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Distant Healing by the Supposed Vital Energy – Scientific Bases

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Additional information is available at the end of the chapter

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1. Introduction

Today in conventional medicine, electromagnetic energy is vastly used for diagnostic and curative purposes. For example, transcranial magnetic stimulation (the magnetic energy pulses through the skull), promotes modulation of neuronal activity in the limbic system for the treatment of depression. But some therapeutic practices encompass the manipulation of a supposed vital energy (SVE). This is a putative form of energy, hypothetical, yet to be detected, that is believed to be present in all living beings. According to these practices, living beings are infused with a subtle form of energy and the health would be modulated by the balance of this energy in the organism, achieved by natural exchange with the environment and harmonious distribution through the body. It is suggested that these energies may be accessed in various ways for therapeutic interventions

Distant healing (DH) includes a broad variety of complementary therapies. This chapter will discuss therapies whose effects could only be explained by an exchange of the SVE from the practitioner to the patient. In techniques based on those principles, the patient is not even touched by the practitioner, and they include Reiki, Johrei, QiGong, intercessory prayer, and other similar practices. This chapter will not approach energy therapies that may exert their effects through explainable elements such light touch, mind-body interaction (due to relationship with the therapist), or positive expectation. In these approaches, it is impossible to examine whether the effects distinguish themselves from a general relaxation effect that could be cognitive or somatic resulted. Therapies as acupuncture, for instance, have part of their theories based on alignment of subtle energy, but they involve also well known physiologic pathways that must be responsible for the major part of the therapeutic effect.

The terms related to these therapies are all borrowed by similarity from physics, in analogy to the knowledge of electromagnetic (EM) phenomena. Terms like bioenergy or biofield therapies has been used to encompass a set of techniques that may or may not belong in the

same category. The biofield is defined as the endogenous, complex dynamic EM field that is proposed to be involved in self-organization and regulation of the living organism [1].

The concept of SVE and methods of its use for healing has been described for thousands of years, although known by different names. Approaches of DH for health purposes is maybe the oldest ancestral curative practice, practiced in all cultures over the entire world, throughout recorded history [2]. These vital energy concepts include the Indian term *Prana*, the Chinese *Ch'i*, the Japanese *Qi*, the Hawaiian *Mana*, and European terms as *animal magnetism* (from Anton Mesmer) or *bioplasma*. All refer to so-called subtle or nonphysical energies that permeate existence and have specific effects on the body-mind of all conscious beings.

Numerous schools and philosophies of healing exist, involving the engagement of the SVE of variant conceptions and descriptions. In an attempt to propose a classification, we would grossly refer a technique as:

- a. performance-related systems (e.g., laying on of hands a few inches away from patient), or distant healing sent only by mental intention;
- b. practitioner in proximity to the patient, or distant (either in other room or miles away);
- c. techniques related to a religious tradition (as intercessory prayer, blessings), or not (as Reiki);
- d. systems derived from ancient wisdom traditions, or modernly constituted systems;
- e. self-healing systems (practitioner heals himself), or healing others (in a relation practitioner-patient).

2. Biophysics and physiology

For centuries, naturalists have noticed behavioral changes in plants and animals that seemed to be correlated with extremely small environmental influences such as variations in electrical, magnetic, and electromagnetic fields, including visible and near visible light. So, it is known for a long time ago that living organisms are extremely sensitive to energy fields. Energy fields are an important language of biocommunication; they go to the foundation of life [3].

An apparent paradox is that living organisms are more sensitive to tiny fields than they are to strong fields [3]. But this selectivity has arisen during evolution as part of survival mechanisms used to locate food, identify predators, and navigate. Moreover, organisms “tune-in” to the subtle variations in the earth’s field to set their biological clocks. Geophysical and celestial rhythms influence plant and animal behavior. Living systems are very sensitive to bioinformation, often responding to energetic cues for survival or reproduction.

Cells maintain integrity by extremely subtle and minute shifts in molecular and sub-molecular balance. This involves continual inter- and intra-cellular communication in order to convey chemical and electromagnetic messages. The activity of living tissues and cells produces

certain collective frequencies. Living structures and functions are orderly, and their biological oscillations are organized in meaningful ways. They contribute information to a dynamic vibratory network that extends throughout the body and into the space around it [4].

Organisms have energy fields around them, and these fields can produce meaningful interactions between organisms. One explanation is that subtle energy fields in the vicinity of an organism can produce or induce electrical and magnetic fields within the organism, and that these signals have potential to activate, enhance or suppress cellular and molecular processes. We may see these effects on cell surface receptors, enzymes, and reaction kinetics [3]. The exposure to low intensity, non-ionizing radiation can induce and/or modulate events within biological tissues.

It is hypothesized that the action of exogenous EM fields on biologic systems is mediated by endogenous energy fields resonating with and modulated by external fields. Experimental data also supports the theory that exogenous EM fields may either induce or perturb endogenous fields. There is an evidence to show EEG synchrony between bioenergy practitioners and client occurs during healing [4].

Cells can respond to extremely weak electromagnetic fields. Internal biochemical reactions can be accelerated by an extremely weak magnetic field, the order of millitesla. Some of these ranges are similar in intensity and frequency with the emissions in the human body. Extreme low frequency electromagnetic fields for example, could induce relatively rapid phosphorylation of specific receptor proteins in T-cell membranes. Hence a cascade of intracellular signals may be initiated, accelerated or inhibited [4].

