NETWORK SPINAL ANALYSIS: A REVIEW

Mary Noel
#8659
Advisor: Dr. Roger Tepe, Ph.D.

A special thanks to Dr. Sue Brown
for teaching me about passion and mastery,
and to Dr. Roger Tepe
for guiding and supporting me with endless patience.

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ABSTRACT

OBJECTIVE: To present a review of current literature of Network Spinal Analysis (NSA).

BACKGROUND: NSA focuses on the location, analysis, and adjustment of spinal subluxations, as well as assessment of effectiveness of the NSA protocol (Epstein, 1996-A). Viewing the system as a community, interrelated and dynamically interacting on a continual basis, it uses methods and concepts from many health disciplines and theoretical sciences. (Epstein, 1998-A) NSA has been the subject of a retrospective research assessment documenting improved health and overall quality of life associated with individuals under Network care. (Blanks, et al., 1997) A longitudinal health-outcomes study was completed in late fall of 1998 to further validate the findings of the retrospective study. At the time of this writing, current research is in progress to study the neurophysiological mechanisms basic to NSA. (Epstein, 1998-B)

DATA SOURCE & KEYWORDS: The English language was searched in order to identify information and studies and literature which exist with regard to a Network Spinal Analysis and to summarize the findings. Index to Chiropractic literature and an advanced

Mantis search of the literature from 1994-1999 using the key terms of Network, Network Chiropractic, Network Spinal analysis and Donald Epstein. My search revealed no indexed material in the database.

Source material was obtained from Chiropractic Journals, Periodicals, Newspaper article, Network Spinal Analysis Basic Level Intensive and Advanced Level Intensive Seminar notes and handouts, Network Spinal Analysis evidence based document, the author's own seminar lecture notes, the Association of Network Chiropractic's (ANC) newsletter, "The Network Release", personal communication with Innate Intelligence and the ANC, the ANC membership listing, and the NSA certification listing.

CONCLUSION: A review of the current literature on Network Spinal Analysis provides the following conclusions. NSA is an integrative and holistic model of health care. It incorporates various technique methods, concepts from multiple disciplines, a body mind interaction and a non-linear model of vertebral subluxation. The Somatopsychic and Respiratory Waves, unique to individuals receiving NSA care, are proposed to dissipate stored tension and promote self awareness. The Levels of Care provide specific and progressive methodology for the application of the Network Protocol, determination of improving spinal health and neural integrity, and enhancement of quality of life indicators. Research involving NSA is encouraging but inconclusive. The ANC recognizes that more empirical research is necessary. Research is in progress to date and the ANC plans to continue to meet this research challenge.

INTRODUCTION

The basic philosophical construct upon which Chiropractic was founded in 1895 contains two major premises. The first premise is that an intelligence within the body, maintains the body's homeostasis. Chiropractic calls this intelligence, Innate Intelligence and believes the nervous system governs it. The second premise is the subluxation: a bone or joint out of anatomical alignment in the vertebral column will place pressure on a nerve and interfere with its nervous impulse. This interruption would therefore interfere with the body's Innate Intelligence, resulting in an altered state of homeostasis or dis-ease. (Palmer, 1934). Various osseous techniques and methods were developed to reposition or adjust the vertebra and remove the interference.

From these basic premises, theories developed as to why the vertebra became misaligned, examples include, postural considerations, muscle tone or imbalance, poor nutrition, psychological stress, visceral reflexes, and noxious environmental stimuli. Then techniques were developed with the intention of treating the effects of various etiological processes.

Additional techniques developed to analyze or diagnose vertebral malpositions, subluxations and the associated factors causing them. The vertebral subluxation complex (VSC) theory became popular in the 1980's. Simply stated the VSC theory proposed that an event leading to a misalignment of adjacent vertebra would cause a narrowed intervertebral foramen, swelling and edema with resultant pressure on the nerve root, which will impede the flow of mental impulse. (Lantz, 1990)

Chiropractic has evolved from two basic premises to a wide diversity of treatments and theories. The philosophies of the various techniques determine what adjunctive procedures are to used to locate the subluxations, as well as when and how to adjust them.

Donald Epstein, D.C., developer of Network Spinal Analysis (NSA) describes it as an evolving system of health care "utilizing longstanding chiropractic methods and employing certain principles of quantum mechanics, neuroanatomy and neurophysiology, psychoneuroimmunology and changing perspectives in health care."(Epstein, 1996-B) The objective of this review is to collect, analyze and discuss information available regarding NSA. Factors include definitions, historical perspectives, objectives, methods, protocol, and assessment of clinical effectiveness and research. This paper will collect and integrate the literature of NSA into a general review of its history, theory, treatment, protocol and research findings into a singular source of reference to NSA.

DISCUSSION

HISTORICAL PERPECTIVES: Network Spinal Analysis has been an evolving system of health care since 1982. At that time Donald Epstein, D.C., developer of NSA, began to classify vertebral subluxations as structural and facilitated, called Class A and Class B, respectively. (Epstein, 1996-B) These two classifications expand on Palmer's original theory that a misaligned vertebra results in subluxation and *Stiga's* vertebral subluxation complex theory. (Epstein, 1998-A) This two subluxation classification system is basic to NSA. The two types of subluxations can exist alone or simultaneously, overlapping in the same segment or at the same time in different segments.

