ORIGINAL ARTICLE

INTEGRATIVE MEDICINE AND PATIENT-CENTERED CARE

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Integrative medicine has emerged as a potential solution to the American healthcare crisis. It provides care that is patient centered, healing oriented, emphasizes the therapeutic relationship, and uses therapeutic approaches originating from conventional and alternative medicine. Initially driven by consumer demand, the attention integrative medicine places on understanding whole persons and assisting with lifestyle change is now being recognized as a strategy to address the epidemic of chronic diseases bankrupting our economy. This paper defines integrative medicine and its principles, describes the history of complementary and alternative medicine (CAM) in American healthcare, and discusses the current state and desired future of integrative medical practice. The importance of patient-centered care, patient empowerment, behavior change, continuity of care, outcomes research, and the challenges to successful integration are discussed. The authors suggest a model for an integrative healthcare system grounded in team-based care. A primary health partner who knows the patient well, is able to addresses mind, body, and spiritual needs, and coordinates care with the help of a team of practitioners is at the centerpiece. Collectively, the team can meet all the health needs of the particular patient and forms the patient-centered medical home. The paper culminates with 10 recommendations directed to key actors to facilitate the systemic changes needed for a functional healthcare delivery system. Recommendations include creating financial incentives aligned with health promotion and prevention. Insurers are requested to consider the total costs of care, the potential cost effectiveness of lifestyle approaches and CAM modalities, and the value of longer office visits to develop a therapeutic relationship and stimulate behavioral change. Outcomes research to track the effectiveness of integrative models must be funded, as well as feedback and dissemination strategies. Additional competencies for primary health partners, including CAM and conventional medical providers, will need to be developed to foster successful integrative practices. Skills include learning to develop appropriate healthcare teams that function well in a medical home, developing an understanding of the diverse healing traditions, and enhancing communication skills. For integrative medicine to flourish in the United States, new providers, new provider models, and a realignment of incentives and a commitment to health promotion and disease management will be required.

Key words: Integrative medicine, health care reform, patient-centered care

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INTEGRATIVE MEDICINE: HISTORY AND DEFINITIONS

A vision for a new kind of healthcare is emerging. It is patient centered, healing oriented, and embraces conventional and complementary therapies. This medicine has become known as integrative medicine. Driven initially by consumer demand, it is now increasingly being accepted by healthcare providers and institutions. Definitions abound, but the commonalities are a reaffirmation of the importance of the therapeutic relationship, a focus on the whole person and lifestyle–not just the physical body, a renewed attention to healing, and a willingness to use all appropriate therapeutic approaches whether they originate in conventional or alternative medicine.

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Integrative medicine represents a broader paradigm of medicine than the dominant biomedical model. It comes from a growing recognition that high-tech medicine, although wildly successful in some areas, cannot address the growing epidemics of chronic diseases that are bankrupting the US domestic economy, and that health promotion and prevention are vital to creating a healthier society. The Centers for Disease Control and Prevention estimate that 70% of all deaths are due to chronic disease. The pain and suffering from these diseases places substantial burden on the more than 133 million Americans who live with them; the cost of chronic care is greater than $1.5 trillion a year, or 75% of all medical expenses.[1] At the same time, we spend a fraction of our budget on prevention and health promotion despite the evidence that prevention has been proven to reduce chronic disease burden. For example, in adults with diabetes, walking at least two hours per week was associated with a 39% reduction in overall mortality.[2]

The Institute of Medicine (IOM) report *Crossing the Chasm* created a heightened awareness of the brokenness of our healthcare system. It acknowledged that our delivery system focused primarily on acute episodic care and that our reimbursement system rewards were misaligned. It called for care that is safe, effective, patient centered, timely, efficient, and equitable.[3] *Patient-centered care* (PCC) was defined as care that informs and

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involves patients in medical decision making and self-management, coordinates and integrates medical care, provides physical comfort and emotional support, understands the patients' concept of illness and their cultural beliefs, and understands and applies principles of disease prevention and behavioral change appropriate to diverse populations. Integrative medicine seeks to create a healthcare system that incorporates these principles, prioritizes self-care, reemphasizes the therapeutic relationship, and bridges conventional and alternative medical systems.

This paper will discuss the history of integrative medicine, its principles, current status, and recommendations for practice. Highlighted will be the need for PCC with a practitioner who knows the patient well and can respond to his/her needs. Integration of a broader array of services that are cost efficient and therapeutically effective will be described. Inserted throughout are cases that illustrate some of the current challenges and exemplify how integrative medicine might provide solutions.

CASE ONE

Integrative Medicine for a Young Man With Persistent Headaches

An 18-year-old high school student presented to the Arizona Center for Integrative Medicine clinic with a three-year history of severe headaches, neck pain, and a new onset tic disorder. He had previously been healthy and played on the varsity baseball team. He recalls the headache beginning after a violent sneeze. After a month of severe daily headaches, during which time he was unable to return to school, he was referred to a neurologist. New symptoms included poor sleep, poor energy, and a loss of enjoyment for most activities. He was diagnosed with depression, Paxil was prescribed, a psychiatric consult was recommended, and a magnetic resonance imaging and electroencephalogram were done. The family sought a second opinion with a neurologist who was also a board-certified psychiatrist. Persistent daily headache was diagnosed and Tofranil and Corgard were prescribed. Over time, due to the persistence of the daily headaches and the subsequent tic that developed, the patient was prescribed Imitrex, Sinequan, Zomig, Maxalt, Risperdal, Tenex, Klonopin, Soma, Kappra, Zyprexa, and even Orap (an antipsychotic medication), without benefit.

The patient was evaluated in the integrative medicine clinic and referred to an osteopathic physician who identified multiple tender points in the neck muscles. Using a gentle manipulation technique called strain-counterstrain, these tender points resolved. The patient reported an immediate decrease in the intensity of his neck pain for the first time since the pain started (on a scale of one to 10, moving down from a nine to five). He returned two weeks later, stating he had begun regular school attendance and was starting to throw a baseball around. A second treatment reduced the pain to a level of two. Six weeks later he remained off all medications and had returned to his previously normal activities.