Also enzymatic processes themselves are field-sensitive. Weak electric fields can change the probability that molecules of the reacting materials will encounter each other[3]. Ions are also highly sensitive to entrainment with external EM fields. Free radicals like nitric oxide are also involved in the coupling of EM fields to chemical events in the signal cascade.

Research showed that extremely low intensity, non-ionizing EM fields, having even less energy content than the physical thermal noise limit, can produce biologic effects. Some evidence suggests that molecular-level receptor proteins on cell membranes may be one locus where electromagnetic fields act on the cell, acting as interface between EM field and biomolecules. These processes also appear capable of acting on specific regions of DNA and regulate expression of several proteins in cultured cells.

At such extremely low levels, the energy content of the signal is irrelevant. Such extremely low-level fields cannot act energetically on organisms, because the energy content is negligible. Thus, it has been proposed that they are acting informationally. Fields carrying biologically relevant information have been called “electromagnetic bioinformation”. It is proposed here that they interact directly with the biofield [1]. The human biologic field is an organizing field which hypothetically regulates the biochemistry and physiology of the body. There is no consensus among scientists regarding the nature of the biologic field (i.e., whether it is electromagnetic or not, or whether it consists of electromagnetic components together with other uncharacterized fields) [1].

DH therapies may be mediated by means of extremely low-level electromagnetic fields emitted from the healer, which are associated with psycho-physiologic states of the practitioner's intention. Regulatory interactions and the impact and mechanisms of self-organization and healing have a theoretic fit with energy balance and reported changes in the autonomic nervous system [1]. The biofield seem to interact with biological tissue at the cellular level, mimicking the response obtained when externally applied pulsed electromagnetic fields. The exchange of low-frequency energy could give up to 18 inches of the body, a distance that would include many therapies that do not involve touch [5]

One theory that could explain the effects of distant healing is that the energy field of one person can interact with that of another, producing or inducing specific beneficial energetic signals within a patient. Living systems are regarded as complex, nonlinear, dynamic, self-organizing systems at a global or holistic level according to the principles of non-equilibrium thermodynamics of open systems and chaos theory. Living systems are constantly exchanging energy-with-information at multiple levels of organization with their surroundings in order to maintain themselves. This biophysical view of life provides the rudiments of a scientific foundation for complementary therapies involving the transfer of bioinformation carried by a small energy signal [1].

3. Theories related to DH

No text provides a mechanistic model of how putative energy modalities might work. The explanation would attribute the beneficial effects of DH to "real" but currently unknown physical forces, which are "generated" by the therapists and "received" by patients. There may be mechanisms as yet not described by scientific laws. Many theoretical models postulate about human energy fields. None has been proven or validated conclusively by Western science. Efforts to make sense of energy healing typically have referenced the physical sciences to provide theories for understanding a putative therapeutic effect. Representative examples include information transport mechanisms, quantum entanglement, and transmission and reception of extremely low frequency electromagnetic energy.

Most scientists and funding agencies are unaware of the evidence or the relevant literature. The work of healers has elicited controversy and skepticism. The existence and transmission of potentially therapeutic healing energy seem to contravene the conventional worldview underlying modern biomedicine. Criticism and rejection of bioenergy healing by Western physicians is expected, in light of misunderstandings resulting from unfamiliarity with the topic. Due to prejudice and ignorance, suggestion or placebo effects are the most obvious alternative explanation of energy medicine. An element of suggestion is present in complementary therapies, as it is in conventional therapies. Randomized controlled trials suggest, however, that several complementary therapies are of significantly greater benefit than the effects of suggestion shown in the mock-therapy control groups [6].

Generally, any theory about DH systems based on the SVE must comprises [7]: a. a source which generates energy and modulates it in some manner such that it conveys information; b. a coupling mechanism connecting the bioenergy source to a transfer medium; c. a transfer medium through which the bioenergy flows; d. a coupling mechanism connecting the transfer medium bioenergy sink; e. a terminal sink which includes a mechanism for the perception of information. The input and output coupling depend on properties of the source and the transfer medium, likewise for the sink. Perception is used rather than reception to imply some active process which uses some form of perceptual reasoning in processing the information based on its content.

3.1. Classic systems visions

Various researchers and practitioners in the field have different understandings of the concept of bioenergy as a result of their diverse educational and experiential backgrounds. While the concept is broadly meant to describe the basis of healing in a varied set of practices, it does not identify a particular type of energy, per se [7].

Energy medicine practitioners state that, in addition to the physical body, an energy body exists that has a direct influence on health. Problems with the energy body can precede physical problems. Similarly, a positive change at the energetic level can lead to physical healing. The energy body is in constant flux according to individuals' emotional, physical, mental, and other states. It is held that energy follows the intentions of both the healer and the person receiving the healing.

