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SIX PILLARS OF ENERGY MEDICINE
Clinical Strengths of a Complementary Paradigm

David Feinstein, Ph.D.
Donna Eden

ABSTRACT

The current status of energy medicine and its increasing challenge to the biochemical paradigm that has dominated conventional medicine are reviewed. While energy medicine represents only a small fraction of one percent of the 2.2 trillion dollar health care industry, six properties of energy medicine give it strengths that could augment conventional health care models. These include the ways energy medicine 1) impacts biological processes at their foundation (*reach*), 2) regulates biological processes with precision, speed, and flexibility (*efficiency*), 3) fosters health with interventions that can be readily, economically, and non-invasively applied (*practicality*), 4) includes methods that can be utilized on an at-home, self-help basis, fostering a stronger patient and practitioner partnership in the healing process (*patient empowerment*), 5) adopts non-linear concepts consistent with distant healing, the healing impact of prayer, and the role of intention in healing (*quantum compatibility*), and 6) strengthens the integration of body, mind, and spirit, leading not only to a focus on healing, but to achieving greater well-being, peace, and passion for life (*holistic orientation*).

Keywords: biochemical paradigm, biofield, energy medicine, fields, gene expression, holistic

This paper contains "interactive footnotes." Double click the footnote number to jump to the reference. Double click again to jump back to the text.

> We are now in the process of revising the past century's biochemical concept, under which all major life processes are chemical in nature, to one that proposes that such processes are electromagnetic in nature.
> **—Robert O. Becker, M.D.**[1]

1. Introduction

While energy medicine[2,3] is still a microdot on the health care landscape in terms of utilization, public recognition, and the economic resources allocated to its development, Norman Shealy, M.D., the founding president of the American Holistic Medical Association, has predicted based on striking clinical and emerging scientific findings that "energy medicine *is* the future of medicine."[4] Energy medicine is based on the supposition that illness results from disturbances in the body's energies and energy fields and can be addressed via interventions into those energies and energy fields.[5] It is one of five domains of "complementary and alternative medicine" identified by the National Institutes of Health (NIH), with others including *biologically based practices* (such as the ingestion of herbs, vitamins, minerals, and amino acids), *manipulative and body-based practices* (such as chiropractic, osteopathy, massage, rolfing, and reflexology), and

mind-body medicine (such as hypnosis, visual imagery, meditation, and biofeedback).[6] NIH also recognizes "whole medical systems," which may incorporate elements of the above, such as traditional Chinese medicine, Ayurvedic medicine, naturopathy, homeopathy, and various indigenous healing traditions.

Strategies for restoring and maintaining the health of the body's energies by stimulating specific "energy points" have been passed along the generations in China and other parts of the world for at least 5000 years. A body that had been mummified in a snow-bound mountainous region along the border between Austria and Italy around 3000 B.C. had tattoos on exactly the points that are indicated in Traditional Chinese Medicine for treating the kind of lumbar spine arthritis revealed by an x-ray analysis of the body (9 of the 15 markings were along a meridian that is used in treating back pain, including one on the precise point that is considered the "master point" for back pain). Forensic analysis also revealed that the body's intestines had been rife with whipworm eggs, and indeed, some of the other markings were on points that are traditionally used for treating stomach upset.[7] Similar tattoos have been found on mummified bodies in other regions, ranging from South America to Siberia.

As contemporary clinical experience and scientific investigation lend increasing credibility to the concepts and procedures used in energy medicine, while at the same time public discontent with and concern about the dangers and costs of conventional medicine grow at a discomfiting rate,[8] six areas are emerging where energy medicine might augment and in some ways supersede conventional medical practices. After examining the fundamental natural mechanism underlying energy medicine—the decisive impact of the body's energies and "organizing fields" on gene expression and cell activity—these six areas are outlined and reviewed.

2. Genes, Cells, and Fields

More than the genetic coding inherited from one's parents, it is the moment-by-moment *expression* of the genes that most impacts health.[9,10] The basic role of a gene—instructing its cell to produce a particular protein or other molecule—is well understood.[11] Each cell, in fact, undergoes some 100,000 chemical reactions per second, many of them governed by the expression of the genes in its nucleus. What is not understood, however, is how these chemical reactions are coordinated with the actions of the body's other trillions of cells. As Lynn McTaggart asks, "If all these genes are working together like some unimaginably big orchestra, who or what is the conductor?"[12(p49)] The answer that is emerging from observations documented by scientists from a range of disciplines,[13] though still not widely accepted, is that organizing fields direct biochemical processes as decisively as a magnetic field aligns metal filings. Coordinating 100,000 chemical reactions per second in each of up to 100 trillion cells is a task of a different order than can be explained by any of the mechanisms within the biochemical model, such as cells sending chemical messengers to other cells. Organs also operate in a harmony that cannot be accounted for by the actions of chemical messengers. The brain, heart, and other organs are in such electromagnetic accord, for instance, that when there is an electromagnetic change in one, the others change *simultaneously* in phase.[14]

While the way the body's unimaginably complex processes are coordinated is one of the most fundamental questions in biology, the biochemical paradigm simply does not yield plausible answers. Instead, the properties that are projected onto genes in the biochemical paradigm "go far beyond their known chemical roles."[15(p158)] For instance, while the chromosomes and genes in the nucleus of every cell are identical, the appropriate instructions for a kidney are somehow

elicited when the gene is in a kidney cell and for a liver when it is in a liver cell. In fact, when primitive, undifferentiated tissue cells from a salamander were grafted near the tail, they grew into another tail; when grafted near the hind leg, they grew into another leg.[16] What chemical process told these genes what was required? Genes give their instructions as if they are amply informed of what is occurring all over the body and of what is needed from them in relationship to the entire system. Who, indeed, is the conductor?