This case exemplifies the adage "when your only tool is a hammer, every problem looks like a nail." It clearly demonstrates the limits of a purely pharmaceutical approach to health issues.

HISTORY OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IN THE US HEALTHCARE SYSTEM

As a result of the Flexner report published in 1910, American medical schools were tasked to set higher admission and graduation standards and to adhere strictly to the protocols of mainstream science in their teaching and research.[4] Over the next 25 years, close to 60% of medical schools were forced to close.[4] Schools providing training in eclectic medicine, naturopathy, and homeopathy were even more adversely affected by the report, leading to closure of the majority. What is now called alternative medicine was pushed out of the mainstream. Despite this setback, alternative medicine never disappeared and continued to grow surreptitiously.

Today the fields of chiropractic, naturopathic, acupuncture, and Asian or Traditional Chinese Medicine (TCM), midwifery, and massage therapy all have well-established, federal- and state-recognized regulatory agencies to oversee accreditation of schools and colleges, certification and licensing, and professional associations. Other complementary and alternative medicine (CAM) professions have recently made significant achievements, such as the 2008 licensure of the first homeopathic medical college in the United States since the 1800s, the development of educational standards for yoga training, and the establishment of Ayurvedic and Tibetan medical programs. It bears restating that TCM, Tibetan, and Ayurvedic medicine; massage therapy; and homeopathy have much longer histories than conventional medicine.

Currently, *complementary and alternative medicine* is defined as those medical fields that fall outside of conventional medicine. The 2000 White House Commission on Complementary and Alternative Medicine Policy report documented the growing use of CAM, revealing that most people used CAM in conjunction with, rather than as a replacement for, conventional medical therapy.[5] The report also noted that people sought conventional medical treatment first before turning to CAM practitioners, and that many patients combined care from a variety of approaches.

The IOM report on CAM[6] further documented growing use of CAM. One third of American adults were using some form of CAM, with total annual visits to CAM providers exceeding visits to primary care physicians, and an estimated 15 million adults were taking herbal remedies and vitamins in addition to prescription drugs. The IOM report noted increasing integration of CAM and conventional medicine in many settings: hospitals, private physician practices, integrative medicine centers, cancer treatment centers, health maintenance organizations, and insurance companies.

Complementary and alternative medicine is not a single field. There is an immense range of ideas, including whole systems of medicine (eg, TCM, Ayurveda, homeopathy), modalities (eg, massage, botanical medicine, manipulation practices), and therapies (eg, Reiki, healing touch). Patient-centered care and patient empowerment are primary components of these fields, as is the commitment to address the mind, body, and spiritual aspects of health. As an emerging field of medicine, integrative medicine seeks to build a bridge between conventional and alternative medical systems and to find therapeutic and cost-effective ways

to combine them so as to have "the best of both worlds," while still maintaining the integrity of each system.

Academic health centers have responded to the demand to include CAM in education in a variety of ways. In 2000, the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) was formed to help transform medicine and healthcare through rigorous scientific studies, new models of clinical care, and innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing, and the rich diversity of therapeutic systems.[7] The CAHCIM has developed curricular goals for medical schools, holds the largest research conference in integrative medicine, and serves as a collective voice for reforming our healthcare system. Membership in the consortium currently stands at 43 academic health centers and requires dean level support and active programs in integrative medical education, clinical care, and research.

In 2004, the Academic Consortium for Complementary and Alternative Healthcare (ACCAHC) was formed[8]; ACCAHC is an organization of CAM accrediting agencies, professional associations, councils of colleges, certifying and testing organizations, and individual colleges and programs. Its mission is to advance the academic needs and development of the evolving CAM professions and to foster a coherent, synergistic collaboration with academic institutions of the conventional medical, nursing, and public and community health professions. The CAHCIM, ACCAHC, and other leading organizations could join their collective expertise to reform the US healthcare system. To do so they will need to ratify a common set of principles such as those below, which originated from a working document of the Arizona Center for Integrative Medicine:

1. Patient and practitioner are partners in the healing process. Care is based on a continuous healing relationship informed by scientific knowledge and implemented through a partnership that recognizes the uniqueness of each person.[9-13]
2. All factors that influence health, wellness and disease are taken into consideration, including mind, spirit and community, as well as body. These multiple influences on health have been firmly documented in the literature but are not often recognized as important in medical practice.[14-18] Conventional medical care tends to focus on the physical influences on health. An integrative approach also addresses the importance of the nonphysical (eg, emotions, spirit, social) influences on physical health and disease.
3. Appropriate use of both conventional and alternative methods facilitates the body's innate healing response. Integrative medicine recognizes the body's profound healing mechanisms and seeks to mitigate barriers to healing by using nutrition, activity, mind-body medicine, and where appropriate, conventional and alternative therapies.[11,12,19]
4. Effective interventions that are natural and less invasive should be used whenever possible. There is great potential for harm among our current medical treatments.[20-22] Integrative medicine orders therapies ranking first those that have the greatest potential for benefit with the least potential for harm. Examples include nutrition, movement, stress management, and a focus on spiritual pursuits. Acupuncture has been recognized by the U.S. Food and Drug Administration as having few or no side effects from its use.[23]
5. Good medicine is based in good science. It is inquiry driven and open to new paradigms. Practical and pragmatic research models that evaluate systems of care and investigate the interaction of multiple health influences are needed. Randomized controlled trials cannot answer questions about cost effectiveness. Nor are they the most useful method to study therapies such as acupuncture and meditation, which are already in common use and for which true placebos cannot be created.[24-27]
6. Ultimately the patient must decide how to proceed with treatment based on values, beliefs, and available evidence. Integrative medicine honors the individual's right to choose a healing path for himself. Practitioners offer options, share their experience and insight, and partner with informed patients.[28]
7. Alongside the concept of treatment, the broader concepts of health promotion and the prevention of illness are paramount. The majority of medical education and treatment focuses upon disease mechanisms. Integrative medicine addresses the mind, body, and spirit, with an emphasis on supporting balance, maintaining health, and promoting longevity.[19,29-31]
8. Practitioners of integrative medicine should exemplify its principles and commit themselves to self-exploration and self-development. It is difficult to facilitate health and healing in others if we have not explored how to do this for ourselves. Medical training should encourage self-reflection that results in health for the learner.[32-35] Integrative medicine believes that this "heal the healer" approach is the most efficient method of empowering professionals to develop an understanding of the self-healing mechanism.[36-38]