According to existing theories of bioenergy, this biofield surrounding the body of all living beings constitutes a dynamic living matrix of information. This matrix communicates information to and among the human energy body, instructing or informing the physical, mental, emotional, and spiritual states of the individual. Correcting and maintaining this system of energy allows for a free flow of information, which in turn enables the biofield to self-regulate—that is, to automatically correct any imbalance that may be causing symptomatic or pre-symptomatic disease [8]

It is believed that an imbalance or attenuation of this energy leads to disease. This theory leads to the belief that vital energy can be redirected or strengthened to promote or restore health. When there is an imbalance of the SVE, allegedly the body would be prone to develop dysfunctional physiologic actions that may origin even physical diseases. The treatments based in distant healing intend to restore the amount and distribution of the SVE of the patient by the intervention of a practitioner. The practitioner seeks to facilitate the flow of bioenergy throughout the biofield.

Certain challenges present in the energy field are commonly encountered by energy practitioners. These include energy depletion, distortion, and congestion. A depletion in the energy field refers to a deficiency of energy in a particular region of the field. A distortion of the energy field is characterized by an area in which energy is present but not evenly distributed. Congestion in the energy field refers to an obvious excess of energy, or blockage

in its flow. DH work is done to facilitate the balanced flow of energy and information throughout the client's energy field. The practitioner's clinical objective is not to treat a disease process, but rather to enable a client's energy to go where it needs to go—by rectifying depletions, smoothing out distortions, and removing congestion. The corrections or healings that occur in bioenergy practice are a result of the energy system rebalancing itself.

The suggested mechanism of action of biologic energies purportedly used by complementary therapies practitioners include activation or unblocking of patients' energies, projection of the practitioners' own energies, channeling of energies by the therapist from nature (e.g., the earth, cosmic energies), and interventions of spiritual agents. Many modalities have their own variations on these theories that are relevant to their particular approaches.

Therapists who are sensitive to bioenergies report they can feel or see an aura surrounding the body. It would reflect the physical, emotional, mental, relational, and spiritual conditions of the person. The energy fields are believed to be templates for what occurs within the body, being shaped by genetic, mental, emotional, and environmental factors. In addition to sensing people's conditions, healers can enhance people's states of health by interacting with the bioenergy field.

Many DH therapists hold that they can maneuver the energy body through various means. Some claim to do so simply by directing their intention; others use their hands. Stones, tuning forks, colors, visualization exercises, chanting, breathing practices, and many other approaches may also be used. Training in various modalities varies.

A practitioner can direct his bioenergy by intentionally redirecting the internal flow of biocurrent in his body. The underlying assumption is that an undirected practitioner's bioenergy is distributed throughout his body in a nonrandom (organized) manner but that the net biofield generated is either zero or radiating more or less uniformly in space (referred to as isotropic radiation). When healing, the practitioner does not have any more energy than normal but rather focuses his internal energy or focuses an external source of energy to a specific purpose. A common thread within these techniques is the use subtle energy to stimulate one's own healing process

There are at least three elements of the healing process [7]. The first is the physical transfer of energy through bioenergy fields at a distance (impedance matching). The second is the transmission of bioenergy at an appropriate carrier frequency of the electromagnetic radiation which carries the modulation or signal and the recipient to tune to this frequency (tuning a resonant circuit). The third, the ability of the recipient to decode this modulation (decoding phenomena).

The role of the recipient must not be neglected. The recipient must need or desire or be motivated to be healed; the recipient must be, at least to some degree, either actively or passively receptive. The recipient can increase the reception of this energy by focusing his attention (intention) to receive the energy with the minimal mismatch of impedance.

There are common components in all healing systems [9]. These include an essential role of consciousness, the perception of the etiology and meaning of the illness, an intention to change and improve, belief by the individual in the therapy and in the practitioner, and a mutual expectation for recovery. There are other components that are frequently described. One is the occurrence of emotional and physical healing, “vital energy,” as well as a connectivity that often manifests as compassion.

These concepts can be often endorsed among healers [10]: (1) the idea that human beings possess an ability to facilitate healing for one another through use of the hands, either in contact with the body (touch healing) or proximal to it (noncontact healing); (2) a reliance upon an innate human capability to access inner guidance; and (3) assertion that the life force intrinsically “knows” where it is needed and that the healer’s principal role is to dispassionately channel or facilitate this transmission.

3.2. The supposed vital energy

In physics, the term “energy” refers to “the capacity to do work and overcome resistance”. Matter and energy are fundamentally interrelated, however, fields of force vary according to energy expressed, and information carried. The term “field” refers to “a force which can cause action at a distance”. Though field effects may be weak in terms of power, they may have a measurable effect on matter.

The SVE would be a “subtle biofield”, something not related to one of the four fundamental forces accepted by current physical knowledge (gravity, electromagnetism, the strong nuclear force and the weak nuclear force). In fact, it has been argued that several complementary practices appear to act in a manner described as nonlocal, non-temporal and non-mediated and thus do not conform to commonly accepted definitions of energy. Non-locality is the interactions between two entities that do not depend on spatial proximity, shielded from ordinary physical and psychological influences, excluding all known causal pathways of human interaction

So, the term energy does not make sense when referring to a distant therapeutic effect that pushes past the known limits of the transmission of any form of energy ever validated. Preferable terms are consciousness and nonlocal mind, since physical scientists have successfully validated and made sense of the sorts of operations at a distance for these constructs that experimental and theoretical work has yet to validate for energy healing [8].