The Class A, or structural subluxation is commonly caused by an external force or stressor causing vertebral misalignment with resulting nerve interference. Class B, or facilitated subluxation is thought to begin with adverse mechanical cord tension (AMCT). (Epstein, 1998-A) AMCT occurs when the dura mater is over stretched limiting the spinal cord and meningeal ranges of motion. (Epstein, 1996-A) Facilitation will result in sensory and motor responses that are hyperreactive. Chronic facilitation can result in loss of spinal integrity if it causes hyperactive paraspinal musculature resulting in osseous misalignment, or dural stretching causing torquing or elongation of the spinal cord. Therefore in the Class B subluxation, nerve root pressure from adverse mechanical tension in the spinal cord occurs first, with the osseous misalignment component being compensatory. (Epstein, 1996-B)

In 1985, Dr. Epstein added the clinical Phasing System. (Epstein, 1998-A) The NSA Phasing System identifies which osseous segment to adjust and when it is to be addressed. There are five phases. Each Phase correlates with specific osseous segments and neuromuscular patterns associated with AMCT. These specific osseous segments, including

occiput, sacrum, coccyx and C1-C6, are at or close to reported sites of meningeal dural attachment. Tension and diminished ranges of motion at or near these dural attachment sites are related to neural facilitation. (Epstein, 1996-A)

In 1994, Dr. Epstein introduced specific Levels of Care. Each Level of Care coincides with specific clinical outcomes observed by the doctor and indicators of health and functional status as reported by the patient. The subluxation classification and the Phasing System, together called The Network Protocol is applied through these specific Levels of Care. Network Spinal Analysis replaced Network Chiropractic with the introduction of Levels of Care. (Epstein, 1996-B)

EDUCATION: Seminars are available f or chiropractic students and D.C.s several times a year in various cities across the U.S., Italy, France and Australia. Students must have completed their first year of chiropractic college to be eligible. There are four levels of instruction, the Basic Level Intensive (BLI), the Intermediate Hands on Workshop, the Advanced Level Intensive (ALI) and Certification Level Intensive (CLI). A student or D.C. wishing to attend the ALI must have attended either two BLIs or a BLI and Intermediate Workshop.

CERTIFICATION: As of 1997, Practitioners who wish to be certified to practice NSA must pass written and practical examinations. (Epstein, 1996-B) There are three levels of certification. Level I and Level II exams are offered after completion of the ALI for D.C.s and students choosing to be certified. Those doctors who have achieved Level II certification are eligible to attend the CLI. The Level III exam is offered at completion of the CLI. (Innate Intelligence, 1999)

DEMOGRAPHICS: Currently, there are almost 400 D.C.s, (ANC membership list, 1999) more than 100 Chiropractic students and almost 850 lay members (ANC, 1999) representing the Association for Network Chiropractic (ANC). Seventeen countries including the United States are in this representation. (ANC membership list, 1999) Approximately 350 D.C.s have certification in NSA. Of these approximately 223 have achieved level I certification, 182 level II and 41 level III. Internationally, there are D.C.s certified in NSA in nine countries. (NSA certification list, 1999)

UNIFICATION OF TECHNIQUES: In clinical practice, Dr. Epstein noticed that some techniques worked better than others in certain areas of the spine, some worked exceptionally well when the segments were adjusted in a certain order and some adjustments didn't work at all. (Epstein, 1995) *"If performed in a particular sequence, the body was better able to process the adjustment-the adjustment results were incredibly enhanced."* D. Epstein, D.C. American Chiropractor, 1995.

The two classification system, unique to NSA unifies adjusting methods used by different techniques. Most spines contain both types of subluxation and some techniques address only Class A or only Class B vertebral subluxations. NSA stresses the importance of sequencing and timing in the correction of vertebral subluxations. Some subluxations are ready to be adjusted before others. (Epstein, 1996-C) Existing techniques including, Columbia, Upper Cervical Specific, Gonstead, Logan Basic, Sacro Occipital, Applied Kinesiology and Diversified were networked and sequenced to develop Network Chiropractic, later to become Network Spinal Analysis. (Epstein, 1995)

CURRENT PERSPECTIVES & RATIONALE

Spinal System Integrity: The components of the VSC theory can occur in any order depending on what induced the initial response. The initiating stimulus can be physical, chemical, emotional, or physiological. When the nervous, meningeal, musculoskeletal and humoral systems of the body cannot adapt to the stimulus, a series of events begins which can lead to vertebral subluxation. (Epstein, 1996-B)

In living systems, when the relationship between structure and function is coordinated, life is expressed to its fullest degree. If this coordination becomes impaired, the manifestation of life is diminished. Living systems are composed of regulating complexes, or subsystems. These subsystems need to be cooperatively coupled in order for the living system to be coordinated. (Kelso, 1995)

Panjabe (1992) describes three interacting subsystems in the body: the passive subsystem, consisting of the vertebrae, ligaments and discs; the active subsystem, consisting of muscles and tendons; and the control subsystem, consisting of the central, peripheral and autonomic nervous systems of the body. These subsystems function together to provide stability for the spine. The passive subsystem does not provide any motion but acts as a transducer to monitor position changes. The active subsystem creates the force to provide stability. The neural subsystem receives the information from the other subsystems and initiates the effects of the active subsystem to provide the spinal stability. When one of the subsystems is compromised, such as with injury, disease or degeneration, the overall stability of the spine is compromised. The neural control subsystem can detect and compensate for

deficiencies, maintaining spinal stability for a short time. Long term compensation, however, may lead to chronic dysfunction, pain and loss of overall spinal stability.

