diverse data might become apparent and further analysis made possible if the network models are integrated.
3. Mathematical and statistical modeling is essential to the quantitative analysis of a system's properties. Based on a working model and relevant assumptions, computer simulations are used to probe the probable effects of perturbations on a system's components and interactions in the interest of making predictions that can be validated by the collection of more data. Thus, there is a tight integration of computer modeling with experimental design.
4. Biology should drive technology which, in turn, makes better biology possible. Invention of novel or more sophisticated data collection, analysis and modeling tools is motivated by the need to solve a real-world biological problem. As a paradigm case, the Human Genome Project forced the development of high-throughput DNA sequencing methodologies. The need to perform multiparameter measurements on single cells is currently driving the invention of microfluidic/cytometry devices.
5. Systems biology research should create an interactive inter-disciplinary scientific culture. For progress to occur, experts in engineering, physics, mathematics, and computer science must join biochemists, cell biologists, and physiologists in the effort to figure out how to obtain the required data and develop the sophisticated computational approaches that will be needed to make viable predictions. For scientists who have been trained primarily in one of these disciplines, doing systems biology research involves stepping outside one's comfort zone to learn new concepts and methodologies. Systems biology-focused institutions accept that cross-disciplinary training from the get-go is the best way for new investigators to embrace the field.
6. The results of research should be freely disseminated. The Human Genome Project has revealed the enormous benefit that derives from the public release of data to the community of researchers. While not as easy to work with as genomic sequences, available microarray datasets, yeast two-hybrid analyses, collections of gene knockout strains and the like have accelerated progress in systems biology research. Similarly, computational biology is facilitated by the sharing of open-source software.

DEFINITION OF EVIDENCE-BASED MEDICINE

Extracted from the Centre for Evidence-Based Medicine website;
used by permission <http://www.cebm.net/index.aspx?o=1014>

What is EBM?

This article is based on an editorial from the British Medical Journal on 13th January 1999 (BMJ 1999; 312: 71-2)

Brief definition:

Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.

Expanded Definition:

Evidence-Based Medicine, whose philosophical origins extend back to mid-19th century Paris and earlier, remains a hot topic for clinicians, public health practitioners, purchasers, planners, and the public. There are now frequent workshops in how to practice and teach it (one sponsored by this journal will be held in London on April 24th); undergraduate [1] and post-graduate training programmes [2] are incorporating it [3] (or pondering how to do so); British centres for evidence-based practice have been established or planned in adult medicine, child health, surgery, pathology, pharmacotherapy, nursing, general practice, and dentistry; the Cochrane Collaboration and the York Centre for Review and Dissemination in York are providing systematic reviews of the effects of health care; new evidence-based practice journals are being launched; and it has become a common topic in the lay media. But enthusiasm has been mixed with some negative reaction [4-6]. Criticism has ranged from evidence-based medicine being old-hat to it being a dangerous innovation, perpetrated by the arrogant to serve cost-cutters and suppress clinical freedom. As evidence-based medicine continues to evolve and adapt, now is a useful time to refine the discussion of what it is and what it is not.

Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By individual clinical expertise we mean the proficiency and judgement that individual clinicians acquire through clinical experience and clinical practice. Increased expertise is reflected in many ways, but especially in more effective and efficient diagnosis and in the more thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care. By best available external clinical evidence we mean clinically relevant research, often from the basic sciences of medicine, but especially from patient-centred clinical research into the accuracy and precision of diagnostic tests (including the clinical

examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative, and preventive regimens. External clinical evidence both invalidates previously accepted diagnostic tests and treatments and replaces them with new ones that are more powerful, more accurate, more efficacious, and safer.

Good doctors use both individual clinical expertise and the best available external evidence, and neither alone is enough. Without clinical expertise, practice risks becoming tyrannised by evidence; for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of patients.

This description of what evidence-based medicine is helps clarify what evidence-based medicine is not. Evidence-based medicine is neither old-hat nor impossible to practice. The argument that everyone already is doing it falls before evidence of striking variations in both the integration of patient values into our clinical behaviour [7] and in the rates with which clinicians provide interventions to their patients [8]. The difficulties that clinicians face in keeping abreast of all the medical advances reported in primary journals are obvious from a comparison of the time required for reading (for general medicine, enough to examine 19 articles per day, 365 days per year [9]) with the time available (well under an hour per week by British medical consultants, even on self-reports [10]).

The argument that evidence-based medicine can be conducted only from ivory towers and armchairs is refuted by audits in the front lines of clinical care where at least some inpatient clinical teams in general medicine [11], psychiatry (J.R. Oades, et al. Royal College of Psychiatrists winter meeting, January 1996), and surgery (P. McCulloch, personal communication) have provided evidence-based care to the vast majority of their patients. Such studies show that busy clinicians who devote their scarce reading time to selective, efficient, patient-driven searching, appraisal and incorporation of the best available evidence can practice evidence-based medicine.

Evidence-based medicine is not "cook-book" medicine. Because it requires a bottom-up approach that integrates the best external evidence with individual clinical expertise and patient choice, it cannot result in slavish, cook-book approaches to individual patient care. External clinical evidence can inform, but it can never replace individual clinical expertise, and it is this expertise that decides whether the external evidence applies to the individual patient at all and, if so, how it should be integrated into a clinical decision. Similarly, any external guideline must be integrated with individual clinical expertise in deciding whether and how it matches the patient's clinical state, predicament, and preferences, and thus whether it should be applied. Clinicians who fear top-down cook-books will find the advocates of evidence-based medicine joining them at the barricades.

Evidence-based medicine is not cost-cutting medicine. Some fear that evidence-based medicine will be hijacked by purchasers and managers to cut the costs of health care. This would not only be a misuse of evidence-based medicine but suggests a fundamental misunderstanding of its financial consequences. Doctors practicing evidence-based medicine will identify and apply the most efficacious interventions to maximise the quality and quantity of life for individual patients; this may raise rather than lower the cost of their care.

Evidence-based medicine is not restricted to randomised trials and meta-analyses. It involves tracking down the best external evidence with which to answer our clinical questions. To find out about the accuracy of a diagnostic test, we need to find proper cross-sectional studies of patients clinically suspected of harbouring the relevant disorder, not a randomised trial. For a question about prognosis, we need proper follow-up studies of patients assembled at a uniform, early point in the clinical course of their disease. And sometimes the evidence we need will come from the basic sciences such as genetics or immunology. It is when asking questions about therapy that we should try to avoid the non-experimental approaches, since these routinely lead to false-positive conclusions about efficacy. Because the randomised trial, and especially the systematic review of several randomised trials, is so much more likely to inform us and so much less likely to mislead us, it has become the "gold standard" for judging whether a treatment does more good than harm. However, some questions about therapy do not require randomised trials (successful interventions for otherwise fatal conditions) or cannot wait for the trials to be conducted. And if no randomised trial has been carried out for our patient's predicament, we follow the trail to the next best external evidence and work from there.

Despite its ancient origins, evidence-based medicine remains a relatively young discipline whose positive impacts are just beginning to be validated [12, 13], and it will continue to evolve. This evolution will be enhanced as several undergraduate, post-graduate, and continuing medical education programmes adopt and adapt it to their learners' needs. These programmes, and their evaluation, will provide further information and understanding about what evidence-based medicine is, and what it is not.

Authors:

David L. Sackett, Professor, NHS Research and Development Centre for Evidence-Based Medicine, Oxford.

William M. C. Rosenberg, Clinical Tutor in Medicine, Nuffield Department of Clinical Medicine, Oxford.

J. A. Muir Gray, Director of Research and Development, Anglia and Oxford Regional Health Authority, Milton Keynes.

R. Brian Haynes, Professor of Medicine and Clinical Epidemiology, McMaster University, Hamilton, Canada.

W. Scott Richardson, Rochester, USA.

References:

1. British Medical Association: Report of the working party on medical education. London: British Medical Association, 1967.
2. Standing Committee on Postgraduate Medical and Dental Education: Creating a better learning environment in hospitals: 1. Teaching hospital doctors and dentists to teach. London: SCOPME, 1994.
3. General Medical Council: Education Committee Report. London: General Medical Council, 1994.
4. Grahame-Smith D: Evidence-based medicine: Socratic dissent. *BMJ* 1997;314:1126-7.
5. Evidence-based medicine, in its place (editorial). *Lancet* 1995;346:705.
6. Correspondence. Evidence-Based Medicine. *Lancet* 1995;346:1171-2.
7. Weatherall DJ: The inhumanity of medicine. *BMJ* 1994;308:1671-2.
8. House of Commons Health Committee. Priority setting in the NHS: purchasing. First report sessions 1994-95. London: HMSO, 1995. HC 124-1.
9. Davidoff F, Haynes R, Sackett D, Smith R: Evidence-based medicine: a new journal to help doctors identify the information they need. *BMJ* 1995;310:1065-6.
10. Sackett DL: Surveys of self-reported reading times of consultants in Oxford, Birmingham, Milton-Keynes, Bristol, Leicester, and Glasgow, 1995. In Rosenberg WMC, Richardson WS, Haynes RB, Sackett DL: Evidence-Based Medicine. London: Churchill Livingstone (in press).
11. Ellis J, Mulligan T, Rowe J, Sackett DL: Important general medicine is evidence based. *Lancet* 1995;346:407-10.
12. Bennett RJ, Sackett DL, Haynes RB, Neuf-MVR: A controlled trial of teaching critical appraisal of the clinical literature to medical students. *JAMA* 1987;257:2451-4.
13. Shiu JH, Haynes RB, Johnston ME: Effect of problem-based, self-directed undergraduate education on life-long learning. *Can Med Assoc J* 1993;149:269-74.

INFORMATION ABOUT THE CHRONIC CARE MODEL

from www.improvingchroniccare.org

[Permission will be needed if we wish to include the graphic of the model; for the content, permission is not required.]