Rather than an exchange of energies, there could be an exchange of information. Information is neither energy nor matter in itself, although energy or matter is its carrier. Information exists only in relationship, and always involves at least two entities, a sender and a receiver, and it depends on the context. Information for a living system conveys meaning, although the meaning to the organism may not always be conscious [1]. In Homeopathy, there may be information stored in the substrate of the remedy that the patient receives. Structured water, or water that has stored information of the original substance dissolved in it, may be the active agent in classic homeopathy.

Another form of passing information associated with bioenergy transfer is that due to resonance, or the inducing of a synchronizing effect in a recipient. In the process of radiated information transfer it is also conjectured that the information content transferred by the practitioner may create a resonance phenomena within the recipient such that the effect is essentially independent of the transferred energy level as long as the level exceeds a detection threshold of the recipient [7].

The phenomena are subject to external influence. The environment is cluttered with a multiplicity of confounding electric, magnetic, and electromagnetic signals. However it is not clear that this ambient radiation may not be the carrier of the information between a practitioner and a receiver and that the practitioner may simply modulate this already existing energy rather than radiate his own energy [7].

The concept of subtle energy may have some relation to a recent issue brought by physics, the concept of dark energy. It is so called because physicists don't know its exact nature. Even so, dark energy may account for 70% of the total mass-energy of the universe. Another bizarre issue, the dark matter, makes up about 25% of this sum. The rest - everything ever observed with all of our instruments, all normal matter - adds up to less than 5% of the Universe. An explanation for dark energy is that it is a new kind of dynamical energy fluid or field, something that fills all of space but whose characteristics are the opposite of that of matter and normal energy.

Some theorists have named this "quintessence," a name that comes from the classical elements of the ancient Greek philosophers. The ether, a pure "fifth element" (*quinta essentia* in Latin), was thought to fill the Universe beyond Earth. This quintessence would be a contribution to the overall mass-energy content of the Universe. In physics propose, the ether would be a space-filling substance or field, thought to be necessary as a transmission medium for the propagation of electromagnetic waves. The assorted ether theories embody the various conceptions of this "medium" and "substance". This early modern ether has little in common with the ether of classical elements from which the name was borrowed.

Albert Einstein was the first person to realize that empty space is not nothing. According to the general theory of relativity [11], space is endowed with physical qualities; in this sense, therefore, there exists an ether. But this ether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked. The special theory of relativity compel us to assume the existence of an ether. To deny the ether is ultimately to assume that empty space has no physical qualities whatever. Besides observable objects, another thing, which is not perceptible, must be looked upon as real. Since electromagnetic fields also occur in vacuum, the ether appears as bearer of such fields. The ether of the general theory of relativity is a medium which is itself devoid of all mechanical and kinematical qualities, but helps to determine mechanical (and electromagnetic) events. Ether determines the metrical relations in the space-time continuum, e.g. the configurative possibilities of solid bodies as well as the gravitational fields. Einstein stated that, if we could succeed in comprehending the gravitational field and

the electromagnetic field together as one unified conformation, the contrast between ether and matter would fade away [11].

3.3. The role of the mind

DH techniques postulate that the intention of one person can influence the health of a distant person. Intentions of one or more persons can interact with the physiological, psychological and/or behavioral status of one or more distant living systems. Healers hold a mental intent, meditative focus, or prayer for the improvement of the healed, through mental focus.

There is evidence to suggest that mind and matter interact in a way that is consistent with the assumptions of distant healing [12]. Mental intention may have some limited effects on living systems. A review [13] of reports on energy medicine, spiritual healing, distant healing and prayer showed that there is evidence, though not conclusive, to suggest an interaction between mind and matter consistent with the claims of many DH modalities. Skin conductance and the autonomic nervous systems of living organisms are more strongly affected. More objective effects of various forms of DH are likely small.

Nonlocal consciousness, in which the awareness of the therapist may connect with the awareness of the patient, is an alternative explanation for some of the effects obtained with energy medicine. Energy medicine practitioners suggest that the mind, acting through biologic energies, can influence states of health and illness profoundly [14]. The therapist may reprogram in some way the patient's disease patterns of perception, behavior, or bioenergy states, promoting changes toward health.

Healing depends on conditions of the therapist such as intention, motivation, emotional engagement, mindfulness, commitment and trust. Communication, clinical method, caring, competence, and treatment characteristics are differentiated as mediating processes; expectancy and conditioning are positioned as antecedents of healing relationships [15]. So, maybe it is not the technique that matters, but rather characteristics of the practitioner and the context of its application in the healing encounter. Effective healing requires all three of these factors: focus, compassion, and intention. The elements of personality most important for healing success are empathy and warmth, sincerity or honesty—and the ability to enhance positive expectancy on the part of the patient.

We know very little about what qualifies a person to successfully express therapeutic intention as a healer. Most investigators believe that the sincerity and genuineness of prayer must surely make a difference, but in most prayer experiments these factors are merely assumed without being rigorously assessed [16]. Variability associated with healing interventions can be expected because of the reliance on human operators who are subject to psychological influences such as expectation and to physical influences such as fatigue.

The level of well-being of the therapist can affect treatment outcome. The practitioner must be in a good healing state. It is expected from practitioners maintaining a daily routine of

compassionate practice that seeks to mobilize these states within themselves, as a way of life. It also should facilitate the kind of personal growth that is required to embody the states of wholeness and balance that healers seek to engender in their clients [8].