It is from this scenario that NSA derives its two classifications of vertebral subluxation. (Epstein, 1996-B) NSA, however, includes the meninges in the neural control subsystem. In addition, NSA proposes that the subsystems will compensate for the instability caused by adverse tension in the spinal cord, nerves and meningeal dura. (Epstein, 1996-D)

Non-Linear Model: Historically, vertebral subluxation theories have described the subluxation as a linear, cause-effect, and unidirectional phenomena. Dr. Epstein proposes that the factors causing vertebral subluxation are nonlinear, multi directional and system wide. Inanimate systems that do not interact with the environment display directly proportional cause and effect relationships. Open inanimate systems, those that are interactive with the environment, will show an unpredictable pattern of change when given a stimulus. In living systems, such as our bodies, the subsystems are highly reactive. They *"respond dramatically to small changes in the order to maintain the overall stability of a higher ordered system."* (Epstein, 1998-A) Because the cause and effect relationship in living systems is multidirectional, simultaneous and nonlinear the effects of the vertebral subluxation are not proportional. For example, a small change in tension can have a large global effect on a person or a large change can have only a slight effect on the person. In addition, when considering correction of the subluxation the force of the adjustment is not directly proportional to its correction. (Epstein, 1996-A)

Wave Phenomena: The frequency at which something changes from one extreme to another is called oscillation. Oscillations can travel as waves and they occur at both the molecular and gross level. In NSA, a referenced oscillator can refer to any part of the living

system. Subsystems can be synchronized or coupled meaning they are oscillating in phase with one another, they can be asynchronous, oscillating out of phase with each other. (Epstein, 1996-D)

Energy moving through matter is oscillation traveling as waves. The Respiratory and Somatopsychic waves, characteristically experienced by individuals receiving NSA care, demonstrate this phenomena. (Epstein, 1996-D) The spontaneous movements associated with the waves are suggested to be an effective way to dissipate stored tension from the spinal subsystems. (Posa, et al, 1998-A) These movements appear to be moving the spinal cord, as well as individual vertebral segments, through their ranges of motion. (Epstein, 1998-A) The cord can change in length 5-7 cm from a relaxed state to a state of stretch. (Breig, 1978) It is suggested, the progression of these phenomena creates enough force through soft tissue and bony segment movement to relieve spinal tension by interrupting dural or soft tissue adhesions. (Epstein, 1998-A)

Spontaneous deepening of respiration and rhythmic chest expansion along with cranio-sacral rocking are seen in association with the Respiratory Wave. As the wave moves up through the spine from the sacrum each vertebral segment is able to increase it motion. Through this motion, negative feedback loops existing between the spinal subsystems can be broken, leading to a reduction of spinal facilitation and fixation. (Posa, et al, 1998-A)

Associated with the Somatopsychic Wave are specific muscular undulations, rocking vertebral segments through their ranges of motion and coupling of individual segments to oscillate in synch. The Somatopsychic Wave progresses as a sine wave. . (Posa, et al, 1998-A) It can start in the sacrum or occiput and progress to the opposite end of the spine, stay completely within the cervical region or involve several areas of the body such as the

shoulders, arms and legs. (Epstein, 1996-B) Individuals under NSA care report a doubling of the quality of life with the commencement of the Somatopsychic wave. (Author's seminar notes, ALI, 1999)

Neurons sending afferent impulses to the higher brain centers can act as oscillators. (Epstein, 1996-D) If groups of neurons are coupled, acting in phase, they produce a stronger signal. In contrast, if the groups of neurons are asynchronous their signal is reduced. In living systems, rhythmical oscillations are preferred to nonrhythmical. (Kelso, 1995)

According to Dr. Epstein, (1996-D) *"NSA proposes that oscillators such as vertebrae or ligaments (passive subsystem) couple with sensory components of the muscles and tendons (active subsystem) which further couple with higher brain centers through the neural control subsystem to ultimately affect spinal stability."* The Respiratory and/or Somatopsychic Waves are suspected to be oscillatory energy created by the efferent responses of the brain.

Emotional Subsystem: NSA proposes that a fourth subsystem coexists with the active, passive and neural control subsystems. This fourth subsystem is the Emotional Subsystem. In the Theoretical Basis and Clinical Application of Network Spinal Analysis (1998-A), Dr. Epstein states, *" It is hypothesized, in accordance with the concept of ubiquity of 'informational substances,' (Pert, 1985) that the emotional subsystem occupies portions of the same anatomical and physiological space as the other three subsystems proposed by Penjabe."* The Emotional subsystem is most highly reactive when the tissues of the other systems are under adverse tension and unable to dissipate this energy. (Epstein, 1996-D) The four spinal subsystems are associated with spinal and neural integrity when they remain highly reactive, adapting quickly and easily to change, and readily share information between

one another. (Posa, et al, 1998-A) When these subsystems are not dissipating energy, resulting loss of spinal stability, NSA is indicated. (Epstein, 1996-D)

The following is taken from a Network Spinal Analysis, Advanced Level Intensive, handout: (1999-A)

"The purpose of NSA is to enhance spinal and neural integrity (Epstein, 1998-A), and to improve the wellness coefficient (Blanks, 1997) of those receiving NSA care. This is achieved through a methodology involving the introduction of specific low force applications to the spine. (Epstein, 1996-B)