While Western medicine has identified molecules that initiate gene expression (inducers) and DNA sequences that activate the synthesis of RNA (promoters), it does not offer plausible explanations for the agencies that coordinate such processes across the body. No one has identified chemical mechanisms that inform the gene about the state of the whole organism. Seeking other explanations, scientists from a spectrum of disciplines — including biologists,[17] physicists,[18] neurologists,[19] and anesthesiologists[20] — have postulated the idea of a "field" where biological information is essentially "broadcast" to genes, neurons, and other governing mechanisms.

The concept that energy fields impact physical development keeps reemerging within biology.[21,22,23,24] In the 1930s Harold Burr, a neuroanatomist at the Yale School of Medicine, measured the electrical field around an unfertilized salamander egg and found that it was shaped like a mature salamander,[25] as if the blueprint for the adult were already there in the egg's energy field. The electrical axis that would later align with the brain and spinal cord was already there in the unfertilized egg, as measured by a vacuum-tube voltmeter with extremely sensitive, non-distorting, silver/silver-chloride electrodes to detect microvolt differentials — a device that contemporary engineers view as having been strikingly sophisticated for its time.[26] Burr went on to find electrical fields surrounding numerous organisms, from moulds to plants to frogs to humans, and he was able to describe electrical patterns that distinguished health from illness. He demonstrated not only correspondences between specific pathologies and electrical characteristics of related organs, but that physical illness is *preceded* by changes in an organism's electromagnetic field![27] The implications of this finding for health care are just beginning to be appreciated, and they challenge the field of energy medicine to innovate new approaches for preventing illness.

Burr's original papers have recently been scrutinized from the perspective of modern advances in electrical engineering, and the instruments he devised were found to be "remarkable for their time, rivaling in their pioneering genius Burr's revolutionary contributions to the scientific understanding of the organizing principles animating all life."[28] Burr's findings did, of course, build on the work of other scientists. Owen Frazee reported in 1909 that passing electrical currents through water containing young salamanders speeded up the regeneration of amputated limbs.[29] Elmer Lund at the University of Texas found, in the 1920s, that the cellular structure of the hydra, a tiny multi-headed aquatic animal, could be reorganized by applying electric current strong enough to override the organism's electromagnetic polarities, causing for instance a head to appear where a tail would be expected.[30]

Additional evidence of field effects on physiological processes has since been accumulating. One of the most readily demonstrated effects of fields on biological expression, seed germination, has been repeatedly reported using a range of interventions, such as exposing the seed to music or to a healer's hands.[31] Pulsed magnetic stimulation (PMS) machines, or "brain pacemakers," create magnetic fields which have been effective in working with a range of disorders, from

Parkinson's disease to epilepsy to depression. The theory behind this use of energy fields to influence biological processes is not at all esoteric:

> *A normal cell has an electrical potential of about 90 millivolts. An inflamed cell has a potential of about 120 millivolts, and a cell in a state of degeneration may drop to 30 millivolts. By entraining the electrical fields of the cells within its range to the magnetic pulses emitted by the PMS machine, cells can be brought back into a healthy range*.[32(p67-68)]

In reviewing studies exploring the relation between electromagnetism and biology, Abraham Liboff summarizes: "We find that this work strongly suggests an overarching explanation that is purely field-driven."[33(p45)] He points to the effects of both internally-generated and externally-applied fields. Internally-generated fields can be seen, for instance, after an animal has been injured. Electrical currents connecting enormous numbers of cells are produced as part of the growth and repair mechanism, a process that clearly transcends the actions of the individual cells. These observations suggest to Liboff that an electrical field is both "intrinsically interwoven into the fabric of the system"[34(p45)] and at the same time, this field is able to generate various currents that *act upon* the system to stimulate growth and repair. Liboff also cites laboratory studies showing that the field does not have to be generated from within the organism to stimulate growth or repair. When external currents are applied to an area of tissue, large numbers of cells also act in concert to initiate specific physiological processes (for better or for worse), and the well-established potential for healing from such procedures may begin to explain the therapeutic effects reported after a practitioner's hand (which itself generates a measurable electromagnetic field) has been held in the proximity of diseased or injured tissue.[35] The electromagnetic fields of healers' hands have not only been measured, they increase significantly compared to baseline measures when a practitioner is focused on the healing process.[36]

Although the idea that fields carry biological and other types of information has still, for the most part, attracted little interest within the scientific community, powerful examples have been coming into the public eye. Among the most dramatic are with heart transplant patients who, post-surgery, begin to exhibit tastes, preferences, and other personality characteristics that they later learn correspond with those of the person whose heart now beats in their own body.[37] No explanation makes sense other than that the heart carries a field (indeed, the electrical field of the heart is about 60 times greater in amplitude than that of the brain, and its magnetic field according to some estimates is up to 5000 times stronger[38]) *and* that this field holds information about the individual. While the following story reads more like a television drama than a documented medical case, its source is a credible psychiatrist who was speaking to an international group of psychotherapists:

> *I have a patient, an eight-year-old little girl who received the heart of a murdered ten-year-old girl. Her mother brought her to me when she started screaming at night about her dreams of the man who had murdered her donor. She said her daughter knew who it was. After several sessions, I just could not deny the reality of what this child was telling me. Her mother and I finally decided to call the police and, using the descriptions from the little girl, they found the murderer. He was easily convicted with evidence my patient provided. The time, the weapon, the place, the clothes he wore, what the little girl he killed had said to him . . . everything the little heart transplant recipient reported was completely accurate*.[39(p7)]

While certainly unusual, this account is consistent with numerous documented reports about other organ transplant patients[40] and constitutes a most dramatic illustration of how fields may carry information. At a minimum, it begs for an explanation that is outside conventional paradigms, and some field effect is the most plausible concept available.