CASE TWO

The patient was a 54-year-old man who recently had a myocardial infarction and had been treated with a stent placed in his left anterior descending coronary artery. He was hypertensive, overweight, stressed, and had elevated lipids with an LDL of 274. He came to the University of Wisconsin integrative medicine clinic wanting to find nonpharmaceutical options to prevent another heart attack. He was ethically against "big pharma" and did not want to take something that "may cause more harm than good."

The clinician took time to listen to his story. All options were reviewed to help reduce his risk of another myocardial infarction, including nutrition, exercise, weight loss, fish oil, medications, and emotional well-being. The patient had three children, the youngest a 16-year-old daughter. Motivational interviewing was used to encourage self-reflection; clinician and patient both developed a deeper understanding of his concerns about pharmaceuticals. An internet-based 10-year cardiac risk calculator based on the Framingham data showed a recurrence risk of 20%. With medications to lower his LDL and control his blood pressure, his risk could drop by over 10%. The patient decided to give the medications a try so he would "be around for his wife and kids." He was started on a statin, aspirin, and a beta-blocker, was referred to a nutritionist and a mindfulness stress reduction

program, and was given a pedometer with the goal of 10,000 steps a day.

This case exemplifies the use of integrative medicine, where effective medications are prescribed in conjunction with lifestyle change. The clinician was able to elicit the patient's values, and in so doing helped him realize his love of family outweighed his concerns about big pharma.

INTEGRATIVE MEDICINE IN PRACTICE

Currently some elements of integrative medicine are already being broadly practiced, and a few integrative medicine practice models have also emerged. This section will describe the roles of PCC, self-management and empowerment, communication and behavior change, continuity of care, new provider models, and group models in integrative medicine. It will also review the evidence supporting both the individual elements and the emerging models of care. These critical elements that support the therapeutic relationship are often downplayed when the focus is primarily placed on CAM.

Patient-Centered Care

Patient-centered care is a fundamental component of practicing integrative medicine; PCC has a movement in its own right and has been the subject of multiple meetings.[39] Its hallmark is to customize treatment recommendations and decision making in response to patients' preferences and beliefs. As delineated in *Crossing the Quality Chasm,*[3] PCC is an essential component of quality care and is included as one of five major areas needing reform in our healthcare system.

Research reveals that PCC leads to enhanced patient satisfaction, better outcomes, improved health status, and reduced utilization of care.[40-42] Interestingly, it also leads to enhanced practitioner satisfaction and lower malpractice rates.[43,44] Levinson et al[43] found lower malpractice rates in primary care physicians who practiced PCC principles. Specifically, these physicians spent more time orienting patients about what to expect in the visit, solicited their opinions, checked their understanding, and encouraged them to speak more. Not surprisingly, they also spent more time in routine visits (mean = 18.3 minutes vs 15.0 minutes) than those primary care physicians who had been sued.

One widely replicated model of PCC is the Planetree model, founded in San Francisco in 1978.[45] Although initially focused on hospital-based care, this nonprofit consulting organization has now spread to outpatient settings. One of the pioneers of Planetree, Rosalyn Lindheim, stipulated that healthcare environments should provide the following[45]:

- welcome the patient's family and friends
- value human beings over technology
- enable patients to fully participate as partners in their own care
- provide flexibility to personalize the care of each patient
- encourage caregivers to be responsive to patients
- foster a connection to nature and beauty

Renovation of the physical plans of hospitals makes these tenets tangible. Nursing stations are open and invite dialogue with patients and families. Kitchens are offered for families to cook wholesome food. Sacred spaces, labyrinths, and meditation gardens are other significant changes.[46] The Planetree organization impacts over 600,000 annual patient admissions, 10 million outpatient visits, and 90,000 births. When studied, Planetree patients reported better mental health status and role functioning after discharge, but otherwise their health status was similar to controls after three to six months. There were no differences in length of stay, readmissions, hospitalization charges, or outpatient care during the following year.[47] The authors acknowledge that not all the attributes of PCC were met; although Planetree patients received more education and involvement in their care than controls, their interactions with physicians were not substantially different, and they were rarely involved in decisions about their care.

Integrative medical practice embodies the spirit of PCC by spending more time with patients. Through initial 90-minute interviews with 30-minute follow-up appointments, there is ample time to discuss options and make decisions together that reflect patient preferences. When time is crunched, as it frequently is in conventional medicine, this patient-centered ideal is often compromised.

Patient-centered decision making can be facilitated by the growing emphasis on reporting the "number needed to treat" and "number needed to harm." For example, a recent trial reported a 47% reduction in relative risk of cardiovascular events with use of a statin medication.[48] Although this sounds compelling, what is more important in clinical practice is the absolute risk reduction. In this study, the actual rates of cardiovascular events in the population were low; they dropped from 1.8% (157 of 8901 participants) in the placebo group to 0.9% (83 of 8901 participants) in the medication group, giving an absolute risk reduction of 0.9%. When patients learn that, as in this study, over 100 patients must be treated for two years to prevent one event, they often decide the prevention drug is not worth the risks. In this trial, the number needed to harm was 165 for increased risk of diabetes and one for the cost (estimated at $1,250 a year or $285,000 per event prevented).