The objectives of NSA, reflected through its methodology, are:

a) To entrain self generated responses which are unique muscular and respiratory wave forms movements,
b) To promote what is believed to be a self organized neurological strategy associated with the reduction of indicators (Epstein, 1996-B) suggesting adverse mechanical spinal cord tension (Breig, 1978) and vertebral subluxation.
c) Through research, evolve the most effective system of application of forces to enhance the body's ability to efficiently dissipate and coordinate energy accumulated and/ or generated by the active passive, neurological and emotional subsystems. (Epstein, 1996-B, 1998-A)"

METHODS, APPLICATIONS AND OUTCOMES:

The Phasing System: The ability to identify and address the two types of subluxation is critical in patient care management for the NSA practitioner. NSA is first concerned with identification and reduction of facilitation from spinal cord tension. The Class A (structural)

subluxations may spontaneously correct or be more easily corrected by the practitioner after the facilitation has been reduced. (Epstein, 1996-B) The facilitated subluxation is corrected with adjustments to the spine at the point of critical tension. The point of critical tension, defined in the NSA Basic Level Intensive Seminar notes, is; *"the location of the vertebral subluxation which gives rise to the specific area of meningeal and/or cord tension."* (Epstein, 1996-A)

The point of critical tension is often, but not limited to, the occiput, sacro-coccygeal, and lower cervical regions, since these are the sites of dural attachment. Because the dura attaches at both ends of the spinal column, a facilitated subluxation at one end can transmit to another area of the spine. For example, cervical and thoracic tension can transmit to the lumbar spine. In addition, additive tension from segments can be sufficient to cause an amplified tension to another segment. These secondary areas of facilitation are termed areas of facilitated focus. The point of critical tension, therefore, because it is causitive, will be the most effective area to adjust. (Epstein, 1996-A)

The NSA Phasing System relates to the facilitated or Class B subluxation. It assists the practitioner in identifying and prioritizing the appropriate segment to adjust. (Posa, et al.,1998-A) The system has five phases. Each phase has specific indicators/parameters that correlate with specific osseous segments and characteristic neuromuscular patterns associated with spinal cord tension. Examples of the indicators include, but are not limited to, leg length analysis, cervical syndrome, heel tension, ankle eversion stress, leg adduction/abduction stress, leg cross over and changes in respiration. (Epstein, 1996-B) The practitioner determines the level to be adjusted, according to findings consistent with the following spinal assessment tools, hard and soft tissue palpation, phase indicators, observation of the

Respiratory and Somatopsychic Waves, physical analysis and physiological/neurological evaluations. After an appropriate adjustment is given, according to the practitioner's assessment, the individual is reassessed to assure the correction was effective. (Epstein, 1996-B)

Levels of Care: The Phasing System is executed through four Levels of Care. Each level has associated specific clinical outcomes, observed by the doctor and functional status and health related quality of life indicators, self-assessed by the patient. As a patient progresses through each level of care, there is expected improvement in functional status of the nervous system. This improvement is marked by an increasing synergism of the spinal subsystems. (Epstein, 1996-B)

All Levels of Care use the indicators as described in *The Phasing System,* to determine the location and presentation of the vertebral subluxations. (Epstein, 1998-A) Each Level contains concepts from currently utilized chiropractic adjusting techniques and have the following features in common:

1. The patient's spinal health is assessed using a case history including various lifestyle and stress profiles, chiropractic spinal examination and evaluation including the integrity of the spinal stability subsystems and their coordination with one another.
2. The patient's progress is evaluated with periodic physical reassessments and self-reporting questionnaires to monitor clinical outcomes and patient self reported outcomes.
3. Any Level of Care deemed to be ineffective or inappropriate is modified to a level which more accurately parallels the clinically observed changes in the patient. (Epstein, 1996-A)(Posa, et al., 1998-A)

Level One-Basic care: The Level One adjustment is the basic care that patients receive throughout their lifetime in NSA care. The other Levels of care overlap onto this basic care structure. Level One is the introductory care for new patients. It is also used after trauma, during times of stress and when there is undissipated tension in the spinal integrity subsystems. (Epstein, 1998-A)

The objective of Level One, introductory care is to set up a life time stategy for the brain to find and reduce the areas of stored tension within the spinal subsystems. (Epstein, 1998-A) Stored tension prevents free circulation of energy in the body. When the energy does not circulate freely through a system, the system is sick. In Basic care the brain learns to find the parts of the body it's been neglecting, and give those areas more attention. In addition, it learns to decrease the attention it has been giving to those areas that have been over stimulated. (Author's seminar notes, ALI, 1999) As the tension is dissipated, the hypertonic muscles relax and the chronic facilitation is reduced. (Epstein, 1996-B) Chronic tension in the spine appears to create a governing pattern of facilitated subluxations, resulting in Class A or Class B vertebral subluxations. Frequent return of Class B and compensatory Class A subluxations has been clinically observed in those individuals who still have substantial spinal cord facilitation. (Epstein, 1998-A) The Respiratory Wave occurs frequently with the reduction of spinal facilitation. In early Level One, it may only involve the sacrum and lumbar spine. By the end of this level, the Respiratory Wave involves the full spine from sacrum to occiput. (NSA-ALI handout, 1999-B) An individual will remain in Level One of care for approximately one to three months, with a suggested frequency of three times per week. A person is to remain in Basic care until their spine has learned a strategy for effective dissipation of stored tension.