Many healing practitioners, ancient and modern, report sensing energies they believe to play a vital role in a person's health (these healers may possess a special form of synthesthesia, where energies most people do not perceive are registered via their senses, most frequently visually or kinesthetically, but occasionally experienced as smells, sounds, or tastes[41]). Such reports, often corroborated by other healers who are also independently recognized for the effectiveness of their methods.[42] These reports, however, also present a challenge to Western models of healing because some of the energies they describe cannot be detected by existing instrumentation. It is also a source of debate whether this is because such energies, assuming they exist, fall along the electromagnetic spectrum but operate in such minute quantities that they do not reach the necessary thresholds for mechanical detection (electrical current can be detected down to thirty quadrillionths, or 1×10^{-15}, of an ampere[43]—household current, for comparison, typically carries 15 to 50 amperes) or whether they are of a fundamentally different nature than electromagnetic energy.[44(pi)]

3. The Body's Energies

Not just the sum of its mechanical parts, the human body is a system of living energy. The skin discharges about 30 photons per square centimeter per second. Living cells emit electromagnetic radiation. Every cell in the body, in fact, like a miniature battery, stores and emits emergy. Normally the outside of a living cell has a positive electrical charge and the inside has a negative charge. But these charges may momentarily be reversed based on the action of "ion pumps" on the cell membrane that drive sodium ions (an ion is an atom or group of atoms that carries an electrical charge) out of the cell and pump potassium ions into the cell. This movement of electrically charged ions at the cellular level is a basic building block in the complex electromagnetic workings of the body's energies. Every thought, body movement, and action of an organ involves electrical activity.

Meanwhile, Western medicine continues to focus on the chemistry of the body rather than its energies or organizing fields, maintaining an emphasis on pharmaceutical and surgical interventions rather than energy treatments in its health care practices. But leading edge science does not support this unilateral approach. According to cell biologist Bruce Lipton, hundreds upon hundreds of scientific studies over the past fifty years have revealed that "every facet of biological regulation" is profoundly impacted by the "invisible forces" of the electromagnetic spectrum. He explains that specific patterns of "electromagnetic radiation regulate DNA, RNA and protein synthesis, alter protein shape and function, and control gene regulation, cell division, cell differentiation, morphogenesis (the process by which cells assemble into organs and tissues), hormone secretion, nerve growth and function," essentially the fundamental processes that contribute to "the unfolding of life." But, he laments, "though these research studies have been published in some of the most respected mainstream biomedical journals, their revolutionary findings have not been incorporated into our medical school curriculum."[45]

What does this disregard of the role of energy in regulating biological processes mean for contemporary medicine? It means more invasive procedures that are at the same time less precise in addressing a patient's health needs. When electromagnetic imbalances cause the body to

produce a chemical to restore balance, such as estrogen or progesterone, the chemical is produced in the precise quantities needed and only where needed. When medications enter the bloodstream, their dosage is based on averages and guesswork, and they travel to and impact parts of the body that are not intended, resulting for instance in the disastrous increases in heart disease, strokes, and breast cancer among women who have undergone hormone replacement therapy.[46] Known as "side effects," between 100,000 and 300,000 people in the United States die each year from medications taken as prescribed, and unintended effects of medical treatment are by some estimates our leading cause of death. A team that surveyed government health statistics over the past decade concluded, "When the number one killer in a society is the health care system, then that system has no excuse except to address its own urgent shortcomings . . . beginning at its very foundations."[47(p33)]

4. Six Pillars of Energy Medicine

Conventional medicine, at its foundation, focuses on the biochemistry of cells, tissue, and organs. Energy medicine, at its foundation, focuses on the fields that *organize* and *control* the growth and repair of cells, tissues, and organs, and on ways of influencing those fields. This affords energy medicine several strengths in comparison with the conventional medical model. Six of these strengths can, in fact, be thought of as the pillars that establish energy medicine as a significant development in health care. Table 1 provides an overview of these six pillars, the premises that support them, and a hypothetical practice example of how that strength might be utilized in a clinical situation. The following discussion focuses on each of the six pillars with greater detail.