The greatest challenge to shared decision making arises when patients are faced with serious illness for which they must make rapid decisions. A variety of very useful interactive decision-making tools have been developed to help women with breast cancer decide on the benefits they will derive from chemotherapy, hormone therapy, and radiation therapy. Adjuvant online allows a health professional to input a woman's age, her tumor size, involvement of lymph nodes, and the histological grade of the tumor, and then estimates of the added benefit from chemotherapy or hormone therapy.[49] When a woman learns that, based on a sample of similar women with a similar diagnosis, her risk of cancer recurrence or death drops by 7%, she can make the deeply personal value decision that the additional percentage reduction is worth the risks of the therapy or not. A similar decision-making tool exists for radiation therapy.[50] These tools, which assess risk reduction, approach the goal of individualized feedback from which patients can make reasoned decisions.

SELF-MANAGEMENT AND PATIENT EMPOWERMENT

The division of power between clinician and patient has significantly changed over the past three decades. With medical ad-

vances came more accurate diagnoses and effective treatments. Along with this positive evolution came a hierarchical relationship based on the belief that science and technology held the answers. This authoritarian approach has only recently been challenged, in part, by the internet that makes available the vast array of medical knowledge to any sophisticated searcher.

Patient empowerment is defined as a greater sense of control over one's life.[51] Patients become empowered when they have the "knowledge, skills, attitudes, and self-awareness necessary to influence their own behavior . . . to improve the quality of their lives."[52] Empowerment arises from the relationship between clinician and patient. It is less a transfer of power and more a symbiotic process where power is created and grows through the relationship.[53] Although evidence is limited, empowered patients have higher satisfaction with care,[54,55] adherence to treatment regimens,[56,57] and improved outcomes.[58-61]

Communication and Behavior Change

The truly competent physician is the one who sits down, senses the 'mystery' of another human being and offers with an open hand the simple gifts of personal interest and understanding."[62] Often described as the art of medicine, this sitting with another human being, with the desire to understand and the intention to be of service, is what calls many to practice medicine. This relationship is the centerpiece of healing-oriented care and needs to be protected and honored. Within this sacred bond, the nonspecific influences on health manifest; unfortunately, these influences are often discounted in conventional medical research and training since they are nonphysical and difficult to quantify.

Leaders in PCC have developed the mnemonic PEECE that helps focus on those nonspecific influences: positive prognosis, empathy, empowerment, connection, and education.[63] When clinicians attend to the art of medicine, results can enhance and even surpass the specific influences of a prescribed therapy. This is nicely demonstrated in an innovative study by Kaptchuk et al[64] in which they sought to discriminate between three components of the placebo effect. Studying irritable bowel patients, they layered on therapies to ascertain the impact of being involved in a study (Hawthorne effect), receiving a therapeutic ritual (placebo treatment), and responding to an "augmented visit" with a warm empathic practitioner. They found that an enhanced relationship with a practitioner, together with the placebo treatment, provided the most robust treatment effect. Another dramatic example is provided in a retrospective analysis of psychiatrists treating patients with depression. Those psychiatrists able to develop strong relationships revealed better results by using a placebo to treat depression than physicians less gifted at developing relationships, who used an active drug. The authors concluded, "the health care community would be wise to consider the psychiatrist not only as a *provider* of treatment, but also as a *means* of treatment."[65]

Integrative medicine considers the therapeutic relationship to be the most important influence in creating positive behavior change in the medical setting. Motivational interviewing mines for a patient's own motivation to make healthy lifestyle changes. Through conversation, patients recognize their ambivalence to change by exploring the positive and negative aspects of a behavior. In doing so they gain insight on how it affects their ability to achieve goals that give life meaning and purpose.[66,67] Successful application relies on a clinical relationship built on empathy and trust without judgment, delivered not through paternalistic prescribing but through artful questioning that allows patients to find their own inner motivation to change.[68] Indeed, meaningful conversation where the patient feels heard and respected is essential to fostering lifestyle change.

Continuity of Care

Continuity of care refers to multiple concepts. Although most commonly it refers to clinician continuity (the proportion of patient visits with a given, particular practitioner), it can also refer to record continuity (availability of patient's medical information to all clinicians who care for the patient), site continuity (a patient's usual source and site for obtaining healthcare), the continuum of care (from beginning to the end of the healing process), and continuity as an attitudinal contract (referring to the patient's understanding of who is in charge of their care and providing information to the patient and his or her family).[69]

One example of the potential impact of building a healthcare delivery system centered upon continuity of care with a team of providers is provided by the South Central Foundation in Alaska. When this foundation restructured its healthcare system, it asked Alaskan natives what they wanted most in their healthcare. The answer was a continuous healing relationship based on patient need and personal choice. The new healthcare system centered itself around this concept and reduced urgent care/emergency department use by 40%, specialist care by 50%, and hospital days by 30%, all the while increasing patient satisfaction ratings (perfect care) from 35% to 85%.[70]

Continuity of care with a provider supports the healing process. It creates a forum for ongoing communication and relationship building, which enhances trust. It can encourage the patient to become more candid with the practitioner regarding the emotional and mental causes of the disease state. Finally, it supports adherence to treatment and lifestyle changes.

With rare exception, patients coordinate information of their own care as they create their own healthcare team. In addition to the challenges of communication between clinic and hospital, pharmacy, physical therapy, and nutrition services, the communication between practitioners trained in different languages and paradigms is especially difficult. Research supports that acupuncturists and medical doctors do not routinely communicate with each other about the care of their patients. Identified barriers included that most patients were self-referred, that acupuncturists were not sufficiently trained to communicate with conventional providers, and were understaffed to manage such communications.[71] What may work best is a shared language between providers around symptoms and measures to improve these symptoms. Thus, rather than discussing how "kidney yin deficiency" is improving, an acupuncturist could instead describe how urination has improved, along with back pain and insomnia (all of which are related in the TCM paradigm). Development of standardized communication models and electronic medical records would greatly facilitate integrative care.