After eight weeks, the patient is reevaluated. At the beginning of care and at each reevaluation a questionnaire is given to the patient, to evaluate personal progress, life-style changes and health related quality of life. By the end of Level One of care, clinical observations should include a marked reduction of spinal facilitation, a deeper respiratory rhythm, spinal tension effectively dissipated by large muscle movement and the early appearance of two spinal oscillators. In addition, the patient should have an increasing sense of their movements, posture and breath as each relates to their adjustments, (Epstein, 1998-A) and show early signs of quality of life changes, such as decreased stress and increased energy. (Epstein, 1996-B)

Patient education during this period is to include topics about spinal health. It should include how tension is stored and released from the spinal subsystems, with emphasis on the experience of how it is dissipated, spinal movement, respiration and spinal tone as they relate to spinal integrity and the facilitated subluxation. (Epstein, 1998-A)

Level Two-Intermediate Care: The objective of Level Two of care is to correct the chronic Class A and Class B subluxations and eliminate any new facilitation that can cause Class B subluxation. In Level Two of care, signs of chronic spinal cord facilitation have been greatly reduced or eliminated. New areas of facilitation can appear, but these areas of facilitation are more readily resolved due to their acute nature and the improved coordination and integration of the spinal integrity subsystems. Although the Somatopsychic Wave begins to occur during Level Two of care, it may be only gentle rocking of the spine. The Respiratory Wave at this level is fully developed, occurring throughout the spine. The Class A subluxation is addressed in a Level Two of care. With the chronic patterns of

facilitation gone, the body is able to accept the structural adjustment more easily. (Epstein, 1996-B)

Intermediate care is expected to last for three to six months, with a suggested visit frequency of two times per week. Instrumentation such as surface EMG or thermography can be useful to obtain a more objective and complete spinal pattern assessment during Level Two of care. The Patient is reevaluated every eight weeks to assess progression and readiness for Level Three of care. With this reevaluation the patient is again given a questionnaire to self evaluate items that deal with their perceptions of changes in their bodies and lifestyle changes. (Epstein, 1996-B) The patient is assisted to become increasingly more aware of the adverse tension and subluxation patterns they are experiencing, and to correlate these with their lifestyle and habits. This will help them understand how external factors and adaptive mechanisms inter-relate with spinal integrity. (Epstein, 1998-A)

Level Two of care is complete when, the facilitated subluxation does not consistently reappear, there is a coordinated Somatopsychic Wave and a fully developed Respiratory wave. In addition, Level Two completion is determined when there is flexibility in spinal contours with coordinated movement and no intermittent segmental fixation. At this level, vertebral subluxation resolution is expected after the corrective adjustment without return of compensatory vertebral subluxations. (Epstein, 1996-B)

Level Three-Advanced Care: Individuals in Level Three of care have adaptable and flexible spines and associated tissues. Their spines are free of generalized facilitation and have no compensatory structural subluxations. (Epstein, 1996-B) The subsystems are more effectively coupled as demonstrated by a fully developed Respiratory Wave and coordinated Somatopsychic Wave. The waves move through the spine and/or extremities in a

coordinated pattern, synchronously and longitudinally. The spines of these individuals have learned a stategy for self-correction through positioning and movement. The practitioner must discern how much intervention is necessary to correct the vertebral subluxation. Often correction is achieved through positioning the spine or extremities into a position that allows for the spontaneous wave to self-correct the subluxation. (Epstein, 1998-A)

Individuals who continue to seek care into Advanced NSA Care do so to improve overall health as opposed to symptom relief. For this reason, these individuals are no longer referred to as patients but as "practice members". (Epstein, 1996-B) In the Theoretical Basis and Clinical Application Of Network Spinal Analysis, (Epstein, 1998-A), a practice member is defined as: *"an individual seeking the service of a health practitioner with the purpose of empowering his/her self-healing and self regulating systems, rather than choosing specific treatment of a symptom or ailment."*

The practitioner continues to assess for subluxations using the same assessment indicators as used in Level One and Two of care. It is essential for the practitioner monitor closely the practice member's spine to assess its maintenance of spinal integrity. Level One or Two protocol is to be reinstituted at any time they are indicated. Instrumentation such as E.E.G. or E.M.G. can be of value to provide information regarding the synchronization between the Respiratory and Somaotopsychic Waves. (Epstein, 1998-A)

In Level Three of care the practice member is educated as to the significance of the spontaneous movements of the Respiratory and Somatopsychic Waves. They are encouraged not to consciously over ride these natural movements. (Epstein, 1996-B) Level Three of care is projected to last for at least four months, with a visit frequency of two times per week decreasing to one time per week. In addition to the practitioner's assessment, the practice

member is given a self-reporting questionnaire containing information related to body awareness, relationships, stress and emotional and spiritual connectedness. The uncertainty in the duration of level three is due to the developmental stage of Level Four. (Epstein, 1998-A)

Level Four-Self-Referral Care: Level four of care begins with a practice member who no longer has generalized spinal facilitation and who exhibits self correction consistently with a fully developed and coordinated Respiratory and Somatopsychic Waves. It is hypothesized by Dr. Epstein in the Theoretical Basis and Clinical Application of Network Spinal Analysis that, *"Level Four of care will serve individuals with a high degree of spinal integration, with virtually no interference."* (Epstein, 1998-A)