4. Problems associated with DH

There is much skepticism and negation by scientists about the validity of distant healing therapies. This is mainly due to the impossibility to detect and measure the SVE by the current available instruments. A barrier to taking such work seriously may be the belief that it is fundamentally incompatible with the scientific world view. Physics-based models are not presented as explanatory but rather as suggestive. In essence, DH postulates that mental intention alone can affect living systems at a distance, unbounded by the usual constraints of both space and time. This postulate challenges scientific assumptions that often go unexamined, including the nature of causality [17]

A principal impediment to the acceptance of healing as an established form of therapy has been its seeming resistance to rigorous, systematic empirical research. The reason for this perception is that published research has been largely (but not exclusively) unrigorous and unsystematic. The generally poor quality of current research with inadequate design, measurement, and analysis prevented this field of scientific inquiry from moving forward. There is a lack of an universal accepted theory that would constitute the base for the DH paradigm. Fundamental non-responded issues includes [10]: what is the source of healing and the pathway by which it is transmitted to the client; what it is precisely being transmitted or channeled or worked with; what exactly healers do when they perform healing; and what is required of the client in order to receive healing.

Other obstacle is the lack of objective standards to offer DH modalities as health treatment. There is no established protocol for any of the DH modalities. Appropriate dosage would be a critical element in assessing the efficacy of treatment. It is not well established how many sessions in a series the person should have to observe an effect. The amount of time is often determined by the healer's sense of adequacy or experience. Also, there may be variations that are seldom considered regarding the preparation, the innate characteristics or the state of consciousness required of healers. There are no universally accepted standards for training and certification of the therapist. Some licensed practices require years of training, with hundreds of hours of documented time with clients required for certification. Many healers describe what they do as a gift that they have cultivated without formal training. The professional training of healers needs a model of continuing education and credentialing. Most energy medicine practitioners are not familiar with conventional medical diagnoses or research methodology.

What is problematic in the study of these therapies is the lack of measurability of these healing energies using the instruments available. Unfortunately, most current tools of measurement is based on responses to electrical signal. These instruments cannot detect and characterize the putative healing energies or forces of life. We cannot observe the biofield

directly, isolate it, or analyze it comprehensively. But there are many unobservable aspects of nature known only indirectly in physics by their effects. Since there is always noise associated with a transfer of energy, there is a limit to the amount of information which can be transferred from one system to another based on the signal (the desired information carrying power) to noise (undesired interfering power) ratio.

The effects of distant healing therapies are so many variable and unpredictable that is very difficult to be scientifically studied. Variables related to the patient, the practitioner and other elements of the environment can interfere on the observable outcomes. The unpredictability of the response to treatment contributed to skepticism about its benefits and increases the tendency to attribute the effects of these therapies to placebo effect or to spontaneous remission of diseases. This poses a challenge in establishing an appropriate time frame in which to determine the effect, because the time period may often be variable. For example, one person may experience some effects immediately, whereas others may not experience the effects for a day or more [18].

Ethical considerations must be established when offering DH. These modalities have no serious side effects, but an occasional undesirable effect is that symptoms such as pain may increase in the first few sessions. This effect is taken by experienced healers as a good sign, indicating that the energetic components that lie behind the symptom are being released. When treatment is continued, symptoms usually improve, but patient must be aware of these facts. DH can be given as a complement to any other allopathic approaches, with no dangerous interactions with other treatment [6]. However, delaying other treatments that are potentially beneficial is a conceivable problem. Problems may arise when patients defers biomedical interventions for an extended period of time to pursue energy modalities. If paradigm conflicts arise between conventional and complementary approaches, practitioners of DH must assume the commitment to not suggest to patient to abandon the conventional treatment. When clinical deterioration occurs due to lack of compliance with these principles, the prejudice against DH is reinforced.

5. Results of researches

Against the skeptic vision surges a quantity of researches about the effects of therapeutic uses of the SVE over simple animal, the biochemistry of bacteria and cells in culture, and over the growth of yeasts and seeds. There are dozens of randomized controlled studies in humans, animals, plants, bacteria, yeasts, and enzymes that suggest spiritual healing can be effective for pain, anxiety, depression, AIDS, hypertension, arthritis, wound healing, and other problems [6].

There are evidence of intentionality effects at the clinical level, as in healing studies involving whole persons; at the tissue level, as in studies involving populations of various types of cells; at the microbial level, as in studies involving growth rates of bacteria, yeasts, and fungi; at the molecular level, as in studies involving enzyme kinetics and biochemical reactions [12]. The fact that intentionality effects are demonstrated across this enormous

spectrum of nature suggests that there is a general, pervasive principle in nature—the ability of intentionality to change matter. There are many studies on the effects in animals, plants, bacteria, yeasts, or cells in vitro, enzymes and DNA, many of which show highly significant effects [6]. Some studies indicate that the consciously focused intention can prevent the growth of tumor cells in vitro, and also influences both DNA replication and the conformation states of the DNA helix [5].