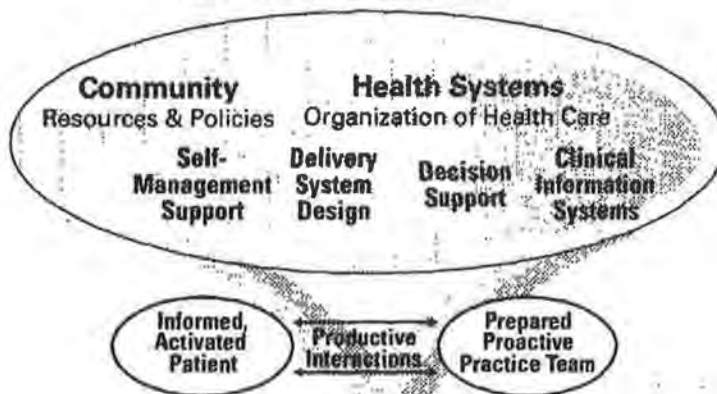
Use and reproduction of ICIC materials, linking to our site, and technical concerns

Dona Canso-George, M.A., Web Writer | Tel 206.287-2092

With the exception of the Chronic Care Model image, all materials and text found on our Web site may be freely used and disseminated. No official permission is needed from ICIC. Certain tools developed by ICIC have a copyright attached in order for us to retain the right to distribute and make revisions to the work.

Reprint permission is required for use of the Chronic Care Model image. The copyright holder of the Chronic Care Model image is the American College of Physicians (ACP), which publishes the *Annals of Internal Medicine* journal. All usage of the CCM image requires copyright clearance from ACP. The CCM image first appeared in its current format in this article:

The Chronic Care Model



Improved Outcomes

Promoting effective change in provider groups to support evidence-based clinical and quality improvement across a wide variety of health care settings.

There are many definitions of "chronic condition," some more expansive than others. We characterize it as any condition that requires ongoing adjustments by the affected person and interactions with the health care system.

138 million people, or almost half of all Americans, live with a chronic condition. That number is projected to increase by more than one percent per year by 2020, resulting in an estimated chronically ill population of 171 million.

Almost half of all people with chronic illness have multiple conditions. As a result, many managed care and integrated delivery systems have taken a great interest in correcting the many deficiencies in current management of diseases such as diabetes, heart disease, depression, asthma and others. 2, 3, 4

These deficiencies include:

- ❖ Rushed practitioners not following established practice guidelines
- ❖ Lack of care coordination
- ❖ Lack of active follow-up to ensure the best outcomes
- ❖ Patients inadequately trained to manage their illnesses

Overcoming these deficiencies will require nothing less than a transformation of health care, from a system that is essentially reactive - responding mainly when a person is sick - to one that is proactive and focused on keeping a person as healthy as possible. 5, 6, 7 To speed the transition, Improving Chronic Illness Care created the Chronic Care Model, which summarizes the basic elements for improving care in health systems at the community, organization, practice and patient levels.

Model Elements

The Chronic Care Model (CCM) identifies the essential elements of a health care system that encourage high-quality chronic disease care. These elements are the community, the health system, self-management support, delivery system design, decision support and clinical information systems. Evidence-based change concepts under each element, in combination, foster productive interactions between informed patients who take an active part in their care and providers with resources and expertise.

The Model can be applied to a variety of chronic illnesses, health care settings and target populations. The bottom line is healthier patients, more satisfied providers, and cost savings.

Development of the Chronic Care Model

The staff at the MacColl Institute for Healthcare Innovation developed the CCM by drawing on available literature about promising strategies for chronic illness management, and organizing that literature in a new more accessible way. The Model was further refined during a nine-month planning project supported by The Robert Wood Johnson Foundation, and revised based on input from a large panel of national experts. It was then used to collect data and analyze innovative programs recommended by experts. RWJF funded the MacColl Institute to test the Model nationally across varied health care settings, creating the national program, "Improving Chronic Illness Care" (ICIC).

Revisions to the Chronic Care Model

In 2008, ICIC and a small group of experts updated the CCM to reflect advances in the field of chronic care both from the research literature and from the scores of health care systems that implemented the Model in their improvement efforts. We list more specific concepts under each of the six elements. Based on more recent evidence, five new themes were incorporated into the CCM:

- Patient Safety (in Health System);
- Cultural competency (in Delivery System Design);
- Care coordination (in Health System and Clinical Information Systems);
- Community policies (in Community Resources and Policies); and
- Case management (in Delivery System Design).

The Model element pages have been redesigned to reflect these updates. Each page describes the overall strategy for each element, and the health system change concepts necessary to achieve improvement in that component. The refinements have been emphasized in bold typeface for ready identification.

Health System

Create a culture, organization and mechanisms that promote safe, high quality care

- **Visibly support improvement at all levels of the organization, beginning with the senior leader**
- **Promote effective improvement strategies aimed at comprehensive system change**
- **Encourage open and systematic handling of errors and quality problems to improve care**
- **Provide incentives based on quality of care**
- **Develop agreements that facilitate care coordination within and across organizations**

A system seeking to improve chronic illness care must be motivated and prepared for change throughout the organization. Senior leadership must identify care improvement as important work, and translate it into clear improvement goals and policies that are addressed through application of effective improvement strategies, including use of incentives, that encourage comprehensive system change. Effective organizations try to prevent errors and care problems by reporting and studying mistakes and making appropriate changes to their systems. Breakdowns in communication and care coordination can be prevented through agreements that facilitate communication and data-sharing as patients navigate across settings and providers.

Delivery System Design

Assure the delivery of effective, efficient clinical care and self-management support

- ❖ Define roles and distribute tasks among team members
- ❖ Use planned interactions to support evidence-based care
- ❖ Provide clinical case management services for complex patients
- ❖ Ensure regular follow-up by the care team
- ❖ Give care that patients understand and that fits with their cultural background

Improving the health of people with chronic illness requires transforming a system that is essentially reactive - responding mainly when a person is sick - to one that is proactive and focused on keeping a person as healthy as possible. That requires not only determining what care is needed, but spelling out roles and tasks for ensuring the patient gets care using structured, planned interactions. And it requires making follow-up a part of standard procedure, so patients aren't left on their own once they leave the doctor's office. 5,6,7 More complex patients may need more intensive management (care or case management) for a period of time to optimize clinic care and self-management. Health literacy and cultural sensitivity are two important emerging concepts in health care. Providers are increasingly being called upon to respond effectively to the diverse cultural and linguistic needs of patients.

Decision Support

Promote clinical care that is consistent with scientific evidence and patient preferences

- ❖ Embed evidence-based guidelines into daily clinical practice
- ❖ Share evidence-based guidelines and information with patients to encourage their participation
- ❖ Use proven provider education methods
- ❖ Integrate specialist expertise and primary care

Treatment decisions need to be based on explicit, proven guidelines supported by clinical research. Guidelines should also be discussed with patients so they can understand the principles behind their care. Those who make treatment decisions need ongoing training to stay up-to-date on the latest evidence, using new models of provider education that improve upon traditional continuing medical education. To change practice, guidelines must be integrated through timely reminders, feedback, standing orders and other methods that increase their visibility at the time that clinical decisions are made. The involvement of supportive specialists in the primary care of more complex patients is an important educational reality.

Clinical Information Systems

Organize patient and population data to facilitate efficient and effective care

- ❖ Provide timely reminders for providers and patients
- ❖ Identify relevant subpopulations for proactive care
- ❖ Facilitate individual patient care planning
- ❖ Share information with patients and providers to coordinate care
- ❖ Monitor performance of practice team and care system

Effective chronic illness care is virtually impossible without information systems that assure ready access to key data on individual patients as well as populations of patients. 11, 12 A comprehensive clinical information system can enhance the care of individual patients by providing timely reminders for needed services, with the summarized data helping to track and plan care. At the practice population level, an information system can identify groups of patients needing additional care as well as facilitate performance monitoring and quality improvement efforts.

Self-Management Support

Empower and prepare patients to manage their health and health care

- ❖ Emphasize the patient's central role in managing their health
- ❖ Use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up
- ❖ Organize internal and community resources to provide ongoing self-management support to patients

All patients with chronic illness make decisions and engage in behaviors that affect their health (self-management). Disease control and outcomes depend to a significant degree on the effectiveness of self-management.

Effective self-management support means more than telling patients what to do. It means acknowledging the patients' central role in their care, one that fosters a sense of responsibility for their own health. It includes the use of proven programs that provide basic information, emotional support, and strategies for living with chronic illness. Self-management support can't begin and end with a class. Using a collaborative approach, providers and patients work together to define problems, set priorities, establish goals, create treatment plans and solve problems along the way.¹³

The Community

Mobilize community resources to meet needs of patients

- Encourage patients to participate in effective community programs
- Form partnerships with community organizations to support and develop interventions that fill gaps in needed services
- Advocate for policies to improve patient care

By looking outside of itself, the health care system can enhance care for its patients and avoid duplicating effort. Community programs can support or expand a health system's care for chronically ill patients, but systems often don't make the most of such resources. A health system might form a partnership with a local senior center that provides exercise classes as an option for elderly patients. State departments of health and other agencies often have a wealth of helpful material available for the taking - wallet cards with tips for controlling diabetes, for example. National patient organizations such as the American Diabetes Association can help by promoting self-help strategies.

Local and state health policies, insurance benefits, civil rights laws for persons with disabilities, and other health-related regulations also play a critical role in chronic illness care. Advocacy by medical organizations on behalf of their patients can make a difference.