Table 1 Six Pillars of Energy Medicine (EM)

Pillar	Premise	Practice
1. REACH: ***EM impacts biological processes at their foundation***	EM optimizes the energies that surround, permeate, and support body structure (e.g., cells, organs, blood, lymph) and body function (e.g., immunity, respiration, cardiovascular). EM methods also influence gene expression.	Balancing and strengthening the energies that surround and permeate the heart of a post-coronary patient lead to an internal environment that better supports healing and repair.
2. EFFICIENCY: ***EM regulates biological processes with precision, speed, and flexibility***	EM techniques send signals that are hundreds of times faster than physical and chemical signals, initiating faster body responses and providing instant feedback to the practitioner so interventions can be adjusted for intended outcomes.	Assessing disturbances in the energy flow to the kidneys of a patient with renal failure allows interventions that are more flexible and precise than medication or surgery and can be used preventively, circumventing further damage to the organ.
3. PRACTICALITY: ***EM fosters health with methods that are readily, economically, and non-invasively applied***	EM utilizes specific movements, postures, and hands-on approaches that do not require high-tech equipment and do not result in unintended side-effects.	Disturbances in the energy flow of a patient with multiple sclerosis can be corrected by holding, tapping, or massaging specific energy points.
4. PATIENT EMPOWERMENT: ***EM includes methods that can be utilized on an at-home, self-help basis, fostering a stronger patient and practitioner partnership in the healing process***	EM procedures can be self-administered to assess systems that are out of balance, implement corrective actions, and build resilient energy patterns throughout the body.	Cirrhosis patients can on a daily basis utilize techniques that balance the energies that impact the liver and enhance its ability to heal.
5. QUANTUM COMPATIBILITY: ***EM adopts non-linear concepts consistent with distant healing, the healing impact of prayer, and the role of intention in healing***	EM explores fields that influence consciousness and work over a distance ("macroscopic quantum interactions"), postulating why intention and expectation have salient outcomes, as illustrated in the placebo effect and distant healing.	Cancer patients can be shown how the energies of their thoughts and emotions affect their healing, and they can be taught techniques which engage the healing power of focused intention.
6. HOLISTIC ORIENTATION: ***EM strengthens the integration of body, mind, and spirit, leading not only to a focus on healing, but to achieving greater well-being, peace, and passion for life***	EM is based on the principle that the body, mind, and spirit are integrally connected, and it promotes their harmonious integration.	Ulcerative colitis patients can be shown how psychological conflicts may exacerbate their symptoms and can be provided therapies which quickly alter the energetic foundations of those conflicts.

Pillar 1. REACH — *Energy medicine can impact biological processes at their foundation.*

The influence of energy fields on gene expression may prove to be at the core of energy medicine's purported healing power. A number of energy fields have been identified which apparently work in concert in governing fundamental biological processes, including a *biofield* surrounding the body, *local fields* concentrated in specific areas of the body, and *pathways* that regulate the flow of energy within the body. These fields, interestingly, correspond with energy systems that have been described in the healing traditions of other cultures. Specifically, ancient constructs adopted into our language as the *aura* (biofields), the *chakras* (local fields), and the *meridians* (energy pathways) are finding empirical support in modern laboratories.

The Biofield. An energy field surrounding the body, as first measured scientifically in Burr's laboratory, has been demonstrated in a number of subsequent research programs.[48,49] Most commonly referred to as the "biofield,"[50] its electromagnetic properties have been registered using sensitive magnetometers, such as the SQUID.[51] The biofield corresponds with older notions of a distinctive but intangible "aura" surrounding the body, seen not only in religious paintings but also described in numerous healing traditions.[52] Scientists investigating the biofield have suggested that it holds information about an organism and transmits this information throughout the organism in a manner that is analogous to the way a holographic plate distributes information throughout a hologram.[53] The biofield is comprised of an extremely weak but measurable electromagnetic field — with its own waveform, intensity, polarity, and modulation patterns — that surrounds and permeates all living systems. Consensus has not been reached, however, on whether this fully accounts for the biofield's actions or if its electromagnetic properties are just the measurable component of a more complex field that includes a "fifth force"[54] that is distinct from the four forces known to physics — gravity, electromagnetism, and the strong and weak quantum forces (further discussed under the "Fifth Pillar").

Some investigators conceive of the biofield as an aggregation of the combined electromagnetic fields of the body's ions, molecules, cells, tissue, and organs, forming a "very complex standing wave," a convergence of many electromagnetic frequencies.[55] This wave is believed to play a decisive role in the integration of all the body's energy systems. Because the biofield is electromagnetically extremely weak (so much so that scientists in the past have dismissed its emissions as waste energy or "noise"), investigators have speculated that it regulates the body's biochemistry and physiology more by conveying information than by exerting force.[56] While the electrical charge of the biofield may be too weak to directly impact cellular structures, Becker found, in a surprising discovery, that tiny currents, on the order of a billionth of an ampere, were more effective than larger currents in stimulating tissue generation.[57] Rubik distinguishes between "structural" and "regulatory" mediation of biological events, and she speculates that energy interventions which create even small fluctuations in the biofield may work by sending signals to the body's regulatory mechanisms rather than by directly acting upon the body's physical structures.[58] She believes the speed and efficiency by which the biofield, with its electromagnetic and holographic properties, can distribute information may account for the rapid, holistic effects reported by energy medicine practitioners.