At the time of this writing, even practice members who are advanced in Level Three of care require Level One and Level Two adjustments occasionally. Clinical observations, however, of practice members in Level Three of care are indicating advancement toward this level of spinal integrity which consists of no interference. (Epstein, 1998-A)

REVIEW OF RESEARCH:

Retrospective Assessment: Robert H.I. Blanks, Ph.D. and Marnie Dobson, B.A., Department of Anatomy and Neurobiology, College of Medicine, along with Tanya L. Schuster, Ph.D., Department of Sociology, from the University of California, Irvine compared and statistically analyzed data from a retrospective, cross sectional study involving 2,818 patients from 156 Network offices, located in the United States, Canada, Australia and Puerto Rico. (Blanks, et al, 1997) The study took place between December 1994 and April 1995. It was designed to obtain information regarding the socio-demographics of patients receiving Network care, as well as assess the effectiveness of the Phasing System and

wellness benefits. (Epstein, 1998-A) Another objective of the study was the development and substantiation of a new health survey instrument. (Blanks, et al, 1997)

A mostly white, middle aged, female, well-educated, professional or white-collar worker represented the population characterization. They demonstrated, according to their health histories, low use of orthodox medical services (28%), including a relatively low use of prescription and nonprescription medications (38-41%). Interestingly, a relatively high percent, however, reported persistent illness (58%), and previous spinal injury (47%). These patients had been under regular network care averaging 21-27 months with a reported consistency in the frequency of visits per week. Most of the patients (75%) had previous chiropractic care (other than Network). An impressively high percentage of patients responding, reported having their expectations met by Network care and planned to continue care, (95% & 99%, respectively). (Blank, et al, 1997)

Self-rated health scales are being used in other areas of health care to measure clinical outcomes such as mortality and longevity, (Idler, 1997). A comprehensive wellness assessment, not just a measurement of the presence of symptoms or disease, can be made with these types of health scales. (Wilson, 1995) The currently available surveys, designed for conventional medical therapies, were not adequate for this study. The instrument used in this study included various newly developed self-rated health indices, including physical state, mental/emotional state, stress evaluation, life enjoyment and an overall quality of life index. Those who responded to the study rated these indices at two periods, at present and before they began Network Care. A "wellness coefficient" was defined by the difference between the combined sums of the wellness scale before beginning Network care and currently, while under Network care. (Blanks, et al, 1997)

Patients reported significant improvements in their perception of health in all four of the health indices and their overall quality of life. The outcomes reported indicate NSA to have a significant clinical effectiveness as demonstrated by the indices effect size range of .91-1.15. The effect size for a study is a statistical technique that provides a way to correlate the statistical data with clinical effect. An effect size of 0.8 indicates a large clinical outcome. All scales combined represent an even higher reliability than when analyzed separately. The effect size of the combined wellness scale is 1.24, a 76% reported improvement while under Network care. (Blanks, et al, 1997)

The "wellness coefficient" showed progressive increase the longer someone was under care. Four intervals of care duration were evaluated, the shortest being 1-3 months the longest 36months or longer. Benefits became evident as early as 1-3 months and continued to increase accordingly. That patients under care for three or more years continued to report improvements, suggests that there is no maximum clinical benefit. (Blanks, et al, 1997)

During the course of the retrospective study, a separate practitioner survey was conducted. Ninety-seven percent of the practitioners responding reported they followed the suggested Network protocol. This demonstrates a high degree of consistency in the care delivery by network practitioners. (Blanks, et al, 1997)

Initial analysis of this new survey instrument shows a high degree of validity. A principle component factor analysis was conducted on the survey instrument and the retrospective recall method used in the study. From the abstract of the published research results, Blanks, et al., (1997) reports, *"Statistical evaluation...indicated a high level of internal reliability in regards to the survey instrument, as well as stable reliability of the retrospective recall method of self-rated perceptions of change as a function of duration of*

care." This new survey instrument is an important contribution to future study of wellness. It will need to have repeated use to further test its validity.

The findings of this study are supportive of the benefits of Network care. The limitations of this type of study, no control group and no test-retest responses, need to be considered in the overall evaluation. Longitudinal studies, collecting data over a period of time are needed to more thoroughly assess the changes and perceptions of individuals under Network care. (Blanks, et al, 1997)

Longitudinal Study: A Twelve month, longitudinal study of individuals receiving NSA was completed in the fall of 1998. The ANC and Dr. Robert Blanks at the University of California, Irvine conducted this study to assess outcomes of patients receiving NSA over time. It included assessment of effectiveness of the Levels of Care, NSA utilization, patient retention and health behaviors of individuals using NSA.

Doctor participation was by random selection of thirty ANC doctors who were willing to commit to the study. During a six-month time, all patients beginning care with these practitioners were asked to participate. The participants reported on health wellness and quality of life by way of a survey questionnaire before beginning care and periodically during their care. (Dobson, 1997) At the time of this writing, the University of California, Irvine is still analyzing data.