Footnotes

1. Partnership for Solutions: Johns Hopkins University, Baltimore, MD for the Robert Wood Johnson Foundation (September 2004 Update). "Chronic Conditions: Making the Case for Ongoing Care"
2. D.H. Stockwell, S. Madhavan, H. Cohen, G. Gibson, and M.H. Alderman. "The determinants of hypertension awareness, treatment, and control in an insured population". *American Journal of Public Health* 84 (1994): 1768-1774
3. S.J. Krony et al., "Survey of physician practice behaviors related to diabetes mellitus in the U.S.: Physician adherence to consensus recommendations", *Diabetes Care* 16 (1993): 1507-1510
4. J.M. Perrin, Homer CJ, Berwick DM, Woolf AD, Freeman JL, Wennberg JE. "Variations in rates of hospitalization of children in three urban communities". *New England Journal of Medicine* 320: 1163-1167
5. E.H. Wagner, B.T. Austin and M. Von Korff. "Improving outcomes in chronic illness", *Managed Care Quarterly* 4 (1996): (2) 12-26
6. E.H. Wagner, B.T. Austin and M. Von Korff. "Organizing care for patients with chronic illness", *Milbank Quarterly* 74 (1996): 511-544

7. E. Calkins, C. Booth, E.H. Wagner and J. Parala, "New Ways to Care for Older People: Building Systems Based on Evidence", New York: Springer, (1999)
8. D.K. McChilloch, M.J. Price, M. Hindmarsh and E.H. Wagner, "A population-based approach to diabetes management in a primary care setting: early results and lessons learned", *Effective Clinical Practice* (1998):12-22
9. M. Von Korff, J. Gruman, J.K. Schaefer, S.J. Curry and E.H. Wagner, "Collaborative management of chronic illness", *Annals of Internal Medicine* 127 (1997): 1097-1102
10. W. Katon, M. Von Korff, E. Lin, L. Walker, G.E. Simon, L. Bush, P. Robinson and J. Russo, "Collaborative management to achieve treatment guidelines", *Journal of the American Medical Association* 275 (1995): 1026-1031
11. M.R. Greenlick, "The emergence of population-based medicine", *HMO Practice* 2 (1995): 120-122
12. E.H. Wagner, "Population-based management of diabetes care," *Patient Education and Counseling* 16 (1995): 225-230
13. E.H. Wagner, C. Davis, J. Schaefer, M. Von Korff, B. Austin, "A survey of leading chronic disease management programs: are they consistent with the literature?", *Managed Care Quarterly* 7 (1995): 13: 56-66
14. Narayan KM, Boyle JR, Geiss LS, Saaddine JB, Thompson TJ, "Impact of Recent Increase in Incidence on Future Diabetes Burden, U.S., 2005-2050", *Diabetes Care*, 2006, 29 (8), 2114-2116

EXCERPTS FROM *Patient-Centered Care: Antecedents, Triggers, and Mediators*

Chapter 8, *Textbook of Functional Medicine*

By Leo Galland, MD

The goal of person-centered diagnosis is to enable healers to develop individualized treatment plans that are based upon an understanding of the physiological, environmental, and psychosocial context within which each person's illnesses or dysfunctions occur... you must start by eliciting all of the patient's concerns. In actively listening to the patient's story, you attempt to discover the **antecedents, triggers and mediators** that underlie symptoms, signs, illness behaviors, and demonstrable pathology. Functional medicine is based upon treatment that is collaborative, flexible, and focused on the control or reversal of each person's individual antecedents, triggers and mediators, rather than the treatment of disease entities.

It is the functional medicine practitioner's job to know not just the ailments or their diagnoses, but the physical and social environment in which sickness occurs, the dietary habits of the person who is sick (present diet and pre-illness diet), his beliefs about the illness, the impact of illness on social and psychological function, factors that aggravate or ameliorate symptoms, and factors that predispose to illness or facilitate recovery. This information is necessary for establishing a functional treatment plan.

What modern science has taught us about the genesis of disease can be represented by three words: triggers, mediators, and antecedents. Triggers are discrete entities or events that provoke disease or its symptoms. Microbes are an example. The greatest scientific discovery of the 19th century was the microbial etiology of the major epidemic diseases. Triggers are usually insufficient in and of themselves for disease formation, however. Host response is an essential component.

Identifying the biochemical mediators that underlie host responses was the most productive field of biomedical research during the second half of the 20th century. Mediators, as the word implies, do not "cause" disease. They are intermediaries that contribute to the manifestations of disease. Antecedents are factors that predispose to acute or chronic illness. For a person who is ill, they form the illness diathesis. From the perspective of prevention, they are risk factors. Knowledge of antecedents has provided a rational structure for the organization of preventive medicine and public health.

Medical genomics seeks to better understand disease by identifying the phenotypic expression of disease-related genes and their products. The application of genomic science to clinical medicine requires the integration of antecedents (gene, and the factors controlling their expression) with mediators (the downstream products of gene activation). Mediators, triggers, and antecedents are not only key biomedical concepts, they are also important psychosocial concepts. In person-centered diagnosis, the mediators, triggers, and antecedents for each person's illness form the focus of clinical investigation.

Antecedents and the Origins of Illness

Understanding the antecedents of illness helps the physician understand the unique characteristics of each patient as they relate to his or her current health status. Antecedents may be thought of as congenital or developmental. The most important congenital factor is gender; women and men differ markedly in susceptibility to many disorders. The most important developmental factor is age; what ails children is rarely the same as what ails the elderly. Beyond these obvious factors lies a diversity as complex as the genetic differences and separate life experiences that distinguish one person from another.

Triggers and the Provocation of Illness

A trigger is anything that initiates an acute illness or the emergence of symptoms. The distinction between a trigger and a precipitating event is relative, not absolute; the distinction helps organize the patient's story. As a general rule, triggers only provoke illness as long as the person is exposed to them (or for a short while afterward), whereas a precipitating event initiates a change in health status that persists long after the exposure ends.

Common triggers include physical or psychic trauma, microbes, drugs, allergens, foods (or even the act of eating or drinking), environmental toxins, temperature change, stressful life events, adverse social interactions, and powerful memories. For some conditions, the trigger is such an essential part of our concept of the disease that the two cannot be separated; the disease is either named after the trigger (e.g., "Strep throat") or the absence of the trigger negates the diagnosis (e.g., concussion cannot occur without head trauma). For chronic ailments like asthma, arthritis, or migraine headaches, multiple interacting triggers may be present. All triggers, however, exert their effects through the activation of host-genomed mediators. In closed-head trauma, for example, activation of NMDA receptors, induction of nitric oxide synthase (NOS), and liberation of free intracellular calcium determine the late effects; intravenous magnesium at the time of trauma attenuates severity by altering the mediator response.⁴² Sensitivity to different triggers often varies among persons with similar ailments. A prime task of the functional practitioner is to help patients identify important triggers for their ailments and develop strategies for eliminating them or diminishing their virulence.

Mediators and the Formation of Illness

A mediator is anything that produces symptoms, damage to tissues of the body, or the types of behaviors associated with being sick. Mediators vary in form and substance. They may be biochemical (like prostaglandins and cytokines), ionic (like hydrogen ions), social (like reinforcement for staying ill), psychological (like fear), or cultural (like beliefs about the nature of illness). A list of common mediators is presented in Table 8.1. Illness in any single person usually involves multiple interacting mediators. Biochemical, psychosocial, and cultural mediators interact continuously in the formation of illness.

⁴²Cernak I, Swick VL, Kouni J, et al. Characterization of plasma magnesium concentration and oxidative stress following gradual traumatic brain injury in humans. *J Neurotrauma*. 2000;17(1):55-66.

⁴³Vink R, Nijmboer AJ, Cernak I. An overview of new and novel pharmacotherapies for use in traumatic brain injury. *Clin Exp Pharmacol Physiol*. 2001;28(1):10-22.

Table 8.1 Common Illness Mediators

Biochemical Hormones

Neurotransmitters
Neuropeptides
Cytokines
Free radicals
Transcription factors

Subatomic

Ions
Electrons
Electrical and magnetic fields

Cognitive/emotional

Fear of pain or loss
Feelings or personal beliefs about illness
Poor self-esteem, low perceived self-efficacy
Learned helplessness
Lack of relevant health information

Social/cultural

Reinforcement for staying sick
Behavioral conditioning
Lack of resources due to social isolation or poverty
The nature of the sick role and the doctor/patient relationship
Sample form used by Functional Medicine Practitioners to
Enhance Pattern Recognition