Local Fields. In addition to a biofield that surrounds the entire body are concentrated local energy fields within particular areas of the body. Pioneering research in the 1970s by Valerie Hunt at UCLA's Energy Fields Laboratory demonstrated that specific regions of the skin produced very rapid electrical oscillations (up to 1600 cycles per second, as contrasted with 0 to

100 cycles per second in the brain, 225 in the muscles, and 250 in the heart),[59] and that these local energy domains corresponded with ancient descriptions of the body's "chakras." The chakras are vortexes of biophysical energy that are a focus in the practice of yoga and addressed in a variety of healing systems. Spectrogram analysis[60] and Polycontrast Interference Photography[61] also reveal distinct frequency ranges or colors associated with specific chakras. In a different line of investigation, when advanced meditators consciously projected energy through a chakra, the strength of the electrical field emanating from that chakra multiplied.[62] These energy fields apparently both spiral above and permeate specific areas of the body and also interact with the biofield, formulations which are consistent with way energy medicine practitioners have described the relationship among the chakras and the aura.[63]

Physiological, psychological, and spiritual functions have been attributed to the chakras.[64] At the physiological level, the chakras envelop with their energies the organs in their proximity, influencing the health of those organs.[65] There is, indeed, some strong anecdotal evidence that the equilibrium in a chakra's energies not only correlates with and influences the health of the organs located in the chakra's field, but that imbalances in the chakra's energies precede (and thus predict) the onset of disease.[66] At the psychological level, the chakras are believed to encode experience, with each chakra associated with a distinct developmental theme (e.g., survival, creativity, identity, love, expression, deep perception, and transcendence of the ego), comprising a sort of memory system that parallels neural memory, a redundancy that is perhaps akin to the redundancy found in the functioning of the right and left cerebral hemispheres. While such an energy-memory system is foreign to Western thinking, it is taken for granted in many healing traditions and would go far toward explaining why some organ transplant donors start to exhibit the psychological characteristics of their donors. Spiritual functions attributed to the chakras are based in the way they are believed to be attuned to metaphysical constructs such as "ancestral memories," "past lives," and "archetypes."

Energy Pathways. A third overarching energy system that seems to regulate the flow of specific energies within the body corresponds with the "energy pathways" referred to as *meridians* in Traditional Chinese Medicine and also described in a variety of other healing traditions.[67(p34)] A study published in the *Proceedings of the National Academy of Science* in 1998 using functional Magnetic Resonance Imaging (fMRI) demonstrated that stimulating an acupuncture point in the toe (each acupuncture point is believed to sit on the line of and regulate the energy in a particular meridian) activated the exact areas of the brain that would be predicted by acupuncture theory, despite no known anatomical pathways connecting the toe to that brain region.[68] A special camera that registers biophotons in the spectral range of 200 to 800 nanometers shows that when stimulated, the meridians generate light along channels that are identical to the descriptions of meridians found in the texts of Traditional Chinese Medicine.[69] While the meridians and corresponding acupuncture points also exhibit other physical characteristics such as less electromagnetic resistance,[70] enhanced ultrasound attenuation,[71] and the conduction of light,[72] infrared,[73] and microwaves,[74] substantial investigation has failed to find exact physical correlates, resulting in the meridian concept being largely discounted by Western science. The meridian system (fourteen major meridians are generally described, but they are understood as segments of a single continuous energy system) does not, for instance, correspond with known structures in the circulatory, lymphatic, or nervous systems, nor are the meridians and acupuncture points even stable in their shape, size, or location on the skin.[75]

This, however, is exactly what would be expected if the meridian system operates as a field that is somewhat independent of the physical body it acts upon. In fact, the electrical properties of the acupuncture points can still be identified after death or on an amputated limb — where blood circulation, lymph flow, and nerve impulses have ceased — suggesting "a completely distinct energy circulatory system interacting with the biomolecular structures but surviving their dissolution for some time."[76(p33)] As Curtis and Hurtak propose, the meridian system may be a distinct energy system that "functions alongside the accepted blood circulatory, lymphatic, and nervous systems," capable of reading, coding, and transmitting information from one part of the body to another and providing "an underlying template for the physical body."[77(p34)] They believe it operates on a distinct energetic spectrum whose movement is more like an energy wave than a tube or vessel. Supporting the hypothesis that this energy system impacts biological processes, abundant anecdotal and limited empirical evidence suggests that disruption in a meridian pathway precedes (and, again, thus predicts) disease in specific organs served by that meridian, and that meridians whose energies are disrupted can be treated for therapeutic benefit.[78]

So the first pillar of energy medicine is its reach, its ability to influence fundamental biological processes in ways the biomedical paradigm cannot. By not having a framework for proactively developing interventions that target the body's energy fields, conventional medicine fails to cultivate methods that have potential for non-invasively influencing the control of gene expression, for the early identification and prevention of disease and for intervening in macro-processes such as immune function.

Pillar 2. **EFFICIENCY** **—** ***Energy interventions can regulate biological processes with precision, speed, and flexibility.***

While the biochemical paradigm remains at the foundation of conventional medicine, the energy paradigm is gaining ground, and for good reason.

Electromagnetic frequencies are a hundred times more efficient than chemical signals such as hormones and neurotransmitters in relaying information within biological systems, a calculation based on research conducted in the 1970s by Oxford University biophysicist C.W.F. McClare.[79] Many of the body's regulatory chemicals, such as hormones, travel less than a centimeter in a second while an electromagnetic wave could have traveled three-quarters of the distance to the moon in that time. The signals sent via acupuncture treatments have been shown to produce information at speeds several orders of magnitude greater than nerve impulses.[80] Beyond the exponentially greater speed of energy interventions, most of the information being transferred by chemical diffusion is lost because so much of the operation is simply making and breaking chemical bonds. Lipton summarizes the benefits and costs of energy treatments: "Energy signals are 100 times more efficient and infinitely faster than physical chemical signaling. What kind of signaling would your trillion-celled community prefer? Do the math!"[81(p112)]