POTENTIAL NEW PROVIDER MODELS

Our current healthcare system is actually a disease-centric medical model. We focus the majority of our attention on acute care (eg, treating heart attacks and cancer) followed by chronic disease management (eg, treating hypertension and diabetes), with minimal funding or attention paid to preventive care.

The shortage of primary care physicians contributes to the challenge of managing the healthcare needs of Americans. Between 1997 and 2005, the number of US graduates entering family medicine residency programs decreased by 50%, and over 80% of internal medicine residents chose to subspecialize or become hospitalists rather than providing general internal medicine.[72,73] Most other countries have much higher percentages of primary care. Geographic areas with more subspecialty care as compared with primary care spend more for care that is fragmented, without better outcomes.[74] One strategy has been to have more advanced practice nurses and physician assistants provide primary care,[75] as research shows that they listen well and spend more time on lifestyle counseling than physicians will.[76] Estimates show that nurse practitioners can effectively manage 80% of patients' primary care needs; two meta-analyses found comparable outcomes of care provided by doctors and nurse practitioners.[77,78] Most of the research has focused on nurse practitioners providing care for patients requesting same day appointments for minor illnesses and working in a team with doctors. Additional research on nurse practitioners' care of patients with chronic diseases is needed.

Integrative medicine emphasizes tending to the health of the body rather than waiting for the development of disease. One benefit of CAM modalities is that they can be used to address symptoms at an earlier stage of a disease process, when from an allopathic perspective they may still be barely discernable.[79,80] For example, in TCM, a provider observes a patient's facial expression, muscle tone, posture, mode of speech, and general appearance. This is followed by assessment of the tongue and pulse, palpation of the body, and follow-up questioning. By describing the patient's body as a whole, patterns emerge at times, pointing to an emerging illness and allowing preventive treatment.[81]

The primary care medical home is one current method being piloted to transform our system. Recently, the American Academy of Pediatrics, the American Academy of Family Physicians, the American College of Physicians, and the American Osteopathic Association adopted the patient-centered medical home concept; the principles include having a personal physician who directs the care, providing whole person, coordinated care wherein quality and safety are hallmarks of the care, providing enhanced access to care, and employing payment structures that recognize the value of this form of care.[82]

Another potential mechanism for health promotion is the development of a health-oriented team. For example, a health-oriented team for optimal weight may include a primary care provider, a nutritionist, an exercise physiologist, a mindfulness eating instructor, an acupuncturist, and a spiritual guide. In contrast, a disease-oriented team may be necessary for a patient with renal failure and would include a nephrologist, a dialysis technician, a surgeon, a pharmacist, a renal nurse, a mind-body coach, and a spiritual director.

Previous research has identified the following barriers to implementing health-oriented interventions. The three most common barriers cited related to time, communication, and cost.

- not enough time–it is perceived as difficult to see enough patients to ensure financial sustainability in a disease-focused medical culture[83,84]
- non–face-to-face clinical time needs to be rewarded for multidisciplinary teams to work effectively[85]
- little economic incentive currently in place that supports a focus on health[86,87]
- limited resources within most primary care clinics to facilitate behavior change
- limited collaboration between clinical and administrative medical leaders[85]
- need for a cultural shift for many physicians to shift from an "all knowing" (traditional model) to a "shared knowledge" team model[83,85]

Group Visits

The group visits model addresses many of these barriers. Originally conceived in 1974 as a model for well-child consultations, group visits have been shown to reduce costs of healthcare, deliver better outcomes, and enhance patient and provider satisfaction.[88] Typically organized as diagnosis-specific appointments, group visits include education emphasizing patient self-management and address topics such as pharmaceutical management, nutrition, exercise, and psychosocial contributors to health and illness. They usually also include a private or semiprivate evaluation by a physician or nurse practitioner. Most group visits comprise the same cohort of patients from visit to visit, although some are designed as drop-in group medical appointments.

Considering the vast numbers of patients with lifestyle-related chronic diseases, group interactions make sense with their inherent peer support. Group visits allow more time for self-management education, skill building, and doctor-patient interaction. The group process can reinforce patient's self-efficacy by modeling that others have been successful in accomplishing the desired behavior change. Group visits have been studied in diabetes, hypertension, headaches, well-child visits, and chronically ill, "high-utilizing" patients.[89-91] Most studies showed enhanced patient satisfaction with group visits; for example, a study of 120 patients enrolled in a six-month series of group visits, which met for two hours per month, showed improved sense of trust in the physician.[92] Emergency visits were reduced in two headache studies,[93,94] and quality of care as measured by patients having preventive procedures, medication reviews, and recommended screening were improved in patients with diabetes.[92,95-98]

EMERGING INTEGRATIVE CARE MODELS

The development of integrative patient care models is progressing. Influential factors include recognition of the enormous numbers of patients using alternative medicine, their demand for integrative care, growing experience of providers referring to and using CAM, increased numbers of trained integrative medicine professionals, and the potential cost savings in these forms of treatment.

The most common form of integrative medicine is the patient-directed model, where the patient seeks out CAM providers to supplement or supplant conventional medical care. The patient functions as a team coordinator and may or may not inform providers of one another. The patient retains control and selects his own providers. Another common model involves conventional medical practitioners who have received integrative training and either refer patients to CAM providers or offer some CAM modalities to their own patients. Finally, patients may rely on CAM providers to manage their healing process.