PATTERN RECOGNITION: ULCERATIVE COLITIS		
Immune Surveillance		Practitioner's Notes
1	☐ Breastfed How long?	
2	☐ Vaccinated Adverse reactions?	
3	☐ Skin rashes ☐ Reaction to contact with significant redness (dermatographia)?	
4	☐ Joint swelling, redness	
5	☐ Dry mouth, lack of salivation	
6	☐ Dry eyes	
7	☐ Migraines Triggered by foods odors	
8	☐ Cravings Fatigue after eating certain foods?	
9	☐ Illness, dysfunction after flu-like or GI flu illness	
10	☐ Neurological symptoms that developed slowly over the course of a day and then resolved after several weeks to months, clearing slowly ☐ Change in vision ☐ Coordination ☐ Numbness ☐ Cognitive problems	
11	☐ Family history of autoimmune disease	
12	☐ Multiple infections	
13	☐ Non-specific increased mucus / allergic symptoms	
14	☐ Fatigue	
15	☐ Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS			Practitioner's Notes
Inflammatory Process			
1	☐	Swelling ☐ Diffuse (edema) ☐ Localized (angioedema, papules, oedema)	
2	☐	Erythema (hyperemia, rashes, erysipelas)	
3	☐	Heat ☐ systemic (fever) ☐ localized (warmth)	
4	☐	Pain (arthralgias, neuralgias, cramping)	
5	☐	Irritation (pruritus, sneezing, etc.)	
6	☐	Loss of function ☐ Associated with pain or scarring ☐ Cognitive impairment (neurodegeneration)	
7	☐	Excessive mucus or fluid production (includes leukorrhea, diarrhea, etc.)	
8	☐	Inflammatory markers ☐ Elevated CRP, ESR, WBC (microscopic or gross purulence) ☐ thrombocytosis ☐ fibrinogen ☐ inflammatory cytokines (IL-1, IL-6, TNF alpha) ☐ decreased complement split products ☐ homocysteine ☐ lipoprotein A2 (PLA2) ☐ calprotectin (fecal or serum)	
9	☐	Autoantibodies (ANA, RF) or elevated immunoglobulins (abnormal SPEP, tissue transglutaminase, IgG, etc.)	
10	☐	Elevated free radical markers (lipid peroxides, F2 isoprostanes, 8-OH-d-G)	
11	☐	Hypercoagulability	
12	☐	Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS		
Digestion, Absorption, Barrier Integrity		Practitioner's Notes
1	☐ Symptoms that arise around eating	
2	☐ Chew your food thoroughly and eat slowly or ☐ Eat quickly or on the run	
3	☐ Problems with saliva, such as dry mouth or drooling?	
4	☐ Experience early satiety; fullness with small portions ☐ Consistent discomfort after eating a typical meal	
5	☐ Frequent nausea Triggered by:	
6	☐ Gas or bloating	
7	☐ Burping, belching, gurgling, rumbling	
8	☐ Diagnosed with reflux disease (GERD)? Medication: x day/week	
9	☐ Diagnosed with peptic ulcers Antacid: x day/week	
10	☐ Tend toward either diarrhea (loose stools) or constipation? If so, which is more typical? Bowel movements: x day/week	
11	☐ Stool consistency varies: If so, which is more typical? Bowel movements: x day/week	
12	☐ Ever sweat intensely after eating certain foods or after meals?	
13	☐ Camp, visit or spend time in wilderness areas and if so, do you drink stream water?	
14	☐ Live with pets? If so, have they had gastrointestinal infections?	
15	☐ Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS			Practitioner's Notes
Detoxification and Biotransformation			
1	☐	Smoke how much x day / week.....	
	☐	Exposed regularly to secondhand smoke	
2	☐	Mercury amalgam fillings	
3	☐	Live or work in a densely populated area or near an industrial plant	
4	☐	Use of pesticides, herbicides, insecticides in the home or garden	
5	☐	Use of chemical preparations at work or as hobby	
6	☐	Breathe toxic elements in the air fumes or other petrochemicals	
7	☐	Symptoms (fatigue, headaches, nausea) upon exposure to various chemicals such as perfume, smoke, diesel or gas fumes, etc.)	
8	☐	Eat fish three times a week or more	
9	☐	Prono to problems taking most medications (overly sensitive to most medication and experience numerous side effects)	
10	☐	React quickly to dental anesthetics	
	☐	Require repeated administration of anesthetic	
	☐	Numbness of one shot lasts a long time	
11	☐	Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS			Practitioner's Notes
Oxidative/Reductive			
1	☐	Smoke how much x day / week Exposed regularly to secondhand smoke	
2	☐	Has chronic inflammatory condition or an autoimmune disease	
3	☐	Exercise intolerance	
4	☐	Easily fatigued	
5	☐	Regularly feels "foggy headed" or mentally fatigued, for no apparent reason	
6	☐	Live or work in a densely populated area or near an industrial plant	
7	☐	Use of pesticides, herbicides, insecticides in the home or garden	
8	☐	Breathe toxic elements in the air, fumes or other petrochemicals	
9	☐	Unpleasant or worrisome symptoms at higher altitudes	
10	☐	Radiation exposure ☐ extensive medical radiation ☐ environmental exposure	
11	☐	Fly regularly	
12	☐	Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS			Practitioner's Notes
	Hormone, Neurotransmitter Regulation		
1	☐	Sluggish and unable to get started	
	☐	Agitated/anxious, difficulty slowing down, relax	
2	☐	Difficulty falling asleep	
	☐	Awaken frequently during the night & Typical reason for waking up:	
3	☐	Change in metabolism, in weight or energy levels	
	☐	Loss of stamina with weight gain	
	☐	Increased nervousness with weight loss, or	
	☐	A different combination of these problems	
4	☐	More likely to be calm in a crisis	
	☐	Completely disheveled and agitated even in mildly stressful circumstances	
5	☐	Temperature intolerant:	
	☐	More often colder than others	
	☐	More often hotter than others	
	☐	Variable sensitivity to temperature	
	☐	Experience hot flashes	
6	☐	Heavy or irregular periods	
7	☐	Loss of libido	
	☐	Erectile dysfunction	
	☐	Inability to achieve orgasm	
8	☐	Memory loss or brain fog	
9	☐	Signs of insulin resistance/metabolic syndrome	
10	☐	Problems with mood or lability of emotional responses (rapid mood swings)	
11	☐	Emotionally stable	
	☐	Emotionally labile	
12	☐	Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS		
Psychological and Spoiritual Equilibrium		Practitioner's Notes
1	☐ Feeling stressed ☐ Problems with acute or chronic stress	
2	☐ Sadness, depression, emotional lability, anxiety as ☐ current symptoms or ☐ in the past ☐ Mood disorders (current or past diagnosis)	
3	☐ Psychiatric diseases: thought disorders, character disorders, neuroses (as a current symptom as well as any history of). Symptoms as well as a formal diagnosis.	
4	☐ Addictions (food, alcohol, drugs, cigarettes)	
5	☐ Problems with body weight (over or under) or image: eating disorders	
6	☐ Self destructive behavior (defined by practitioner or patient)	
7	☐ History of trauma, abuse, neglect	
8	☐ Chronic or serious illness or pain in patient, family or friend	
9	☐ Allergies to food/environment that create difficulties (serious issues avoiding allergens) in living	
10	☐ Grief, mourning, loss	
11	☐ Caregiver for a disabled, sick or elderly person	
12	☐ Feeling unhappiness with life situation (job, family, friends)	
13	☐ Loss or meaning, faith	
14	☐ Lack of social support	
15	☐ Other:	

PATTERN RECOGNITION: ULCERATIVE COLITIS		
Structural Integrity		Practitioner's Notes
1	☐ Joint pain	
2	☐ Pain impacted by movement (better or worse)	
3	☐ Pains that diminish as the day progresses, returning the next AM ☐ Pains that increase as the day progresses, minimized the next AM	
4	☐ Pains impacted by posture	
5	☐ Pains impacted by repositioning the body (worse or better)	
6	☐ Postural abnormalities (head anterior to shoulders, swayback, tilted head, elevated shoulder, hip sway with gait, awkward gait)	
7	☐ Abnormal wear pattern of shoes	
8	☐ Abnormal (awkward) gait patterns	
9	☐ Stiffness in AM getting out of bed, relieved by a hot shower	
10	☐ Other:	

**Reforming the United States Health Care System:
Implementing an Effective Approach to Chronic Disease**

Jeffrey Bland, Ph.D., FACN, FACB
Founder, Institute for Functional Medicine

RELEASE IN
FULL

The Challenge

It is widely acknowledged that the future of the United States health care system is challenged with the rising prevalence of chronic disease (1). The cost of health care per capita is increasing, but there is evidence that children born today will have on average a shorter life expectancy than their parents due to the rising incidence and subsequent burden of chronic disease (2). Thus, the United States health care system is facing a looming crisis. Medicine is in need of a new form of clinical education for physicians as well as an alteration in the health care delivery system that provides more effective preventive care and chronic disease management (3)

Disease Diagnosis versus Early Assessment

The origin of the problem lies in part with the emphasis on disease diagnosis and treatment. This coupled with the absence of an effective system that assesses and intervenes at an early state of illness before the onset of a disease has resulted in the increasing application of ever more expensive intervention and hospitalization (4). Presently the majority of the financial incentives in the health care system are focused on disease diagnosis and treatment by specialists. This translates into less than 10% of students in United States medical schools presently planning on going into the primary component of the health care system for the prevention and management of chronic disease: family practice.

What is Missing

The United States health care system is a very effective provider of hospital-based, specialty disease care, but is not as effective in providing intervention related to the prevention of disease. In 1983 Lewis Thomas, M.D. and past editor of the *New England of Medicine* authored a book entitled "*The Youngest Science*" in which he described how medicine was evolving from a descriptive science where disease diagnosis was the most important feature of medicine to a predictive science based upon the understanding of the etiology of disease. He predicted that by the start of the 21st century the biomedical sciences would have discovered enough about the origin of chronic disease to treat the early cause of the disease, and not just its late state effects (5). His prediction has proven to be largely correct. Over the past thirty years the underlying physiological dysfunctions that give rise to later disease have been discovered. We are witnessing the transition in medical thinking from that which is *reactive* (i.e. pathology-based) to that which is *proactive* (i.e. prognostic-based) based on the understanding of the early alterations in physiological function (6). The emerging understanding of the origin of chronic diseases is that they result from a complex interaction between the genetic uniqueness of the individual with their lifestyle and environment (7). Chronic disease is therefore the result of an alteration in physiological function in the individual that reflects the translation of

genetic susceptibilities through the exposure to specific lifestyle and environmental factors (8).

Functional Prospective Medicine

The present debate surrounding health care reform has focused heavily on universal access to health care and the institutional and financial implications of this objective. These are important objectives, but absent in this dialog has been a discussion concerning the type of health care that will be provided. A continued dominant focus on access to disease treatment in the absence of an equally serious discussion as to how lifestyle medicine will be effectively implemented in medicine to improve physiological function will result in a continued perpetuation of the costly disease intervention focused model.

Synderman and Hood have termed the medicine focused on improving the functional health of the individual as "Prospective Medicine" which has the four characteristics of personalized, predictive, preventive and participatory (9,10,11,12). This medical approach is built upon the emergent science of systems biology which focuses on the underlying functional disturbances in physiology at an early stage in its development prior to the onset of severe pathology (13).

Improved Clinical Outcome with Functional Predictive Medicine

A clinical example of the application of this type of medicine comes from a patient at the Functional Medicine Research Center in Gig Harbor, Washington which I oversee. John H was a 53 year old who has type 2 diabetes. He also has early stage cardiac disease. He was being seen by three different medical specialists each of which was treating under accepted standards of practice one aspect of his complex chronic disease presentation. His diabetes was being managed through the use of insulin injections and insulin stimulating medications, his elevated cholesterol and triglycerides were being managed by another physician with the administration of a statin and fibrate medication, and his hypertension and erectile dysfunction was being managed by a third physician with an angiotensin converting enzyme inhibitor and nitric oxide modulating medications. When he presented to our clinic he was still feeling poorly and his disease indicators were still significant. Using a systems biology, functional approach to his condition the underlying antecedents and lifestyle/environmental factors that underlie his diseases were identified. Using this patient-focused rather than disease-focused approach he was then given a treatment program that fulfills the criteria of personalized, predictive, preventive and participatory. His outcome on this program over twelve weeks was outstanding with an improvement in all his disease indicators, and a concomitant reduction or elimination of all the medications that he was initially taking.

This is a representative example of the type of outcome that can be achieved through the effective application of a systems biology-based intervention program. This is but one of countless hundreds of clinical outcome examples that have been achieved in patients with a variety of chronic diseases through the application of a functional prospective medicine approach.

The cost-effectiveness of this program is enhanced by the use of health extenders in its clinical application. A physician's time is a limited resource. Improvement in both patient outcome and a reduction in the cost of the delivery of a prospective, functional medicine approach to chronic disease have been achieved by the use of health care extenders such as nurses, dietitians, physician assistants and certified lifestyle educators. The use of such resources within the health care team has been demonstrated to improve compliance and personalization of the program to the patient's needs (14).