To determine if energy healers could affect the metabolism of geranium leaves, Creath et al [19] designed a study to test their effectiveness on the biophoton emission. They compared effects of treated leaves to untreated control leaves from a single geranium plant. Leaves from intervention sample were treated for 10–15 minutes with a healing intention using an energy healing technique. Leaves from the untreated sample were placed in similar conditions to act as a control. The treated leaf sections have noticeably less biophoton emission, and there are fewer clumps with less activity near the edges, showing a healthier state [19].

Studies of DH in humans are quite promising; however, the effects seem more marked in small animals or simple life forms. At this point, they can only suggest that these healing modalities have efficacy in reducing anxiety; improving muscle relaxation; aiding in stress reduction, relaxation, and sense of well-being; promoting wound healing; and reducing pain [20]. Although research findings show that such interventions are promising, more research is needed.

In human subjects, there are around two dozen major-controlled studies, approximately half of which show statistically significant results favoring the intervention group toward whom healing intentions were extended. Approximately eight systematic or meta-analyses of studies involving healing intentions and prayer have been published in peer-reviewed journals. All but one arrived at positive conclusions [12]. In a systematic review of randomized double-blind controlled trials about DH the positive and negative results were almost identical. A statistically significant effect was found in almost all categories of DH studied (16 papers). A limitation of this review was the heterogeneity and methodological limitations in many studies [21]. In another review of 191 randomized controlled trials of ADT, 124 showed statistically significant effects [6].

A systematic review [2] examined 66 clinical studies with a variety of biofield therapies in different patient populations. They conducted a quality assessment as well as a best evidence synthesis approach to examine evidence for biofield therapies in relevant outcomes for different clinical populations. Biofield therapies show strong evidence for reducing pain intensity in pain populations, and moderate evidence for reducing pain intensity hospitalized and cancer populations. There is moderate evidence for decreasing negative behavioral symptoms in dementia and moderate evidence for decreasing anxiety for hospitalized populations. There is equivocal evidence for biofield therapies' effects on fatigue and quality of life for cancer patients, as well as for comprehensive pain outcomes and affect in pain patients, and for decreasing anxiety in cardiovascular patients [2]

In University of Arizona, Tucson (USA), a study [22] described particularities of Reiki practitioners and the treatment scenario. To do it, wild type E.coli bacteria were heat shocked for 25 minutes at 49°C just prior to Reiki treatment. Samples were then randomly assigned to the treatment and control groups. Those samples brought to the treatment room were given 15 minutes of Reiki. Some practitioners took part in healing treatments on a real patient, prior to their sessions working with the bacteria. The results showed that the bacteria which were treated straight after a healing treatment was given grew significantly better than those which were given Reiki without a healing context, and that practitioner well-being, as measured by questionnaires before and after every session also had an influence on the success of the treatment. They also found that prior negative feelings by the practitioner correlated with low or even negative growth of the bacteria.

A study, using functional magnetic resonance imaging (fMRI) technology, demonstrated that distant intentionality (DI), defined as sending thoughts at a distance, is correlated with an activation of certain brain functions in the recipients [23]. Eleven healers at distance were recruited. The recipient was placed in the MRI scanner and isolated from all forms of sensory contact from the healer. The healers sent forms of DI that related to their own healing practices at random 2-minute intervals that were unknown to the recipient. Significant differences between experimental (send) and control (no send) procedures were found ($p = 0.000127$). Areas activated in the recipient brain during the experimental procedures included the anterior and middle cingulate area, precuneus, and frontal area. It was concluded that instructions to a healer to make an intentional connection with a sensory isolated person can be correlated to changes in brain function of that individual [23].

A promissory form to monitoring biofields around living organisms was presented by Creath et al. [19]. Experimental evidence indicates that biophotonic emission (light) plays an important role in certain biological functions and processes. Advances in low-noise, cooled, highly sensitive CCD (charge-coupled device) cameras able to count photons over thousands to millions of pixels have made it possible to image biophoton emission in completely darkened chambers. Images of biofields can now be recorded and changes can be monitored over time. The biophoton emission imaging provides information about metabolic functioning, state of health of the organism, and that BE appears to be able to be modulated by the intention of a healer [19].

6. Suggested solutions

Outcome of DH are often not disease specific. Biomedical research generally develops a specific treatment aimed at a specific problem based on an understanding of the mechanisms of action, which could be physical, biochemical, neurologic, or genetic. Understanding of the mechanism of disease or disorder is critical to matching an intervention to alter the progress of disease, restore function to an organ or system, or repair a malfunctioning aspect. DH therapies are not designed as treatments for specific diseases; appropriate outcomes, effective dosages, and time lines to detect efficacy are unknown. Therefore, it is challenging to design studies that can adequately control variables so that a

causal relation can be detected [18]. The DH must be seen more as a complementary intervention than treatment for specific diseases. Many hospitals incorporate Reiki, therapeutic touch, or similar initiatives, particularly to help people before or after surgery or the discomfort related to cancer treatment.

DH practice emphasizes, as a clinical objective, the strengthening or reinforcement of the client's innate resources to enable one to withstand pathogenic exposures or threats, thus ameliorating susceptibility to disease and/or facilitating recovery. DH can be applied not just to correct a present pathological state and to restore balance, but also to prevent future pathology in a normal client and to elevate a healthy client to a state of high-level wellness. DH seeks to empower one's innate healing resources, and not to attack a disease process, as in Western biomedicine [24]. Also, DH must not be offered as a substitute to conventional medical treatment or without a clinical diagnosis by a doctor.