Nonlinear Mathematical Modeling: A research project entitled Chaotic Modeling in Network Spinal Analysis, is currently underway at the University of Southern California, Department of Engineering. Using sEMG data, the Somatopsychic Wave phenomenon is being studied to mathematically define the wave and how it potentially relates to the self-organization of living systems. (Posa, et al, 1998-A) As reported in the official newsletter of

the ANC, The Network Release, in Autumn 1998, *"Preliminary reports on the nonlinear modeling of the somatopsychic wave are very positive."*

A paper with a preliminary analysis of the information obtained to evaluate the linear versus nonlinear nature of the Somatopsychic wave has been published in the December 1998 issue of Journal of Vertebral Subluxation Research by Stephan Bohacek and Edmund Jonckheere, Ph.D. The sEMG was recorded while individuals were receiving a Network adjustment and experiencing a Somatopsychic Wave. According to the report, the sEMG signals indicate some nonlinearity. The authors conclude, *"Further study will be necessary to clarify the extent to which the sEMG signals associated with the wave forms of NSA are due to a nonlinear versus random source. The findings* [regarding the predictor analysis] *are encouraging."* (Bohacek, et al. 1998)

Case Report: Dr. Epstein has challenged NSA's staff and practitioners to publish *"interesting case studies."* (Epstein, 1996-E) In December 1998, Madeline Behrendt, D.C., published a case study regarding a 52 year old male patient who experience a reduction of psoriasis while under Network Spinal analysis care. Psoriasis is a skin disorder characterized by an accellerated rate of skin cell turnover. Typically the effected areas have red raised scales appearing on the extensor surfaces of the body. It is thought to be an autoimmune disorder.

This patient presented for Network care with postural distortions and indicators of compromised spinal stability. Level One care was initiated. During Level One of care the patient verbally reported increasing improvement including but not limited to better sleep, more ease with movement, less tension in his spinal musculature and a noticed reduction of psoriasis. On the questionnaire completed by the patient at the scheduled Level One re-

evaluation, he notes increasing spinal awareness of areas of tension and decreased motion without the sensation of discomfort, better posture, easier movements, spontaneous muscle movements and a sense of unwinding. He also reported, the oral medication for his psoriasis had been discontinued on the advice of his medical doctor, great improvement in his psoriasis, a decrease in his high blood pressure and that his colleagues found him more pleasant. The doctors reexamination revealed a substantial reduction of facilitation and vertebral subluxation indicators.

During his six-year history of chronic psoriasis, this patient experienced a gradual increase in severity from 1-6% of body coverage, with exacerbations up to 20% total body coverage. Prior to initiating Network care he began oral drug therapy with Methotrexate, an immunosuppressant with potentially life threatening side effects. While on the methotrexate his symptoms reduced and stabilized to 5% body coverage. (It is worth noting that two months prior to beginning Network care the patient mistakenly discontinued his medication with a resultant exacerbation of his symptoms. When reinstating the oral medication he again experienced a reduction of coverage, stabilizing at 5% body coverage.)

At the time Network care was initiated, this patient's symptoms were stabilized at 5% and he was still taking the oral Methotrexate. After five weeks in Level One of Care with a continued 5% stabilization, his medical physician advised him to discontinue the oral drug therapy advising that he would probably require ultraviolet A therapy with drug therapy in the winter months. One week after he discontinued the methotrexate therapy his symptoms reduced to 1% body coverage. At the time of the report in November 1998, the patient had been under Network Care consistently for five months, was in Level Two of Care, showed

considerable reduction of vertebral subluxation indicators, and reported continued reduction of psoriatic symptoms (less than 1% coverage).

There appears to be an association between this patient's regular NSA care, reduction of vertebral subluxation indicators, his improved perception of quality of life and the reduction of his psoriatic symptoms. Psoriasis is known to show periods of exacerbation and remission. It is possible that this reduction of symptoms is coincidental to the onset on NSA care. (Behrendt, 1998) Dr. Behrendt, author of this case report, suggests in her conclusion, *"...in consideration of the potential dangers of the standard drug therapy available to patients with this condition... a clinical trial in a population of psoriatic patients would be appropriate to evaluate the possible benefits of NSA care, separate from other forms of care, or administered concurrently."*

Summary of Research: It is a continuing challenge to study nonmedical paradigms. Reductionist study designs, where variables can be controlled, work well with inanimate models or controlled laboratory study. When studying the effects of an intervention with humans, it is difficult to separate the effects of the intervention from other variables such as diet, emotions, attitude, observer bias, exercise etc. (Epstein, 1996-E)

In 1995 the National Institute of Health formed a panel to ascertain how evidence from various type of research affect the assessment of interventions classified as complimentary or alternative medicine. The panel expressed that *"close attention to the question being asked"* can resolve the problems in research of these types of interventions. It was suggested that the research design be fit to the particular question being asked. (Report of Types of Evidence, 1995)

Although subluxation based chiropractic is not complementary or alternative medicine (Boone, 1997) they do share some common features and therefore similar research method may apply to both. In, A Proposed Vertebral Subluxation Model Reflecting Traditional Concepts and Recent Advances in Heath and Science: Part III, Boone and Dobson (1997) list the following common features:

A) "a rich theoretical base lacking sufficient research testing its tenets;

B) considerable anecdotal reports of efficacy, with few large scale retrospective or longitudinal studies investigating clinical observations;

C) a high level of enthusiasm among its practitioners with only meager funding available to support sophisticated research protocols, including randomized clinical trials when appropriate,

D) general insufficiency of knowledge and appreciation for the necessity of research among its practitioners, often precipitating from the lack of research training offered during the educational process,