Conventional medical treatments still do not take advantage of the potent ways energy can transmit information in biological systems (with some notable exceptions, such as the use of heart pacemakers, harmonic frequencies that dissolve kidney stones, pulsed magnetic stimulation machines, and the use of magnets for alleviating tendonitis, facial paralysis, and optic nerve atrophy). Nonetheless, in another irony, conventional medicine has had no difficulty accepting diagnostic instruments that are based on the concept of energy as information. Energy-scanning devices analyze the frequencies of the body's chemicals, tissues, and organs. MRIs, EEGs, ECGs, EMGs, and CAT scans have proven their ability to non-invasively detect illness. Healthy

and unhealthy tissues have distinct electromagnetic properties that can be detected in scanned images. Lipton observes that "diseased tissue emits its own unique energy signature, which differs from the energy emitted by surrounding healthy cells," and he goes on to suggest that there is enough scientific evidence to speculate that we will be able to tailor energy and waveforms that act as therapeutic agents "in much the same way that we now modulate chemical structures with drugs."[82(p119)]

Energy medicine practitioners, often without the use of mechanical devices, purportedly identify imbalances in the body's energy pulsations and fields and directly intervene so the waveform patterns emitted by diseased tissue or malfunctioning systems are modified and the associated areas are surrounded by energy fields that have a therapeutic effect. To the extent that such procedures can be refined and taught, energy medicine will offer interventions that are substantially more flexible and precise than medication or surgery, often substantially reducing the time involved in the healing process without producing unwanted side effects.

Pillar 3. **PRACTICALITY** ***— energy medicine fosters health with interventions that can be readily, economically, and non-invasively applied.***

The ability to sense and correct energy imbalances has historically been tied to survival. Tribal people could detect whether the energies of a recently encountered plant were noxious before ingesting it. Indigenous medicine is oriented toward keeping the body healthy by keeping its energies flowing and in harmony. As the Nobel-prize winning biochemist Albert Szent-Györgyi observed, "In every culture and in every medical tradition before ours, healing was accomplished by moving energy."[83] In Traditional Chinese Medicine, you kept the body healthy by keeping the energy fields that support it healthy. Because disturbed energies lead to corresponding disturbances in the physical body (somewhat like the way the energy field carried by a salamander embryo is the blueprint for the adult), maintaining healthy energies is seen as the path for maintaining health and preventing illness. In some provinces of ancient China, in fact, you paid the physician when you were healthy. If you got sick, the physician would work hard to try to cure your illness, but you did not have to pay because the physician had failed to keep your energy field healthy enough to prevent the illness.

Norman Shealy and Dawson Church have identified four ways that energy can be systematically introduced into the healing process.[84] The first is a form of energy that is generated mechanically, such as the spark produced by pressing the button on a gas-grill lighter. Called piezoelectricity (derived from the Greek word *piezein*, which means "to squeeze or press"), it is based on the way that pressure placed on certain materials is converted into electricity. Current can be generated by placing pressure on crystalline structures, which include the bones, tendons, and collagen. This, in fact, is the basis of acupuncture, acupressure, and the massaging or tapping of energy points, and the piezoelectrical energy that is produced can be conducted through the body's connective tissue.[85] A second way that energy can be used in healing is by surrounding tissue with an electromagnetic field. When a healer's hands or a magnetic device are held over a part of the body, the energy within the tissue can, at least in theory, be brought back into alignment and balance. A third approach is to actually send electrical impulses through the body, as is accomplished with heart pacemakers and pulsed magnetic stimulation machines.[86] A final approach, which is highly speculative yet necessary to explain oddities such as "distance healing"[87] and other non-local effects involves "macrolevel quantum fields."[88]

While a range of interventions using electrical devices, magnets, crystals, needles, aromas, and ingested substances are all used in energy medicine, the tool used by the largest number of practitioners for intentionally moving and harmonizing the body's energies and fields is the human hand. Many of the interventions found in the field's standard texts and manuals[89,90,91,92] are, in fact, hands-on approaches designed to bring balance and harmony to the body's energy fields. A practitioner can tap, massage, pinch, twist, or connect specific energy points on the skin. Because everyone's hands carry a measurable electromagnetic charge, specific areas of the body can be surrounded with the hands to produce a field effect, or the hands can be used to move and align the body's energies by tracing specific energy pathways along the skin.

Other non-invasive and readily accessible interventions include the use of specific postures and movements that have beneficial effects on the body's energy system. Such non-invasive treatments might routinely be considered in health care settings, in accord with the principle that the least invasive measure likely to impact an illness should be the first applied.[93] These low-tech procedures are not only readily available and easily added to the practitioner's treatment repertoire with a modicum of continuing education, their purported preventive and non-invasive qualities promise that they may also be highly cost-effective in contrast to the rapidly rising costs of conventional medicine and its deleterious impact on the economy.

Pillar 4.* PATIENT EMPOWERMENT — *Energy medicine includes methods that can be utilized on an at-home, self-help basis, fostering a stronger patient and practitioner partnership in the healing process.