Independent integrative medicine clinics began opening in the 1990s. Many of these integrative clinics closed after two to three years despite high patient demand. A 2007 Health Forum survey of hospitals offering CAM programs cited the top reasons for closures as poor financial performance (55%), reprioritized hospital initiatives (40%), lack of community interest (35%), inability to break even (30%), lack of medical staff support (30%), and general cuts to nonessential programs (25%).[99] Many hospital-initiated programs started CAM or integrative medicine clinics due to public demand but did not incorporate them into the larger institution; when medical profits grew tight in the 1990s, these programs were often cut. This became known as the "guillotine effect," removing integrative medicine clinics that did not earn large profits in a disease-centered medical model. To prevent this from reoccurring in the future, integrative medicine clinics will have to create more successful financial models and be viewed as an essential service.

In the late 1990s, academic health centers began opening integrative medicine clinics. The Universities of Arizona, California at San Francisco, and Maryland were among the first academic health centers to provide integrative care; they have since been joined by the majority of CAHCIM-affiliated centers.[7] Many CAM institutions have either opened their own integrative clinics or developed a training relationship with an integrative clinic.[100-102] In addition, a proliferation of small to large integrative medicine clinics have opened, some successful (eg, Scripps, Beth Israel Continuum Center) and others not.

Hospitals have begun to integrate CAM into their services in a variety of ways. For some, integration consists of offering art therapy, meditation, or Tai Chi courses. Others provide acupuncture or chiropractic. The American Hospital Association found that US hospitals are increasingly adding CAM to conventional services; 37% of responding hospitals now offer one or more CAM therapies, up from 26.5% in 2005.[103] Eighty-four percent of the hospitals indicated patient demand as the primary reason for offering the alternative therapies, while 67% stated clinical effectiveness as the main reason.

Integrative medicine is also being offered in leading cancer centers, including M. D. Anderson, Dana-Farber, Memorial Sloan-Kettering, and Columbia University, pediatric oncology program. These centers are largely funded by cancer survivors who desire an integrative form of oncology care. In addition, integrative medical care has found its way into detoxification programs, eating disorder centers, assisted living centers, hospice, and the spa industry. For example, the National Acupuncture Detoxification Program has developed an auricular acupuncture protocol that has been adopted by rehabilitation centers and drug courts in several states. Finally, several community health centers, assisted living, and nursing homes have begun to offer integrative medicine services.

CASE THREE

Integrative Medicine in a Cancer Patient

A 44-year-old woman with history of type 1 diabetes since age 12 presented to the Arizona Center for Integrative Medicine clinic for help with side effects from her chemotherapy. She had been diagnosed with stage IIB infiltrating ductal carcinoma of the breast. After lumpectomy and radiation, chemotherapy with Adriamycin and cytoxan had been recommended. With her first cycle of chemotherapy, she developed diabetic ketoacidosis, which placed her in the intensive care unit for a week. Despite additional premedications with her second cycle of chemotherapy, the same thing occurred. Her oncologist told her it was too risky to proceed with further chemotherapeutic treatment.

The patient presented to the integrative medicine clinic stating, "I have four children; I need aggressive treatment to survive." A treatment plan was developed that included weekly acupuncture treatments and daily self-hypnosis by using a tape to reduce the nausea and vomiting associated with chemotherapy. Using these two adjunctive therapies, the patient was able to complete her chemotherapeutic regimen without further hospitalizations.

This case exemplifies the use of integrative medicine as an effective adjunct to cancer care. The patient's values were sought out, clarifying her appeal for help. Multiple strategies are available to mitigate the side effects of chemotherapy and allow patients to complete their chemotherapeutic course, which in turn enhances the likelihood of a cure.

OUTCOME RESEARCH TO SUPPORT INTEGRATIVE MEDICINE

A large number of studies support lifestyle and increased time spent in consultations with patients. These include lower risk of the development of diabetes and reversal of cardiovascular disease.[104,105] Longer consultations resulted in fewer prescriptions, more lifestyle advice, better handling of psychosocial problems, and empowered patients.[106]

Several studies support cost savings with the use of CAM. For example, acupuncture treatments have been shown to reduce the need for knee surgery at an average savings of $9,000 per patient,[107] reduce days in hospital or nursing home following stroke at a savings of $26,000 per patient,[108] and postpone heart surgery due to clinical improvement, resulting in return to work at a total savings of $31,000.[109] Manipulative therapies for neck pain were as effective and less costly than physical therapy or care by a general practitioner.[110]

Very few studies of outcomes research of integrative medicine exist. McCaffrey et al[111] explored patient preferences through focus group interviews of patients who received their primary care in an integrative clinic in Cambridge, Massachusetts. They found that patients believed the combined approach of CAM and conventional medicine provided better care than either approach alone, particularly when all options are considered in a nonhierarchical way.

One focus group member is quoted, "I really like that things are integrated and that there are all these different options. There are pharmaceuticals as an option and there is homeopathy and herbal supplements, but all of them are considered valid options depending on what works for you."

Another said: "I like seeing a doctor who is aware of the bigger picture. Even if she decides or recommends a conventional treatment, at least I know they're aware of alternative health thinking . . ."

Another qualitative study used focus groups to interview patients with cancer and other serious illness seen in consultation at the University of Arizona Center for Integrative Medicine.[112] Provider-patient partnering was described by 77% of the patients with cancer and 85% of the other patients as one of the major differences from typical conventional care. This was described as listening to concerns, respectful attention, providing uninterrupted time, considering the effect of the treatments on the person as a whole, communicating the equality of the partners, and empowerment.

For example, one focus group member said, "I really appreciated that they really cared about how I felt. I was treated with respect–like I had a brain . . ."

Another reported, "It seemed like I was the most important person he had to see that day–it was very emotional."