E) a model of care more appropriately investigated through 'outcomes' research as opposed to 'cause and effect'"

The effect of vertebral subluxation on overall health is an important study subject. (Boone, et al., 1996) An individual's perception of health is a combination of their personal characteristics and environment. (Wilson, 1995) The individual's perception is related to their practitioners care objectives. The combined effect of all these variables can be empirically related through health related quality of life assessments. (Boone, et al., 1996)

A diverse approach to study subluxation based chiropractic is appropriate. Studies geared to the basic sciences and biomedicine require more control of variables and statistical evaluation to determine significant differences. These types of studies may be appropriate for the mechanistic aspect of chiropractic. The sociological/anthropological

approach, based on evaluation of compiled evidence, stressing case reports, observational studies and small sample research, larger retrospective and longitudinal studies using questionnaires seem more appropriate for the holistic aspect of chiropractic. (Boone, et al., 1997)

CONCLUSION:

The review of the literature regarding Network Spinal Analysis reveals four conclusions:

A) NSA is an integrative and holistic model of health care. It incorporates various technique methods, concepts from multiple disciplines, a body mind interaction and a non-linear model of the vertebral subluxation;

B) The Somatopsychic and Respiratory Waves, unique to individuals receiving NSA care, are proposed to dissipate stored tension and promote self awareness;

C) The Levels of Care provide specific and progressive methodology for the application of the Network Protocol, determination of improving spinal health and neural integrity, and enhancement of quality of life indicators;

D) Research involving NSA is encouraging but inconclusive. The ANC recognizes that more empirical research is necessary. Research is in progress to date and the ANC plans to continue to meet this research challenge.

INTEGRATIVE MODEL: The systems approach in NSA allows the spine to be *"viewed as a system in community with all of its components."* (Epstein, 1996-C) Incorporating the interaction of the subsystems of the body and inclusive of the meningeal and emotional components throughout the Levels of Care, makes NSA more holistic in its application than techniques focusing on only one or two of these subsystems. (Epstein, 1996-

D) NSA proposes to educate the system to recognize its own blocks to health and to learn a strategy to self-correct. There is academic interest in NSA from a variety of disciplines

including neuroanatomy, neurobiology, sociology, immunology, biochemistry, psychology, radiology, engineering, physics, endocrinology and mathematics. (Posa, et al., 1998-B)

Concepts from various techniques and disciplines are incorporated in NSA. Techniques that address only the osseous or soft tissue components of vertebral subluxation alone are unified in NSA's subluxation classification system. (Epstein, 1996-C) Theoretically, Dr. Epstein proposes that there are *" many interacting variables"* that cause and correct vertebral subluxations and, that the associated factors are *"inter-linked as part of a quasi-sequential, non-linear continuum."* (Epstein, 1998-A) In Network Spinal Analysis: Meeting tomorrow's research challenges, Dr. Epstein states, *"The integration of isolated concepts into a more global concept has provided the impetus for the NSA rationale as well as its clinical application."* (Epstein, 1996-E)

WAVE PHENOMENA: Spontaneous motor responses occur in a large number of individuals while under NSA care. These repeatable and self-generated responses correspond with Somatopsychic Waves, Respiratory Waves, emotional releases, or a combination of the above. (Blanks, et al., 1997) They are suggestive of the dissipation of stored tension and appear to be corrective in their attempt to improve spinal cord and soft tissue flexibility and realign bony segments. (Epstein, 1998-A) Individuals receiving Network Care report improved health and quality of life with the onset of experiencing these responses. (Posa, et al., 1998, A)

LEVELS OF CARE: NSA is applied clinically through a comprehensive plan of care called Levels of Care. Each Level of Care corresponds with the level of self-awareness and self-corrective ability of the individual under care. Periodic reevaluations determine the patient's progress. The specific clinical outcomes that are expected with each Level of Care

are evaluated by the practitioner. These are combined with the patient's functional status and overall quality of life, as self-assessed through a questionnaire by the patient. (Epstein, 1998-A)

RESEARCH: The NSA evidence based document, Theoretical Basis and Clinical Application of Network Spinal Analysis (NSA) originally copyrighted in November 1994, has been revised for the tenth time, most recently in May 1998.

The published results of the retrospective study conducted University of California, Irvine are exciting and highly suggestive of improved quality of life in individuals receiving NSA care. The retrospective study is to date, the largest study to characterize a chiropractic population and to study health and wellness benefits of chiropractic care. It is the first epidemiological study to evaluate self-reported health and wellness with such a wide range of indices. It is the first and largest study to establish a new survey instrument sufficient to study a non-medical discipline. (Epstein, 1998-B)

Dr. Epstein is in the process of writing a textbook on NSA theory, application and benefits. It will include anecdotes, observations and research data as well as biological and physical principles. (Epstein, 1996-E)

At the time of this writing, the final reports for the longitudinal study are not yet published and the chaotic modeling study is still in progress. Dr. Candice Pert, Author and well known psychoneuroimmunologist, has discussed with Dr. Epstein conducting research in her lab to study potential influence of neuropeptides with NSA. (Epstein, 1998-B)

Research involving NSA is very promising but inconclusive at this time. Continued research, planned by the ANC, *"is designed to accept the challenge of stating and studying*

the theoretical basis of NSA, describing its benefits, and rigorously reporting patient outcomes." (Epstein, 1996-B)

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