When considering therapies based purely on the putative manipulation of bioenergy fields, patients should be warned that the mechanism of action is not fully understood and that the benefits vary from individual to individual and take the financial implications into consideration. They may reduce stress and have a modest effect on pain relief but have no antitumor effects [25]. Patient must be aware that intense emotional experiences and memories may also surface. Therapies based on bioenergy fields are safe and may provide some benefit for reducing stress and enhancing quality of life [25].

Some patient-oriented practice recommendations are suggested by Rindfleisch [20]: Energy modalities can be useful when integrated with primary care medicine. Energy medicine is generally safe and may help to modestly decrease pain (roughly 1 point on the 10-point scale), and to reduce anxiety and to improve wellbeing measures. Consider energy medicine when: A biomedical diagnostic workup has not been revealing; Patients make it clear that such an approach would resonate with their belief systems. Adverse effects: as intense emotions may arise during sessions, it should be used with caution in people who have psychoses. Evaluation of healers' qualifications is also important: How much time have they spent in training? Are they licensed or certified? How is their acceptance to integrate their treatment with the conventional one?

Energy medicine interventions may complement conventional care and have minimal risks. Patients report high satisfaction with energy medicine interventions perhaps because complementary therapists often offer patients significant amounts of time to talk about their problems. Conventional medical wisdom can inform and enhance energy medicine practice by encouraging further research. It is hoped that the future will bring more collaboration, greater acceptance of integrative care, and greater appreciation of energy medicine

The evidence presented so far are sufficiently interesting to warrant further study. Recent research suggests that there is a sound basis for accepting DH as a legitimate intervention. It is essential to recruit multidisciplinary teams to investigate the biofield: physicists, biophysicists, chemists, engineers, biologists. Figure 1 presents key questions that must be answered by future researches in order to establish the ultimate paradigm which will make

DH fully acceptable by the current biomedical model. Below are also some directions for future research [26] to accelerate the progress of understanding the source and the biological effects of DH:

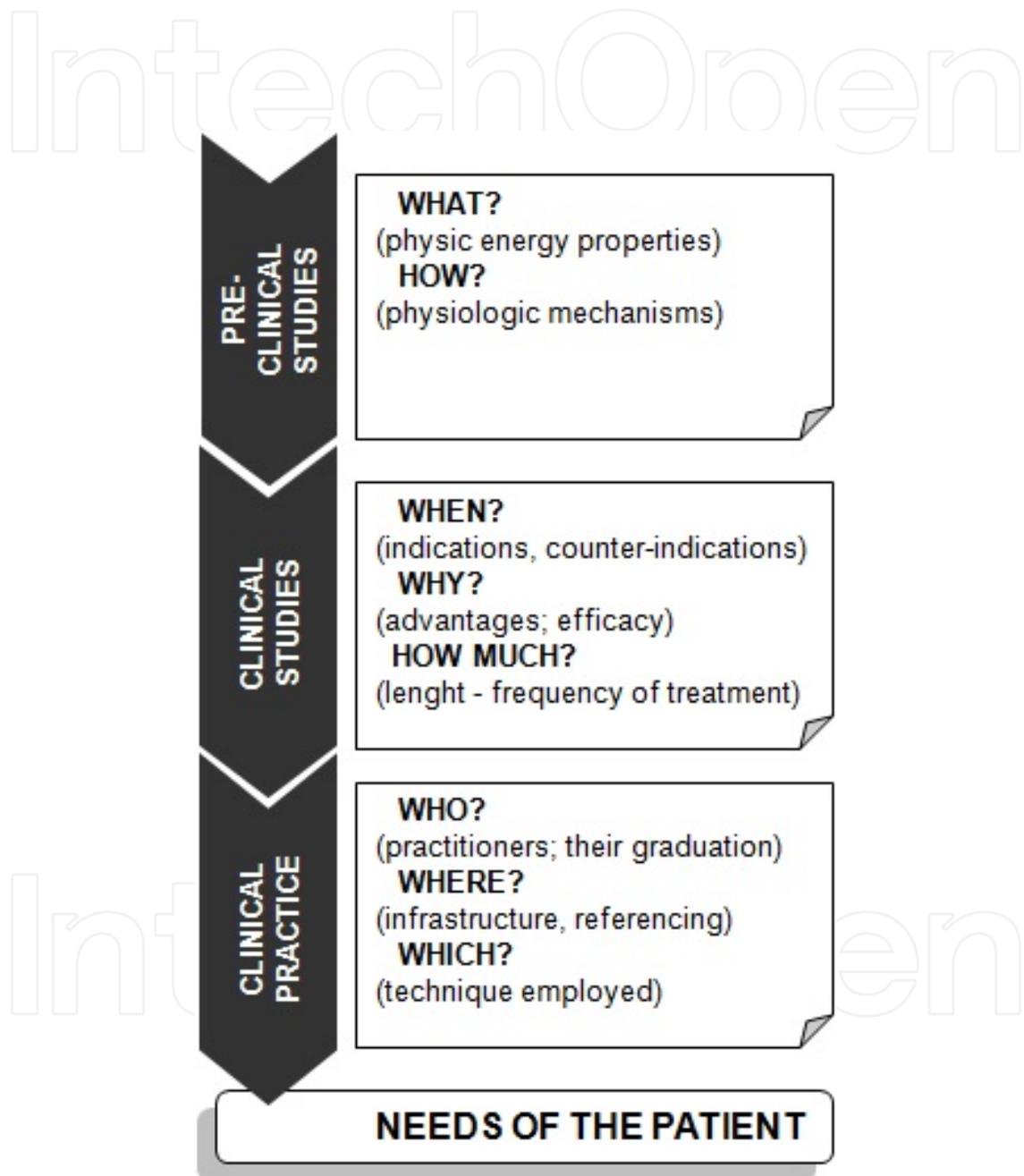


Figure 1. Key questions to establish the ultimate paradigm of distant healing>

- Clarify the scientific hypotheses. Develop further theories to resolve questions of mechanism of action. Researchers must seek whether ancient theories supposing subtle energetic effects of these therapies are supported by current data
- Develop pre-clinical models (cell, tissue, animal) to validate their biological effects and mechanisms of action.
- Validate markers attesting to the biological effects. Maybe specific biomarker associated with stress and relaxation response systems should be examined to determine impact of biofield over autonomic nervous system
- Investigate the ultra-weak electromagnetic components of the biofield. Although the purported subtle energy cannot be directly measured, bioelectric signal measurement can be examined at least as a shadow or a trace of this energy
- Clarify issues that are clues to DH: characteristics of the therapist; potential moderators or mediators of treatment (e.g., expectation, empathic resonance); the regime of ministrations and dosage needed; etc.

7. Conclusion

Figure 2 (mostly based on information from Tiller [27]) presents a proposal intended to summarize all the information presented in this chapter. This scheme starts with some external afferent EM energy (A), which source may be the organism of the practitioner or even EM waves from the environment. The focused intention of the practitioner (B) imprints information in this EM energy, modifying the waves (C) that arrive to the patient body (D). This would modulate the chemical reactions in cell, generating a new structure expression that would set a physiologic function (E).

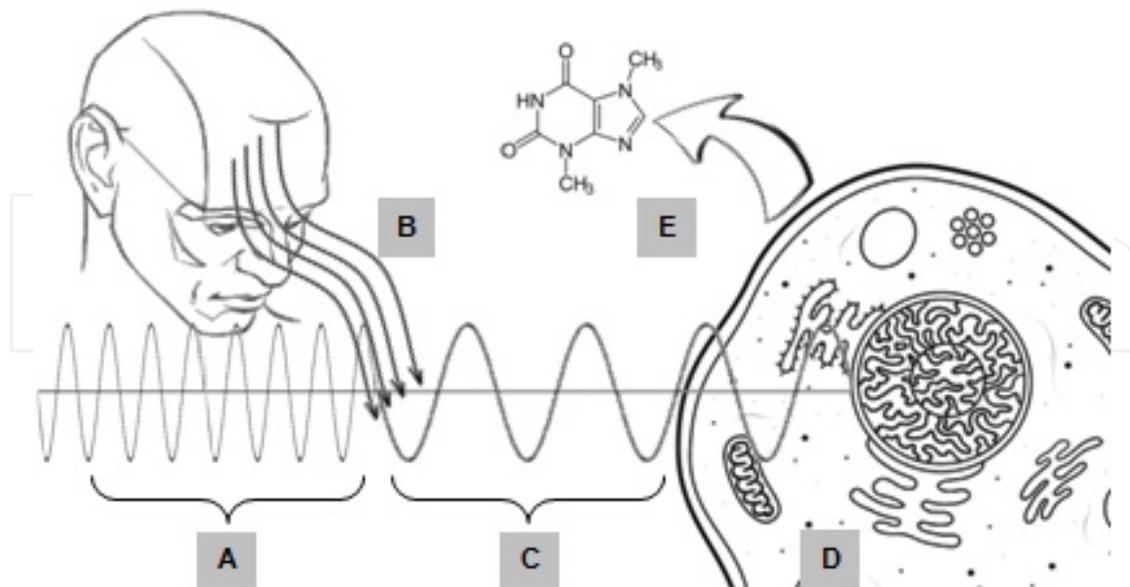


Figure 2. A proposal to summarize all presented information. A = external afferent EM energy, from the organism of the practitioner or waves from environment. B = focused intention of the practitioner imprinting information in this EM energy. C = afferent modified EM waves. D = a cell representing the patient body. E = a new set of some physiologic function>

“Subtle energy” effects are neither supernatural, nor do they require a revision of physics. One reason that a particular event cannot be explained by science might be due to human ignorance. Our science is constantly under revision. In fact, the known universe seems far too big for us to believe that we will ever fully comprehend all of its potentially knowable scientific laws. The effects could be due to factors beyond the current scientific understanding, which will be better understood with time. The failure of science to characterize the SVE does not confirm that it does not exist.

As Dossey posed [12], the key question is not how large the effects are, but whether they exist at all. In other words, what matters is whether human consciousness can act non-locally to affect the material world, beyond the reach of the senses. If only a single one of these studies is valid, then a nonlocal dimension of consciousness exists. In this case, the universe is different than we have supposed, and the game changes.

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