An outcomes study of 763 medically diverse patients was carried out at Thomas Jefferson University Hospital's integrative medicine clinic. The clinic provides anthroposophical medicine, nutritional medicine, Western herbs, homeopathy, nutritional counseling, and acupuncture. At three-month follow-up, there were statistically significant improvements in health-related quality of life on all eight SF-36 subscales*.[113] The University of Michigan opened its integrative medicine consultation clinic in 2003. An outcomes research project measuring the SF-12, a holistic health questionnaire, and a patient satisfaction scale were carried out in 85 patients who received a consultation between 2003 and 2006. The authors found that patients had a high level of satisfaction with care, statistically significant improvement in the physical component of the SF-12 (but not the mental), and statistically significant improvements in the holistic health questionnaire subscales for body, mind, and spirit.[114]

Clearly there is a critical need for additional outcomes research. To date, funding has been scarce for these complex and expensive research projects that look at an entire package of care rather than individual elements.[115]

CASE FOUR

Integrative Medicine for Six-Year-Old Male With Otitis Media

A six-year-old male had a recurring history of otitis media since age 2. He had been treated with recurring courses of antibiotics, yet the ear infections recurred every two to three months; eustachian tube placement was also unsuccessful. His mother presented with him to the American Medical College of Homeopathy with a 24-hour history of fever to 102°, bilateral ear pain (worse on the right and described as sharp and cutting), enlarged painful lymph glands, and nocturnal salivation.

He was treated with Mercurius solubilis hahnemanni, 200 c in a single dose. The symptoms resolved completely 24 hours after the medication. He had one recurrence of otitis media six months later that responded well to repeating the homeopathic medicine. He has been symptom free now for five years.

Homeopathy often presents the greatest challenge to allopathic physicians as its presumptive mechanism of action is seen as implausible to the scientific mind. The evidence for homeopathy from randomized trials shows positive and negative results. A 2005 widely publicized meta-analysis suggested that homeopathy is no more than a placebo.[116] Yet, multiple well-designed randomized trials, including one for otitis media, have demonstrated the chosen remedies as superior to placebo, and a new study challenges the *Lancet* authors' methods.[117,118] Homeopathy, however, will continue to be controversial, as it challenges current paradigms.

THE INTEGRATIVE MEDICINE MODEL

Given the complexity of medicine, the wide range of therapeutic options, the need for preventive care, health promotion, acute disease care, chronic disease management, and palliative care, we will have to move toward team-based care. Already, teams have formed in complex areas of medicine, notably for children with disabilities, adults with renal failure, and hospice and palliative care. Teams will need training to work together effectively. Grumbach and Bodenheimer[119] describe the five key characteristics of cohesive primary healthcare teams as having clear goals with measurable outcomes, clinical and administrative systems, division of labor, training of all team members, and effective communication.

Health promotion and preventive care require a different set of skills and attitudes than acute care. Motivational skills, understanding of patient's beliefs and values, and willingness to address societal influences on health are important. Similarly, acute care demands speed, calm under pressure, rapid diagnostic acumen, and recall. Chronic disease care and education regarding lifestyle change may also be carried out in groups, which require facilitation skills and a systems orientation to address all the needs of someone with diabetes or heart failure. Hospice and palliative care calls for still another set of skills, including being comfortable in identifying and addressing the spiritual needs of patients.

For most patients, the selected team of healthcare providers will vary. At the same time, a primary health partner must be identified with the following characteristics:

- knows the patient well
- schedules initial visit long enough to get to know the person
- values continuity
- able to work with a team

*The SF-36 is a multi-purpose, short-form health survey that yields an 8-scale profile of functional health and well-being scores.

- values and respects other team members
- knowledgeable about CAM and allopathic therapies
- accountable for preventive and screening needs of patient
- agrees to abide by established recommendation (ie, U.S. Preventive Task Force)
- screens patients or refers to a qualified team member
- able to assess if urgent or critical health issue
- appreciates signs and/or symptoms of cancer diagnosis, blood clot, or rare diagnosis
- accesses team member who is trained to diagnose these problems
- able to appropriately care for the needs of the patient
- acknowledges that needs may change over time (ie, child to adulthood or healthy person to new chronic disease state requiring different level of care)

The team of providers will vary depending on the patient's diagnosis and the goal of providing comprehensive evidence-based healthcare that addresses mind, body, and spirit. Team members will be drawn from conventional providers (eg, doctors, nurses, pharmacists, nutritionists, physical therapists, social workers, chaplains) and from the CAM community (eg, TCM acupuncturists, naturopathic physicians, chiropractors, massage therapists, and instructors in yoga, Qi gong, and meditation). The team will also vary depending on the patient's most critical needs: pediatric care, health promotion and prevention, acute care, chronic disease management, or palliative care.

Physicians, nurse practitioners, and CAM providers who meet the above characteristics may serve as primary health partners when selected by their patients. Ideally, teams of professionals would work together within a medical home, providing the breadth of non–hospital-based care. Communication will be facilitated by trained integrative professionals who function as "culture and language brokers," working to bridge the different healing traditions and educating patients and providers about the different healing options.

In this model, reimbursement rates would value time spent in developing a therapeutic relationship or counseling patients; CAM services would be reimbursed at levels consistent with other providers. All services, CAM and conventional, would be tracked through electronic databases and research networks to assess effectiveness of care. Incentives for successfully keeping patients healthy, for coordination of all chronic disease needs, and for innovations in care delivery, would be built into the system.

CASE FIVE: THE FUTURE OF INTEGRATIVE CARE

The patient presents for his semiannual health promotion check-up at his primary care clinic in New Mexico. He is a 46-year-old man who has been followed for two years with borderline elevated blood sugars, a low HDL, and elevated triglycerides, all hallmarks of metabolic syndrome. Despite discussion with his physician, he has gained 48 pounds over the past two years. He had been unable to make the recommended lifestyle changes as he was simply too busy. Today his labs confirm early diabetes, with a hemoglobin A_1c of 7.1. His physician explains that while there are medicines to manage his diabetes, the only way to reverse it is with lifestyle change.