Recently, Elias Zerhouni, M.D. described in an article in the *New England Journal of Medicine* the importance of translating the latest in biomedical research progress into clinical practice to improve patient outcomes (15). He stated that it is "time for a new vision". This concept is applicable for both the management of chronic as well as acute diseases. The *Textbook of Functional Medicine* describes a successful way of introducing systems biology thinking and prospective medicine into clinical practice for the management of complex chronic diseases (16). In a recent article in the *New England Journal of Medicine* AL Barabasi indicated that the future of medicine will be in the implementation of a system that incorporates the understanding that disease arises from a complex alteration in the physiological network that connects genetic uniqueness to environmental and social factors (17). The Institute for Functional Medicine has been providing continuing medical education courses surrounding the concept of a patient-centered, systems biology approach to the management of chronic disease since 1991. There are presently more than 10,000 physicians who have attended the Institute for Functional Medicine courses, and are utilizing aspects of this patient-centered, prospective approach to health care for the successful management of their patients.

The Tools We Need Are Available Now

We are standing at the frontier of a new medicine based upon the recent biomedical discoveries of the origin of chronic diseases, and the recognition that they are rooted in the gene-environment interaction. This new medicine is systems biology rather than disease focused (18). It is a medicine that takes its lead from the understanding of the human disease network that connects the individual's genetic uniqueness with their lifestyle, environment and social network (19). It redefines chronic disease as a functional alteration in the physiological network that requires a system approach to clinical intervention to improve both the safety and effectiveness of therapy (20,21).

We have the tools to create a more effective health care delivery system today. We need to seriously address how to implement a nationwide clinical training program in prospective, functional medicine. We need to develop reimbursement procedures for prospective, functional interventions that provide support for assessment, patient education, and therapy. We need to harness the talents and expertise of health care extenders to provide patient services in the delivery of a personalized, predictive, preventive and participatory medicine for the reduction in the burden of chronic disease.

The tools we need are available, the effectiveness of the approach has been demonstrated through the successful clinical application of this model by thousands of health care providers over the past fifteen years, and the development of many of the clinical

biomarkers for the functional assessment of patients has been accomplished (22). What is now needed is a fundamental paradigm shift in the way regulators, overseers of institutional medicine, and third party payers think about the origin of chronic disease from a systems biology, functional perspective (23).

References

1. Bar-Yam Y, "Improving the effectiveness of health care and public health: A multiscale complex systems analysis", *American Journal of Public Health* 2006; 96: 459-466.
2. Olshansky SJ, Passaro DJ, Heshaw RC, Layden J, Carnes BA, Brody J, Hayflick L, Butler RN, and Ludwig DS, "A potential decline in life expectancy in the United States in the 21st century", *N Engl J Med* 2005; 352: 1138-1145.
3. Holman H, "Chronic disease-the need for a new clinical education", *JAMA* 2004; 292: 1057-1059.
4. Bland JS, "Functional somatic syndromes, stress pathologies and epigenetics", *Alter Ther Health Med* 2008; 14 (1): 14-16.
5. Thomas L, "The youngest science: notes of a biology watcher", Penguin Books 1983, New York.
6. Bland JS, "Systems biology, functional medicine and folates", *Alter Ther Health Med* 2008; 14 (3): 18-20.
7. Ordoas J, "Gene-environment interaction and susceptibility to metabolic syndrome and other chronic diseases", *J Periodontology* 2008; 79: 1508-1513.
8. Coyle YM, "Lifestyle, genes and cancer", *Methods Mol Biol* 2009; 472: 25-56.
9. Snyderman R and Williams, RS, "Prospective medicine: the next health care transformation", *Academic Medicine* 2003; 78: 1079-1084.
10. Auffray C, Zhu C, and Hood L, "Systems medicine: the future of medical genomics and health", *Genome Medicine* 2009; 1: 2-26.
11. Weston AD, and Hood L, "Systems biology, proteomics and the future of health care: toward predictive, preventative, and personalized medicine", *J Proteome Res* 2004; 3: 179-196.
12. Snyderman R, and Langheier J, "Prospective health care: the second transformation of medicine", *Genome Biol* 2006; 7: 104-112.
13. Hood L, Heath J, Phelps M, and Lin B, "Systems biology and new technologies enable predictive and preventative medicine", *Science* 2004; 306: 640-643.
14. Dagogo-Jack S, "Preventing diabetes-related morbidity and mortality in a primary care setting", *J Natl Med Assoc* 2002; 94: 549-560.
15. Zerhouni EA, "Translational and clinical science-time for a new vision", *N Engl J Med* 2005; 353: 1621-1623.
16. "Textbook of Functional Medicine", 2005, Jones D, editor, Institute for Functional Medicine, Gig Harbor, Washington.
17. Barabasi AL, "Network medicine-from obesity to the 'diseasome'", *N Engl J Med* 2007; 357: 37-379.
18. Aderem A, "Systems biology: its practice and challenges", *Cell* 2005; 121: 511-513.
19. Goh K, Cusick ME, Valle D, Childs B, Vidal M, and Barabasi A, "The human disease network", *Proc Natl Acad Sci* 2007; 104: 8685-8690.

HA 09/01/2015

20. Nicholson JK, "Global systems biology: personalized medicine and molecular epidemiology", *Mol Systems Biol* 2006; 10: 1-6.
21. Ahn AC, Tewari M, Poon C, and Phillips RS, "The clinical application of a systems approach", *Plos Medicine* 2006; 3: 956-959.
22. Bland JS, "Importance of functional biomarkers in the management of chronic disease", *Alter Ther Health Med* 2008, 14(4): 18-21.
23. Ahn AC, Tewari M, Poon C, and Phillips RS, "The limits of reductionism in medicine: could systems biology offer an alternative?", *PlosMedicine* 2006; 3: 709-712.

HA 09/01/2015

RELEASE IN
FULL



A WELLNESS INITIATIVE FOR THE NATION

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.

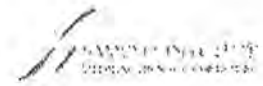
★ The policies and programs of WIN would be grounded in the **continuity of health and the prevention of illness throughout the human lifecycle** and would approach this continuity through comprehensive lifestyle and integrative health care approaches that have demonstrated effectiveness.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

The initial step towards a Wellness Initiative for the Nation (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.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

HA 09/01/2015



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")

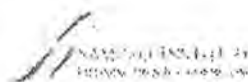
- ★ Create an advanced information tracking and feedback system (an applied health promotion technology toolkit) for delivery of personalized wellness education, customized to each person's level of readiness, IT capabilities and stage of life.
- ★ Interface this applied wellness toolkit with electronic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



A Wellness Initiative for the Nation- February 19, 2009, Page 3 of 11



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;

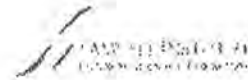
Phase 4: Collate, coordinate and align current health promotion and prevention policy efforts such as, House Concurrent Resolution 406, The Health Promotion First Act, the Healthy Workforce Act, The Health Project, the 1st Dollar Clinical Preventive Services Coverage, the Medicare Improvement Act, the 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

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% of the GNP by 2025 and 49% 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.

*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)*

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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% 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



11-11-11 11:11:11
11-11-11 11:11:11
11-11-11 11:11:11

★ 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

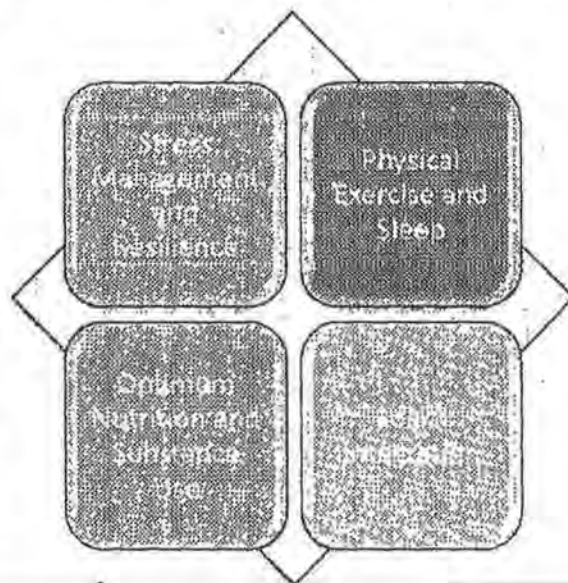
★ Five behavioral factors contribute the most to mitigating costs and to increasing sustainable wellness. These are: 1) reducing toxic substance exposure (smoking, alcohol, drugs and pollution); 2) sufficient exercise; 3) healthy diet; 4) psychosocial integration and stress management; and 5) early detection and intervention.^{20, 28}

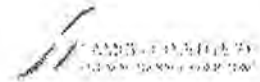
★ To achieve gains in wellness and productivity requires a change in the nature of the culture and services provided to our communities. Increased access to our current disease treatment system is not sufficient and will increase costs. We need a concerted investment in creating a flourishing human capital 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 practices²⁶ 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}

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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.

★ 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).

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

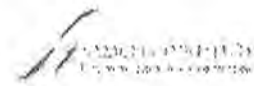
MODELS OF SUCCESSFUL PREVENTION AND HEALTH PROMOTION

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.



A Wellness Initiative for the Nation- February 19, 2009, Page 7 of 11



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

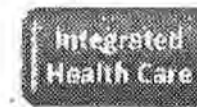
The widespread application of selected, evidence-based integrated health care practices could markedly improve quality of life and reduce costs.³³ Behavioral and mind-body practices have been repeatedly demonstrated to enhance quality of life, improve self-care and reduce costs.³⁸ Acupuncture has now 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.

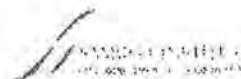
WORKSITES

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 factors⁵¹, stroke prevention⁵², smoking cessation⁵³, treating obesity⁵⁴ and osteoporosis⁵⁵, and diabetes prevention⁵⁶, 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

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 in 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}

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

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% 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

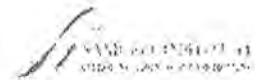
THE UNDERSERVED

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.⁷⁷ 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% reduction in pain, 25% reduction in health care utilization and 20% 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

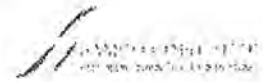
These examples are only a few of the practices that could improve health, productivity and well-being, and reduce costs from disease and disability in our nation. For other examples involving disease screening, vaccination, nutritional practices and educational programs, see the governmental summaries on those areas.^{5, 77, 78-85}

REFERENCES

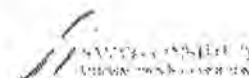
1. Editorial: Tackling the burden of chronic diseases in the USA. *Lancet*. 373; 981. Jan 17, 2009. See also: Park A. America's health check-up. *Time Magazine*. 2008; December 1:41-51.
2. Podesta J. *The Power of Progress: How America's Progressives Can (Once Again) Save Our Economy, Our Climate, And Our Country*: Crown / RandomHouse 2008.