People can apply many energy medicine techniques in a self-administered manner and can be shown a variety of exercises or postures that are designed for specific energy effects. Energy medicine can actually be applied in three contexts. Energy medicine is an integrated system for treating illness, a complement to other approaches to medical care, and a set of procedures for self-care and self-help. Using energy medicine as a self-care system, individuals can learn to assess if certain key energy systems are out of balance, to implement corrective procedures, and to build resilient energy patterns for the prevention of illness. While traditional medicine may recommend exercise, a healthy diet, stress reduction, and other common sense steps for better health, its core procedures are medication, radiation, and surgery, and these must be administered by the health care professional. Energy medicine — which recognizes energy as a vital, living, moving force in each individual — is inherently democratic. The body's healing energies are free, everyone's birthright. Energy medicine teaches people to marshal these energies to counter illness and enhance health. Energy medicine uses the term "energy" in two senses. Energy is the *medicine*, and energy is also the *patient*. You heal the body by activating its natural healing energies (the "medicine"), and you also heal the body by restoring energies that have become weak, disturbed, or out of balance (the "patient").

Pillar 5.* QUANTUM COMPATIBILITY — *Energy medicine adopts non-linear concepts consistent with distant healing, the healing impact of prayer, and the role of intention in healing.

A great incongruity in Western medicine is that its core paradigm is a century behind the paradigm used by modern physics. Einstein's piercing formula showing that energy and matter are interchangeable was published in 1905. This discovery revealed that a Newtonian physics which focuses on the mechanics of life gives us only a glimpse of a much larger story. The darkest implications of the discovery that energy and matter are interchangeable burst into our

collective psyche on August 6, 1945, when the story of Prometheus, who stole fire from the gods, became the terrifying myth of an unwitting humanity that suddenly possessed the power to destroy itself. But the realization that the billiard ball-like atoms of a century ago are really packets of energy — unique in their distribution of positive and negative charges, spin rate, and vibrational pattern[94] — has also been the key insight for many of our modern miracles, from sending a man to the moon to the invention of televisions, cell phones, and computers.

While Western medicine has developed few interventions that are based in the recognition that energy is the "stuff" of all physical matter, scientists from numerous disciplines are working within this perspective. They are, for example, recognizing the potential explanatory power of fields that are "totally unlike any of those presently known"[95(p17)] in the ways they hold and transmit information, display quantum properties such as non-local influence, and interact with consciousness. While nature's strong and weak quantum forces are understood to have their effects only in the subatomic world, hypothesized fields whose actions on biological systems work at a distance through "macroscopic quantum interactions" have been formulated[96,97] Such fields might parsimoniously explain, for instance, the beneficial effects of prayer and distant healing that have been widely observed and amply documented[98] as well as the role of intention, placebo effect, and other psychological factors in health and healing.

Pillar 6. **HOLISTIC ORIENTATION —** ***Energy medicine strengthens the integration of body, mind, and spirit, leading not only to a focus on healing but to achieving greater well-being, peace, & passion for life.***

A critical difference between energy medicine and conventional medicine involves the concepts of diagnosis and treatment. In energy medicine, "diagnosis" is concerned with disruptions and imbalances in the body's energy system. For instance, there is some evidence that, with cancer, the energies tend to be disorganized and lacking in coherence, while with multiple sclerosis, they tend to be so highly ordered as to lack flexibility.[99] "Treatment" is designed to correct such imbalances. Symptoms provide clues for determining the nature of the energy imbalances and a measure of whether the treatment is succeeding, but they are not the primary focus. For instance, where conventional medicine treats kidney disease by focusing on the organ itself (thus leaving medication and surgery as the most obvious choices), in energy medicine, the treatment focuses on the *energy systems* that impact the kidneys.

Such energies, however, are not necessarily limited to the kidneys. They are often systemic, running throughout the body. Energy medicine, in fact, offers many methods that instantaneously impact the entire body. The mechanism by which it is possible for energy interventions to have this "holistic" influence is the body's connective tissue, which is, for many healers, thought of as a communication medium.[100] According to Dawson Church, "Every organ of your body is encased within the body's largest organ, which is a giant liquid crystal electrical semiconductor" that can also conduct information by being able to "*store* energy, *amplify* signals, *filter* information, and *move* the flow of information in one direction but not another."[101(p84)] With the connective tissue acting as a "liquid crystal electrical semiconductor," energy interventions can simultaneously be brought to every cell of the body. Where this may be problematic for medications that are meant to correct chemical imbalances in a specific area of the body but inadvertently upset the balance in other organs and systems as they move through the blood stream, the body's energies self-regulate in such a manner that serious side effects from hands-on energy interventions are rarely seen (the most frequently reported difficulties have involved too much energy being moved too quickly for a physically unstable person to assimilate).

Not only do energy medicine interventions allow for rapid signaling activity throughout the body that, according to its practitioners, is clinically safe, energy medicine is also holistic in its apparent ability to bridge body, mind, and spirit. The influence of the mind on the body's health is well-established. In a thirty-five year longitudinal study, people with a pessimistic explanatory style were at greater risk for physical illness than individuals with an optimistic explanatory style.[102] The power of thought on biological processes is decisive and direct. Focused intention can literally wind or unwind the tightness of DNA strands, leading to speculation that DNA acts as an "antenna" attuned to fields and thought processes that ultimately influence the expression of specific genes.[103] Energy medicine and energy psychology (energy psychology is a specialty within energy medicine in the sense that psychiatry is a specialty within conventional medicine) provide methods that attempt to directly influence fields that are involved in psychological processes to address emotional problems and promote robust psychological functioning.[104] This positions energy therapy as an unusually direct and powerful approach for working with the principles being generated by behavioral medicine and health psychology.[105] In addition, many of the ancient traditions being revisited via energy medicine were spiritual disciplines as well as healing modalities, and some practitioners speculate that the energies they invoke are a bridge into the world of spirit.[106] Meanwhile, medical systems based in the biomedical paradigm have to struggle against the paradigm itself to incorporate the decisive findings and health implications regarding the impact of consciousness, intention, and other psychological factors on physical processes.