The patient has been mulling this over in his mind for some time and is now motivated. His mother died of complications of diabetes and he does not want the same fate. Recognizing the challenges he's had on his own, he enrolls in the clinic's diabetes prevention group. This six-month commitment involves weekly visits with a nutritionist, naturopathic physician, exercise physiologist, and behavioral therapist. Twenty-eight other clinic patients with metabolic syndrome or early diabetes have enrolled. He learns from the nutritionist how to eat low on the glycemic index and cut back on processed and refined foods. He and his wife incorporate simple dietary changes, including garlic and onions in cooking and by using a half teaspoon of cinnamon daily to lower blood sugar. He remembers how he loved the nopales (prickly pear) his grandmother used to make and learns that the cooked stems can lower blood sugar. Group members share tips, including local restaurants catering to folks trying to follow the principles of the South Beach Diet. His naturopathic doctor, in a one-on-one visit, suggests a few dietary supplements to enhance blood sugar control, including chromium and alpha lipoic acid. The exercise physiologist lends pedometers to each member of the group. The patient, who has always thought of himself as very active on his job as a real estate agent, is surprised to see his daily tally at 2,000 steps. He begins taking walks in the evening with his wife. He notices how this helps him feel more peaceful and centered and decides to commit to the mind-body stress reduction seminar his physician is offering.

Over a two-year period, the patient loses 37 pounds and eight inches from his waist line. His blood sugars are consistently normal, as is his hemoglobin A_1c. His triglycerides normalized once he began two grams a day of fish oil. He speaks of being grateful for the wake-up call that has him feeling better, more comfortable in his body, and aware of the chronic disease he has successfully prevented.

This case describes effective use of team-based care. The roots of the illness are addressed, effective education and support are provided over time in the group setting, and the patient is able to reverse a potentially serious chronic illness. He is left feeling empowered and capable, aware that his own actions reversed the disease process.

CONCLUSION

For integrative medicine to flourish and provide solutions to our current healthcare crises will take systemic change. It will require a commitment to focus on prevention and health promotion, to embrace new providers, and new provider models. And to honor the therapeutic relationship and the bond that forms when a trained provider and patient will require a shift in focus. Technology, including electronic medical records that enhance interdisciplinary communication and teamwork, will be a necessary driver. To provide healthcare that is both high tech and high touch, more integrative medicine providers will have to be trained. The emphasis of this training will be to learn to facilitate healing. Steps to move us toward this healthcare system are outlined in Table 1.

Table 1. Recommendation for Healthcare Reform

Recommendation	Key Actors	Examples or Needs
1. Align incentives so that they support health	Federal and state governments to redirect Medicare and other insurers	At present, hospitals profit substantially from amputating a diabetic limb and lose money providing preventive diabetes care.
2. Develop systems that recognize total costs, including costs of benefit and harm	Health payers, including private insurers, Medicare, and Medicaid	When acupuncture is compared to epidural steroids for low back pain, it has been found to be more effective, less harmful, and cheaper.[120,121] Acupuncture has a cost/quality adjusted life year of $8,097 versus $319,130 for epidural steroid injections.[122,123]
3. Pass a congressional mandate that requires insurers to fairly reimburse providers for a one-hour visit for a new patient to develop a therapeutic relationship and for lifestyle coaching	Congress, related governmental health agencies	More time to form a therapeutic relationship and develop insight will result in more accurate diagnosis and cost efficient care.[106] Development of robust outcome measures to track the impact of lifestyle coaching and the results of integrative care for different conditions are needed.
4. Create a set of competencies among health-oriented teams where both conventional and CAM providers develop an understanding of each others' fields; include training in effective patient communication, lifestyle coaching, and appropriate referral	Health profession schools, accrediting agencies, certifying bodies of continuing professional education	Interdisciplinary health-oriented teams are needed to facilitate health for a common health need (eg, pain management or obesity). Team members learn from each other through open communication, defining terminology, and sharing medical system theories. California licensing now requires 10 hours of continuing medical education in palliative care or pain management.
5. Create a set of required competencies in conventional medicine for CAM providers, including recognition of critical health issues, prevention and screening, and broad understanding of healthcare	Accrediting agencies of CAM professions	Although most accredited CAM colleges and schools include coursework in Western sciences such as pathophysiology and appropriate referral, the additional study of biomedical clinical practices, policies, and medical systems are needed to help CAM professionals more easily acculturate into ambulatory care and hospital settings.
6. Establish credentialing and privileges that allow greater integration of CAM practitioners in conventional settings, particularly primary care team development	Hospitals, insurers	Partnerships with CAM institutions are encouraged to allow for mutual education of students and to provide clinical training beneficial to both patients and providers.
7. Fund outcomes studies that measure cost and clinical effectiveness of integrative medicine	Agency for Healthcare Research and Quality, National Institutes of Health	Measures that are of interest to employers who pay for healthcare, hospital CEOs, and the insurance companies will be beneficial. Systems that communicate and reward best practices in integrative clinical management are essential. Patient feedback should be a central feature of these systems.
8. Create societal incentives to support and educate patients and their families as they seek to enhance their own health	Businesses, schools, community centers	Some corporations have invested in wellness activities and on-site gyms and have been able to show profitable returns on their investments. To foster healthier children and families, integrative medicine concepts such as mind/body awareness, meditation techniques, and Qi gong exercises in secondary education can be taught. Communities can identify their most critical health needs and develop programs to address them.
9. Create incentives in insurance to maintain a continuous healing relationship between clinician and patient, including support for the development of health teams in patient-centered medical homes	Payers, including private insurers, Medicare, and Medicaid	A patient who receives medical care from a healthcare team over time will gain insight that creates an understanding of what the person needs for health. Insurers will also benefit from more effective medicine, resulting in greater cost savings in the long run.
10. Healthcare providers should practice self-care	CEOs, hospital and clinic administrators	Healthcare professionals and other caregivers often suffer from stress and other ailments that can affect performance and the patient-clinician relationship.

CAM, complementary and alternative medicine; CEO, chief executive officer.

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