3. Schoen C, Osborn R, How SK, Doty MM, Peugh J. In Chronic Condition: Experiences Of Patients With Complex Health Care Needs, In Eight Countries, 2008. *Health Aff (Millwood)*. Nov 13 2008.
4. Center for American Progress and the Institute on Medicine as a Profession. *The Health Care Delivery System: A Blueprint for Reform* 2008. http://www.americanprogress.org/issues/2008/10/health_care_delivery.html Accessed January 2, 2009.
5. Healthy People. <http://www.healthypeople.gov/> Accessed December 2, 2009.
6. Lambrew J, Podesta J, Center for American Progress. Promoting prevention and preempting costs: A new wellness trust for the United States. *Center for American Progress*. 2006; http://www.americanprogress.org/issues/2006/10/pdf/health_lambrew.pdf.
7. Daschle T, Lambrew J, Greenberger S. *Critical: What We Can Do About the Health Care Crisis*. New York: St. Martin's Press; 2008.
8. Institute of Medicine. *Crossing the Quality Chasm: A new health system for the 21st century*. Washington, DC: National Academic Press; 2001.
9. Adams K, Corrigan J. *Priority Areas for National Action: Transforming Health Care Quality*. Washington, DC: National Academies Press; 2003.
10. Institute of Medicine. *Complementary and Alternative Medicine in the United States*. Washington, DC: National Academies Press; 2005.
11. *White House Commission on Complementary and Alternative Medicine Policy: Final Report* 2002. www.whccamp.hhs.gov Accessed December 2, 2009.
12. Samueli Institute. Alignment of the WIN. <http://www.siiib.org/news/news-home/112-SIIB.html>. 2009; Accessed January 21, 2009.
13. Cole B, Fielding J. Building Health Impact Assessment (HIA) Capacity: A strategy for Congress and Government Agencies. *A Prevention Policy Paper Commissioned by Partnership for Prevention*. http://thehill.com/wppdf/PfP_HealthImpactAssessment.pdf. Accessed January 20, 2009.
14. RAND COMPARE. <http://www.randcompare.org/> Accessed January 20, 2009.
15. World Health Organization. *Primary Health Care: Now More Than Ever*. Washington, DC: World Health Organization; 2008. <http://www.who.int/whr/2008/en/index.html> Accessed January 2, 2009.
16. Demyttenaere K, Bruffaerts R, Posada-Villa J, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA*. Jun 2 2004;291(21):2581-2590.
17. Lambrew J. *A Wellness Trust to Prioritize Disease Prevention*. Brookings Institute; April 2007. www3.brookings.edu/views/papers/200704lambrew.pdf Accessed December 2, 2008.
18. World Health Organization. *Health Systems: Improving Performance*. Geneva: World Health Organization; 2000. www.who.int/whr/2000/en Accessed December 2, 2008.
19. Congressional Budget Office. *The Long-Term Outlook for Health Care Spending* November, 2007. www.cbo.gov/ftpdocs/87xx/doc8758/11-13-LT-Health.pdf Accessed December 2, 2008.
20. DeVol R, Bedroussian A, Charuorn A, et al. *An Unhealthy America: The Economic Burden of Chronic Disease -- Charting a New Course to Save Lives and Increase Productivity and Economic Growth*. Santa Monica, CA: Milken Institute; October 2007.
21. Partnership for Prevention. *Real Health Reform Starts with Prevention* December 2008. www.prevent.org/HealthReform Accessed January 2, 2009.
22. Lorig KR, Sobel DS, Ritter PL, Laurent D, Hobbs M. Effect of a self-management program on patients with chronic disease. *Eff Clin Pract*. Nov-Dec 2001;4(6):256-262.
23. Duensing L. Shifting the health care paradigm: An interview with Wayne Jonas, MD, President and Chief Executive Officer of the Samueli Institute. *The Pain Practitioner*. 2008;18(2):48-54.
24. Brown K. Biopsychosocial perspectives of chronic pain, depression and effective medical therapeutics. *The Pain Practitioner*. 2008;18(2):38-47.
25. Snyder M, Wieland J. Complementary and alternative therapies: what is their place in the management of chronic pain? *Nurs Clin North Am*. Sep 2003;38(3):495-508.
26. Jonas WB, Levin J. *Essentials of Complementary and Alternative Medicine*. Philadelphia: Lippincott Williams & Wilkins; 1999.
27. McGinnis JM, Russo P, Knickman J. The case for more active policy attention. *Health Affairs*. 2002;21(2):78-93.
28. McGinnis JM. A vision for health in our new century. *Am J Health Promot*. Nov-Dec 2003;18(2):146-150.
29. Schröder S. We can do better-improving the health of the American people. *N Engl J Med*. 2007;357:1221-1228.
30. Walach H, Jonas WB. Placebo research: the evidence base for harnessing self-healing capacities. *J Altern Complement Med*. 2004;10(Suppl):S103-S112.
31. Chez R, Pelletier K, Jonas WB. Toward optimal healing environments in health care: Second American Samueli Symposium. *J Altern Complement Ther*. 2004;10(Suppl 1).



32. Herman PM, Craig BM, Caspi O. Is complementary and alternative medicine (CAM) cost-effective? A systematic review. *BMC Complement Altern Med*. 2005;5:11.
33. Debas H, Laxminarayan R, Straus S. Complementary and alternative medicine. In: Jamison D, Breman J, Measham A, Alleyne G, Claeson M, eds. *Disease Control Priorities in Developing Countries*. 2nd Edition: The World Bank Group; 2006:1281-1291.
34. Deuster PA, O'Connor FG, Henry KA, et al. Human performance optimization: an evolving charge to the Department of Defense. *Mil Med*. Nov 2007;172(11):1133-1137.
35. Samuelli Institute. Toward a Systems Wellness System. <http://www.siib.org/research/research-home/systems-wellness-system.html>. Accessed December 2, 2008.
36. Samuelli Institute. Knowledge Center for Optimal Healing Environments. <http://www.siib.org/research/research-home/optimal-healing.html> Accessed December 2, 2008.
37. Eng T. *The eHealth landscape: a terrain map of an emerging information and communication technology in health and health care*. Princeton, NJ: Robert Wood Johnson Foundation; 2001.
38. Sobel DS. MSJAMA: mind matters, money matters: the cost-effectiveness of mind/body medicine. *JAMA*. Oct 4 2000;284(13):1705.
39. Haake M, Muller HH, Schade-Brittinger C, et al. German Acupuncture Trials (GERAC) for chronic low back pain: randomized, multicenter, blinded, parallel-group trial with 3 groups. *Arch Intern Med*. Sep 24 2007;167(17):1892-1898.
40. Diener HC, Kronfeld K, Boewing G, et al. Efficacy of acupuncture for the prophylaxis of migraine: a multicentre randomised controlled clinical trial. *Lancet Neurol*. Apr 2006;5(4):310-316.
41. Cherkin DC, Sherman KJ, Deyo RA, Shekelle PG. A review of the evidence for the effectiveness, safety, and cost of acupuncture, massage therapy, and spinal manipulation for back pain. *Ann Intern Med*. Jun 3 2003;138(11):898-906.
42. Scafidi F, Field T, Schanberg S. Factors that predict which preterm infants benefit most from massage therapy. *J Development Behav Pediatrics*. 1993;14(3):176-180.
43. Field T, Hernandez-Reif M, Quintino O, Schanberg S, C K. Elder retired volunteers benefit from giving massage therapy to infants. *J Appl Gerontology*. 1998b;17:229-239.
44. Barnes P, Bloom B, Nahin R. *Complementary and alternative medicine use among adults and children: United States, 2007*. Washington, DC: US Department of Health and Human Services; December 10, 2008. <http://www.cdc.gov/nchs/data/nhsr/nhsr012.pdf> Accessed January 2, 2009.
45. Pelletier KR. A review and analysis of the clinical and cost-effectiveness studies of comprehensive health promotion and disease management programs at the worksite: update VI 2000-2004. *J Occup Environ Med*. Oct 2005;47(10):1051-1058.
46. *The Business of Health-The Health of Business: Building the case for health, safety and wellness* 2006. <http://www.iblf.org/docs/BizofHealth.pdf> Accessed December 2, 2008.
47. Substance Abuse and Mental Health Services Administration. Fact Sheet: Workplace Health Promotion/Wellness. <http://www.workplace.samhsa.gov/ResourceCenter/r305.pdf>. 1998.
48. Pelletier KR. Corporate Health Improvement Program (CHIP). <http://www.drpelletier.com/chip/index.html> Accessed December 2, 2008.
49. Special Committee on Health, Productivity, and Disability Management. Healthy Workforce/Healthy Economy: The Role of Health, Productivity, and Disability Management in Addressing the Nation's Health Care Crisis: Why an emphasis on the Health of the Workforce is Vital to the Health of the Economy. *J Occupational and Environmental Medicine*. 2009;51(1):114-119.
50. The Health Project: Reducing health care costs through improved health behavior. <http://healthproject.stanford.edu/> Accessed January 2, 2009.
51. Pazoki R, Nabipour I, Seyednezami N, Imami SR. Effects of a community-based healthy heart program on increasing healthy women's physical activity: a randomized controlled trial guided by Community-based Participatory Research (CBPR). *BMC Public Health*. 2007;7:216.
52. Sit JW, Yip VY, Ko SK, Gun AP, Lee JS. A quasi-experimental study on a community-based stroke prevention programme for clients with minor stroke. *J Clin Nurs*. Feb 2007;16(2):272-281.
53. Andrews J, Bentley G, Crawford S, Pretlow L, Tinggen M. Using community-based participatory research to develop a culturally sensitive smoking cessation intervention with public housing neighborhoods. *Ethn Dis*. 2007;17(2):331-337.
54. Pettman TL, Misan GM, Owen K, et al. Self-management for obesity and cardio-metabolic fitness: Description and evaluation of the lifestyle modification program of a randomised controlled trial. *Int J Behav Nutr Phys Act*. 2008;5:53.
55. Pearson JA, Burkhart E, Pifalo WB, Palaggo-Toy T, Krohn K. A lifestyle modification intervention for the treatment of osteoporosis. *Am J Health Promot*. Sep-Oct 2005;20(1):28-33.
56. Satterfield DW, Volansky M, Caspersen CJ, et al. Community-based lifestyle interventions to prevent type 2 diabetes. *Diabetes Care*. Sep 2003;26(9):2643-2652.
57. Kerr J, ed. *Community Health Promotion: Challenges for Practice*: Bailliere Tindall; 2000.