5. Future Research and Conclusions

Many ancient healing practices that conceptualize "energy" as a critical component in their actions—from acupuncture to meditation to yoga to qigong — are, according to Kim Jobst, Editor of *The Journal of Alternative and Complementary Medicine*: "withstanding the test of time and emerging into the realms of biomedicine because, not only does anecdote testify to the practices' benefits to patients . . . emerging technology can demonstrate objective effectiveness according to the . . . criteria for what constitutes scientific evidence."[107(p1-2)] Research evidence indeed exists demonstrating the efficacy of acupuncture,[108] acupressure,[109] therapeutic touch,[110] healing touch,[111] Reiki,[112] qi gong,[113] intentional healing,[114] and other forms of energy medicine,[115] but their clash with conventional medicine's paradigm has, to a large degree, prevented these modalities from being integrated into mainstream health care. The six pillars discussed in this paper beckon health care providers to consider facilitating such integration.

While subtle energies and organizing fields still elude contemporary scientific instrumentation, the clinical outcomes of interventions by practitioners who believe they are working with those energies and fields can be measured. In addition to the studies supporting each of the specific energy medicine modalities cited above, examples focused on energy medicine interventions with specified health conditions include improvement in the symptoms of fibromyalgia following qigong therapy,[116] improvement in health-related quality of life measures in cancer patients undergoing radiation therapy who were provided healing touch treatments,[117] increased strength, balance, and flexibility in adults with cardiovascular disease risk factors following tai chi,[118] and improved cardiovascular function following acupressure.[119]

Experiments could also be devised to test of each of the six pillars. Empirical demonstration of their strengths would be a timely contribution given the seemingly plausible claims of energy medicine practitioners regarding the potential benefits of integrating energy interventions into

mainstream practice. The following research questions, one for each of the six pillars, are formulated to encourage such studies:

1. What are the effects of twice-weekly energy medicine treatments on gene expression as measured by "gene chips,"[120] as well as the disease course, with patients diagnosed with multiple sclerosis as compared with matched patients receiving conventional treatment only? (1st Pillar, Reach).

2. Do energy medicine treatments before and after surgery impact recovery rates in comparison with matched patients who do not receive energy medicine treatments. (2nd Pillar, Efficiency)

3. Does offering a randomly selected group of employees of a company daily 20-minute energy balancing sessions impact job performance, baseline lab test health indicators, and medical service utilization over a two-year period as compared with randomly-selected employees who are offered a daily 20-minute calisthenics program and another with no special treatment? (3rd Pillar, Practicality).

4. Does introducing an at-home energy balancing regimen to cancer patients receiving radiation treatment reduce side effects in comparison with matched patients not using such exercises? (4th Pillar, Patient Empowerment)

5. Can the waveform patterns associated with diseased tissue be modified through the use of energy medicine treatments, and do the modified waveform patterns correspond with the tissue being repaired? (5th Pillar, Quantum Compatibility)

6. Do energy interventions that focus on psychological conflicts in patients with gastrointestinal disorders lead to more rapid improvement according to physical makers than matched protocols that do not include a focus on psychological conflicts? (6th Pillar, Holistic Orientation)

Even as energy medicine practitioners continue to operate largely outside of conventional medical institutions (though the routine use of methods such as Reiki, Healing Touch, and Therapeutic Touch is seen in growing numbers of hospitals and The American Academy of Medical Acupuncture has more than 1600 physicians in its membership), each of these experiments could readily be conducted and would shed substantial light on the strengths, limitations, and comparative value of an energy medicine approach. Meanwhile, the six pillars outlined in this paper have been demonstrated in many practice settings as being operational, relevant, and available for implementation. While the discipline is still establishing its strengths and range of application, enough is already known to conclude that conventional health care could be strengthened substantially by embracing energy medicine.

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David Feinstein, Ph.D., a clinical psychologist, is the national director of the Energy Medicine Institute, based in Ashland, Oregon. Author of seven books and more than fifty professional papers, he has taught at The Johns Hopkins University School of Medicine and Antioch College. Among his major works are *The Promise of Energy Psychology* (co-authored with his wife, Donna Eden, and Gary Craig), *The Mythic Path*, and *Rituals for Living and Dying.* His multi-media *Energy Psychology Interactive* was a recipient of the Outstanding Contribution Award from the Association for Comprehensive Energy Psychology. The American Psychological Association's book review journal applauded the work for providing "a lucid foundation for a growing interest in integrative psychology" and "a valuable expansion of the traditional biopsychosocial model of psychology to include the dimension of energy."

Donna Eden*,* a pioneer in the field of holistic healing, is among the worlds most sought, most joyous, and most authoritative spokespersons for energy medicine. Her abilities as a healer are legendary, and she has taught some fifty thousand people world-wide, both laypeople and professionals, how to understand the body as an energy system. Since childhood, she has been able to see the flow of the body's energies, and from this clairvoyant ability, she has developed a system for teaching others, who do not have this gift, to productively work with their body's energies. Her best-selling book, *Energy Medicine*, has been translated into 10 languages, and is a classic in its field. According to Carolyn Myss: "The contribution Donna Eden has made with *Energy Medicine* will stand as one of the backbone studies as we lay a sound foundation for the field of holistic medicine."