58. Togami T. Interventions in local communities and work sites through Physical Activity and Nutrition Programme. *Obes Rev.* Mar 2008;9 Suppl 1:127-129.
59. Kain J, Uauy R, Albala, et al. School-based obesity prevention in Chilean primary school children: methodology and evaluation of a controlled study. *Int J Obesity.* 2004;28(4):483-493.
60. Wellspring Academies. <http://www.wellspringacademies.com/>. Accessed December 5, 2008.
61. Gortmaker SL, Peterson K, Wiecha J, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Arch Pediatr Adolesc Med.* Apr 1999;153(4):409-418.
62. BMJ Health Intelligence 2007. <http://healthintelligence.bmj.com/hi/do/home> Accessed November 25, 2008.
63. van Sluijs EM, McMinn AM, Griffin SJ. Effectiveness of interventions to promote physical activity in children and adolescents: systematic review of controlled trials. *BMJ.* Oct 6 2007;335(7622):703.
64. Huhman ME, Potter LD, Duke JC, et al. Evaluation of a national physical activity intervention for children: VERB campaign, 2002-2004. *Am J Prev Med.* Jan 2007;32(1):38-43.
65. Kirschenbaum D, Craig R, Kelly K, Germann J. Treatment and innovation: Description and evaluation of new programs currently available for your patients. *Obesity Management.* 2007;DOI: 10.1089/obe.2007.0115:261-266.
66. Astin JA, Pelletier KR, Marie A, Haskell WL. Complementary and alternative medicine use among elderly persons: one-year analysis of a Blue Shield Medicare supplement. *J Gerontol A Biol Sci Med Sci.* Jan 2000;55(1):M4-9.
67. Najm W, Reinsch S, Hoehler F, Tobis J. Use of complementary and alternative medicine among the ethnic elderly. *Altern Ther Health Med.* May-Jun 2003;9(3):50-57.
68. Coleman MT, Newton KS. Supporting self-management in patients with chronic illness. *Am Fam Physician.* Oct 15 2005;72(8):1503-1510.
69. Martin EM, Coyle MK. Nursing protocol for telephonic supervision of clients. *Rehabil Nurs.* Mar-Apr 2006;31(2):54-57, 62.
70. Noel HC, Vogel DC, Erdos JJ, Cornwall D, Levin F. Home telehealth reduces healthcare costs. *Telemed J E Health.* Summer 2004;10(2):170-183.
71. Amarasingham R, Plantinga L, Diener-West M, Gaskin DJ, Powe NR. Clinical information technologies and inpatient outcomes: a multiple hospital study. *Arch Intern Med.* Jan 26 2009;169(2):108-114.
72. Goetzel RZ, Shechter D, Ozminkowski RJ, et al. Can health promotion programs save Medicare money? *Clin Interv Aging.* 2007;2(1):117-122.
73. Newsreel C. Unnatural Causes...is inequality making us sick? <http://www.unnaturalcauses.org/>. 2008; Accessed Dec 2, 2008.
74. Bezold C, Calvo A, Fritts M, Jonas WB. Integrative medicine and health disparities: A scoping meeting. A report produced by the Institute of Alternative Futures, Health Resources and Services Administration and the Samueli Institute. 2008.
75. Sarnat RL, Winterstein J, Cambron JA. Clinical utilization and cost outcomes from an integrative medicine independent physician association: an additional 3-year update. *J Manipulative Physiol Ther.* May 2007;30(4):263-269.
76. NCMIC. The Integrator Blog. http://theintegratorblog.com/site/index.php?option=com_content&task=view&id. Accessed December 2, 2008.
77. Center for Disease Control. www.cdc.gov. Accessed December 2, 2008.
78. A series of issue briefs addressing many of the most important prevention policy issues facing the nation. www.prevent.org/HealthReform/ Accessed January 21, 2009.
79. Recommendations from the US Preventive Services Task Force about effective clinical preventive services. www.ahrq.gov/clinic/prevenix.htm. Accessed January 2, 2009.
80. Recommendations from the Task Force on Community Preventive Services about effective community preventive services. www.thecommunityguide.org/ Accessed January 2, 2009.
81. Partnership for Prevention. http://www.prevent.org/component/option,com_frontpage/Itemid,1/.
82. Prevention Institute. <http://www.preventioninstitute.org/> Accessed January 2, 2009.
83. The American College of Occupational and Environmental Medicine. <http://www.acoem.org/> Accessed January 2, 2009.
84. Maclosek M, Coffield A, Edwards N, et al. Priorities among effective clinical preventive services: results of a systematic review and analysis. *Am J Prev Med.* 2006;31(1):52-61.
85. Partnership for Prevention. Principles for prevention-centered health reform. www.prevent.org/HealthReform/ 2007; Accessed January 20, 2008.
86. National Commission on Prevention Priorities. Preventive care: National profile on use, disparities, and health benefits. Partnership for Prevention. 2007; www.prevent.org/100,000Lives/ Accessed January 20, 2009.

From: H <hdr22@clintonemail.com>
Sent: Friday, March 6, 2009 8:26 PM
To: Cheryl Mills <CMills@hillaryclinton.com>
Subject: Can you talk?

RELEASE IN
FULL

I just arrived in Ankara and would like to check in I would call thru Ops.

From: H <hdr22@clintonemail.com>
Sent: Friday, February 27, 2009 1:33 PM
To: Lauren Jiloty <JilotyLC@state.gov>
Subject: Fw: The Hearing and IOM Meeting
Attach: Hyman Senate Testimony Final.2.26.09.doc; 21stCentMed.pdf; 21stCentMed_Appendix.pdf; 2009 Functional Prospective Medicine.doc; WIN Summary 19feb09.pdf

RELEASE IN PART
B6

Pls print all of this and hold for me. Thx.

From: "Mark Hyman, MD"
Date: Fri, 27 Feb 2009 07:45:48 -0500
To: Hillary Clinton <hr15@att.blackberry.net>; Hillary Clinton <hdr22@clintonemail.com>
Subject: The Hearing and IOM Meeting

Dear Hillary,

I thought you would also like to see some of the testimony submitted this week.

1. My testimony
2. Jeff Bland's testimony
3. The White Paper on A New Model for Education and Practice in the 21st Century from the Institute for Functional Medicine.
4. Dr. Wayne Jonas proposal for a White House wellness initiative to help the health care reform team and bring in key advisory leaders in this field.

Hope to see you soon!

Mark Hyman, MD
Founder and Medical Director
The UltraWellness Center
45 Walker Street
Lenox, MA 01240

B6

Mark

HA 09/01/2015

From: H <hdr22@clintonemail.com>
Sent: Friday, February 27, 2009 1:37 PM
To: Mark Hyman, MD
Subject: Re: In Washington

B6

RELEASE IN
PART B6

Dear Mark,

I'm so sorry but I'm just seeing this (no blackberry contact permitted in my office) and I'm on the way to the shuttle to NY. Tomorrow I leave for Egypt, Israel, Europe and Turkey for a week. I hope the meeting and the hearing goes well. Let me know. All the best.

From: "Mark Hyman, MD"
Date: Fri, 27 Feb 2009 07:45:35 -0500
To: Hillary Clinton<hr15@att.blackberry.net>; Hillary Clinton<hdr22@clintonemail.com>
Subject: In Washington

Dear Hillary,

I just wanted to thank you again so much for opening the door to Senator Harkin and helping me bring the concepts that will be the best hope for changing not only the way we do medicine but the medicine we do, into the conversation of health care reform. I am sending another email with the documents – in case attachments don't get through..

I am also at the Institute of Medicine meeting at the NAS on Integrative Medicine this week – 600 leaders –quite a gathering. I saw that the State Department was right across the street.

I know you are extremely busy – but if you are around I would love to pop by and say hi.... Just let me know if you have time and I will come over. I am here and mostly free all day - Friday Feb 27th.

Thinking of you!!

Be well,

Mark

Mark Hyman, MD
Founder and Medical Director
The UltraWellness Center
45 Walker Street
Lenox, MA 01240



From: H <hdr22@clintonemail.com>
Sent: Friday, February 27, 2009 1:38 PM
To: Marty Torrey
Subject: Re: Dave Stone, etc

RELEASE IN
PART B6

B6

Thx so much. I look forward to seeing you two.

-----Original Message-----

From: Marty Torrey
To: hdr22@clintonemail.com
Sent: Feb 26, 2009 3:05 AM
Subject: Re: Dave Stone, etc

Great. Thanks. I imagine your body won't know what time zone it is in for a couple of years. [redacted] (the exchange teacher who is back in China) reported that your trip to China was well received by the everyone she knows. Interesting to watch Washington. I recall that a few months ago you said fixing the home owners problems was a vital step that had to be dealt with at the front end. Now they're trying to fix it as a 4th or 5th priority because they finally see that element provides the basis for confidence in the economy, etc. That said, I'll connect with your office to arrange for sailors visit. A few minutes of your busy schedule most appreciated. While I doubt it is possible, hope you are getting a bit of rest. Busy times Marty

----- H <hdr22@clintonemail.com> wrote:

> I'd love to see you two sailors. Don't know when schedules will mesh, but contact Lauren or Lona in my office to try to coordinate the three of us.
> All the best from your jet-lagged friend.

> -----Original Message-----

> From: Marty Torrey
> To: hdr22@clintonemail.com
> Sent: Feb 25, 2009 2:08 AM
> Subject: Dave Stone, etc

>
> Dave Stone is in Bahrain for a bit. Any chance Dave and I could get 10 minutes just to say hello? Either Washington or NY. We all recognize you're the planet's busiest lady... and doing great for sure. Everyone proud. Glad to see the Ann Lewis emails, site, etc underway. Best,
> Marty
>
>

From: H <hdr22@clintonemail.com>
Sent: Friday, February 27, 2009 2:01 PM
To: Bill Owens
Subject: Re:

B6

RELEASE IN PART
B6

Dear Bill,

Thank you for coming to the Beijing Embassy to see me. You look as tho your new life is agreeing w you and I only regret we did not have more time together. I will follow up on in the next week on your memo about complementary engagements. All the best Hillary

-----Original Message-----

From: Bill Owens
To: 'hdr22@clintonemail.com'
Sent: Feb 21, 2009 6:38 PM
Subject:

Dear Hillary,

I think your "listening tour" has been inspiring to all of us who have cared about our relationships with Asia. I had dinner last night in Beijing with about a dozen very well placed senior generals and politicians. You would have liked their comments about your visit. I'm proud of what you're doing and always here to help when I can. It was very nice to see you at the Embassy. After such an arduous trip, I thought you were great with the staff/Marines/Peace Corps (and the kids!).

I hope you'll have a chance to think about the "complementary engagement" one pager on mil/econ/political friendships (which I'm afraid I too quickly passed to you). I think the effort is helpful to what you're doing on a more formal level.

Warm best wishes, I'm cheering for you, Bill Owens

From: Huma Abedin [REDACTED]
Sent: Friday, February 27, 2009 3:13 PM
To: hdr22@clintonemail.com
Subject:

B6

RELEASE IN PART
B6

Call ops to connect you to susan rice
202-647-1512
And then call lauren 202-647-5298 if u want to be connected to mort zuckerman and chuck schumer

From: Humá Abodin [REDACTED]
Sent: Friday, February 27, 2009 9:40 PM
To: hdr22@clintonemail.com
Subject:

RELEASE IN PART
B6

B6

Can u call cheryl thru ops?
202-647-1512

From: H <hdr22@clintonemail.com>
Sent: Saturday, February 28, 2009 7:29 AM
To: Huma Abedin [REDACTED]
Subject: Re: Calls

B6

RELEASE IN
PART B5,B6

Yes to both.

-----Original Message-----

From: Huma Abedin
To: hdr22@clintonemail.com
Sent: Feb 27, 2009 11:59 PM
Subject: Calls

B5

[REDACTED] Ops can reach out tonite and suggest a time.
[REDACTED]

B5

From: Abedin, Huma <AbcdinH@state.gov>
Sent: Saturday, February 28, 2009 9:58 AM
To: humamabedin
Subject: PrintFw: Final NEA/EUR Trip Schedule: 27 February p.m.
Attach: 090209 Sharm, J'salem, BxI, Genf.doc

B6

RELEASE IN PART
B6

From: Merten, Kenneth H

To: Ries, Marcie B; Lucas, William; Turner, Bruce I; Feltman, Jeffrey D; Hale, David M; Abedin, Huma; Valmoro, Lona J; McLean, Lori A; Shapiro, Andrew J; Muscatine, Lissa; Crocker, Bathsheba N; Russell, Daniel A; Shah, Khushali P; DeMarcellus, Roland F; Sullivan, Jacob J; Simon, Jessica L (PACE); Bennett, Virginia L; Goldberger, Thomas H; Adler, Caroline E (PACE); Wohlers, Laurence D; Arizu, Patricia A; Slaughter, Anne-Marie; Feinstein, Barbara (AID/A/COO); Thompson, Trent(AID/A); Silliman, Douglas A; Garbe, Danielle N; Bennett, Virginia L; Crocker, Bathsheba N; Wells, Alice G; Turner, Bruce I; Rana, Gautam A; Abedin, Huma; Fried, Daniel
Cc: SES_4; Inzerillo, Suzanne M; Ruggles, Taylor V; Plechowski, Jon E; Sindle, James M; Littlejohn, J.R.; Narain, Paul F; Mack, Jason R; S_SpecialAssistants; Russell, Daniel A; Lukens, Lewis A; Hunter, Theresa M
Sent: Fri Feb 27 18:23:28 2009

Subject: Final NEA/EUR Trip Schedule: 27 February p.m.

All,

This is my final trip schedule. From here on out we'll be producing them on the road. Jerusalem is pretty firm, and we have a few more details on Sharm. Still waiting on NATO-Georgia-Ukraine councils to firm up...

Kenneth Merten
Deputy Executive Secretary
Executive Secretariat
U.S. Department of State
Tel: 1-202-647-8448

From: Capricia Penavic Marshall [REDACTED] B6
Sent: Friday, March 6, 2009 9:58 PM
To: humamabedin [REDACTED] Huma Abedin [REDACTED]
Subject: Re: FW: Key Contact

RELEASE IN PART
B5, B6

I did not say anything to hum.

-----Original Message-----

From: huma abedin <humamabedin [REDACTED]>
To: Huma Abedin; Capricia Penavic Marshall
Sent: Fri Mar 06 21:13:14 2009
Subject: Re: FW: Key Contact

B5

just seeing this

[REDACTED]
please reply at cause money on my yahoo account orrery.

--- On Fri, 3/6/09, Capricia Penavic Marshall [REDACTED] wrote:

> From: Capricia Penavic Marshall [REDACTED]
> Subject: FW: Key Contact
> To: "Huma Abedin" [REDACTED] humamabedin [REDACTED]
> Date: Friday, March 6, 2009, 12:13 PM
> On this matter - David called me again and I asked [REDACTED] to
> talk to [REDACTED] - this is what she learned

> FYI!

> From: David Mercer [REDACTED]
> Sent: Friday, March 06, 2009 12:03 PM
> To: Capricia Penavic Marshall
> Subject: Fw: Key Contact

> Hi Capricia--Here's the email I sent to Huma regarding
> [REDACTED] Thanks very much for your help in all this.
> It would be great if Huma gave [REDACTED] a call prior to their
> arrival in Turkey which I believe is tomorrow David.

> David L. Mercer
> President
> Mercer & Associates, Inc.
> 2550 M Street, NW
> Washington, DC 20037

> ----- Original Message -----

> From: David Mercer
> To: 'abedinh@state.gov' <abedinh@state.gov>
> Sent: Wed Mar 04 12:33:07 2009
> Subject: Key Contact

HA 09/01/2015

--

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	

>
>
> David L. Mercer

✓	
✓	
✓	
✓	
✓	
✓	

B6

From: Burns Strider [redacted]
Sent: Saturday, March 7, 2009 11:07 AM
To: hdr22@clintonemail.com
Subject: I love running across your kiddies... FW: Vets Screening Bill and Hello from Naz Durakoglu

RELEASE IN
PART B6

I don't even know what Naz did in the campaign... I just know she was energetic, full of excitement and totally loyal to you.. [redacted]

[redacted] I spoke yesterday to the House Demo Press Secretaries on Veterans message and communications and met one of her colleagues:

From: Durakoglu, Naz [mailto:Naz.Durakoglu@mail.house.gov]
Sent: Friday, March 06, 2009 5:27 PM
To: bstrider [redacted]
Subject: Vets Screening Bill and Hello from Naz Durakoglu

Dear Mr. Strider,

I heard that you ran into my co-worker, Lauren Amendolara today. It was a nice surprise to hear that she met you and discussed our bill. I wanted to send you the bill itself because I heard that you were interested in it. We are very excited about it, and the Congressman really hopes that it will make a difference in the horrific suicide statistics amongst the young vets returning home from OEF and OIF.

I would love to know what you think of it. Please keep in touch!

Thank you,

Naz Durakoglu
Legislative Assistant
The Office of Rep. Michael E. McMahon
CHOB Room 323
T: 202-225-3371
F: 202-226-1272

HA 09/01/2015

From: H <hdr22@clintonemail.com>
Sent: Sunday, March 8, 2009 12:59 PM
To: Huma Abedin
Subject: Re:

RELEASE IN PART B6

B6

Ok. Can Kristy come tomorrow for both?

-----Original Message-----

From: Huma Abedin
To: 'hdr22@clintonemail.com'
Sent: Mar 8, 2009 12:14 PM
Subject: Re:

Sorry its ops 647-1512

-----Original Message-----

From: Huma Abedin
To: 'hdr22@clintonemail.com' <hdr22@clintonemail.com>
Sent: Sun Mar 08 12:13:54 2009

Richard holbrooke wants to talk at your convenience.
202-547-1512

From: H <hdr22@clintonemail.com>
Sent: Sunday, March 8, 2009 12:59 PM
To: Cheryl Mills [REDACTED]
Subject: Re: Are you up and about?

RELEASE IN PART
B6

B6

Yes--pls call the house in DC.
-----Original Message-----
From: Cheryl Mills
To: hdr22@clintonemail.com
Sent: Mar 8, 2009 12:55 PM
Subject: Are you up and about?

HA 09/01/2015

From: H <hdr22@clintonemail.com>
Sent: Sunday, March 8, 2009 8:38 PM
To: Cheryl Mills [REDACTED]
Subject: Re: Maria Haley

RELEASE IN PART
B5, B6

B6

Ok

From: "Cheryl Mills"
Date: Sun, 8 Mar 2009 20:31:54 -0400
To: <hdr22@clintonemail.com>
Subject: RE: Maria Haley

[REDACTED]
B5

From: H [mailto:hdr22@clintonemail.com]
Sent: Sunday, March 08, 2009 8:31 PM
To: Cheryl Mills
Subject: Re: Maria Haley

B5

From: "Cheryl Mills"
Date: Sun, 8 Mar 2009 20:23:22 -0400
To: <hdr22@clintonemail.com>; Hillary Clinton<hr15@att.blackberry.net>
Subject: Maria Haley
See below - thoughts before I answer?

From: Maria Luisa M. Haley [REDACTED]
Sent: Sunday, March 08, 2009 2:17 PM
To: mills@dstate.gov
Cc: Cheryl Mills
Subject:

B6

Cheryl:

Gary Locke has asked me to help him in his confirmation and personnel process so I am taking vacation from my present job in the Gov.'s Cabinet to go to DC for a week, week and a half. I was just talking to Ginger Lew. Can I help HRC and you?

Maria Haley

HA 09/01/2015