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Orthomolecular therapy for the treatment of mental illness with vitamins

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Orthomolecular therapy for the treatment of mental illness with vitamins

Abstract

The mentally ill patient has long been a major medical problem. Large numbers of our population need and receive help every year for mental illness. If a person has a physiological abnormality, such as a biochemical aberration, whether it effects his perception or his emotional control, he may not be able to respond to even highly trained professionals when it is viewed as a psychological disorder. If the correctable physiological abnormalities are found in even a small percentage of cases, treatment of these abnormalities could mean improvement for large numbers of children and adults with diagnosis of autism, paranoia, schizophrenia, minimal brain dysfunction, depression and other mental diseases.

ORTHOMOLECULAR THERAPY FOR THE TREATMENT
OF MENTAL ILLNESS WITH VITAMINS

A Research Paper
Presented to
The Department of School Administration
and Counseling
University of Northern Iowa

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Randall Lee Harding

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INTRODUCTION

The mentally ill patient has long been a major medical problem. Large numbers of our population need and receive help every year for mental illness. If a person has a physiological abnormality, such as a biochemical aberration, whether it effects his perception or his emotional control, he may not be able to respond to even highly trained professionals when it is viewed as a psychological disorder. If the correctable physiological abnormalities are found in even a small percentage of cases, treatment of these abnormalities could mean improvement for large numbers of children and adults with diagnosis of autism, paranoia, schizophrenia, minimal brain dysfunction, depression and other mental diseases.

The methods principally used now for treating patients with mental illnesses are psychotherapy (Marmor, 1961; Wynne & Singer, 1963; Luborsky, Singer & Luborsky, 1975), chemotherapy (Hollister, 1977), and convulsive or shock therapy (Riddell, 1963; Abrams & Fink, 1972; Fink, 1978). More is needed than the time tested tools of the history, physical examination and laboratory work-up to reveal the interplay between environmental and bodily factors which characterize many mental illnesses. Linus Pauling concluded that, "Another method of treatment, which may be called orthomolecular therapy, may be found to be the best method of treatment for many patients." (1968, p. 265)

Much has been learned during the last decade about the diagnosis and treatment of biochemically based mental illness. However, orthomolecular therapy is not fully understood by the medical profession and, considered a proven technique in treating the mentally ill. An analysis of materials available to medical professionals, educators and counselors, demonstrates the knowledge of these correctable physiological abnormalities is not widely published.

This paper will not attempt to include all known biochemical causes of mental illness included in orthomolecular therapy, such as; environmental chemicals, allergies, hypoglycemia, diabetes, hormonal imbalance, pollutants or dietary considerations. Instead, it will focus on the literature illustrating the relationship between mental illness and vitamin deficiency. In this study, the terms vitamin and nutrient are used interchangeably.

ORTHOMOLECULAR THERAPY

Orthomolecular therapy is the achievement and preservation of mental health by varying the concentration in the human body of substances that are normally present, such as vitamins. The term "orthomolecular" was first utilized by Nobel Laureate Linus Pauling (1968) to characterize the treatment of disease with nutrients that are endogenous to the human body. Orthomolecular simply means "right molecule" or essential nutrient given at the right time. "Mega-vitamin" therapy is better called "meganutrient" therapy. Treatment with

adequate nutrients is the distinguishing therapy of orthomolecular therapy.

Orthomolecular therapy does not deny that many mental illnesses are triggered by stress, sudden shock, trauma or an accumulation of disappointments and frustrations. However, orthomolecular therapy maintains that the primary causative factors in these cases is a biochemical one that is either preexistent or brought on by the stressful experience. Only when the nutrient environment of the brain has been altered to correct the condition, will the mental illness cease. This is accomplished with the treatment of vitamins.

Vitamins

Vitamins are organic food substances found only in living things, that is, plants and animals. There are about twenty substances that are believed to be active as vitamins in human nutrition. Each of the vitamins is present in varying quantities in specific foods, and each is absolutely necessary for proper growth and maintenance of health. With a few exceptions the body cannot synthesize vitamins; they must be supplied in the diet as a dietary supplement.

Vitamins have no caloric value or energy value but are important to the body as constituents of enzymes which function as catalysts in nearly all metabolic reactions. As such, vitamins help regulate metabolism, help convert fat and carbohydrates into metabolic energy and assist in forming bone and tissue.

The range of vitamins with psychochemical importance is broad.

According to Linus Pauling;

The proper functioning of the brain is known to require the presence of molecules of many different substances. For example, mental disease, usually associated with physical disease, results from low concentration in the brain of any of the following vitamins: thiamine (B1), nicotinic acid or nicotinamide (B3), pyridoxine (B6), Cyanocobalamin (B12), pantothenic acid, folic acid and ascorbic acid (Vitamin C). (p. 265)

The following is a partial listing of the symptoms brought about by the deficiency of the aforementioned vitamins:

Vitamin B1 (thiamine)

Thiamine is a water soluble vitamin that combines with pyruvic acid to form a coenzyme necessary for the breakdown of carbohydrates into glucose, or simple sugar, which is then oxidized by the body to produce energy. Common sources of B1 are: Brewer's yeast, brown rice, organ meats, egg yolks, nuts, whole grains, fish and poultry.

Thiamine deficiency causes loss of appetite, generated by cell malnutrition in the hypothalamus (Williams, 1971). This makes it difficult for an individual to digest carbohydrates but this also leaves too much pyruvic acid in the blood. This causes an oxygen deficiency that results in loss of alertness, labored breathing and cardiac damage. Other symptoms include, depression, irritability, confusion, loss of memory, inability to concentrate, fear of impending doom, and sensitivity to noise. These symptoms, related to mild mental disease, disappear with the administration of thiamine (Williams, 1971; Bruno, 1973).

Vitamin B3 (niacin)

As a coenzyme, niacin assists enzymes in the breakdown and utilization of proteins, fats and carbohydrates. Lean meats, poultry, wheatgerm, fish and peanuts are rich sources of niacin.

Niacin is difficult to obtain except from these foods. The earliest manifestation of pellagra, created by a severe deficiency of niacin, are anxiety, depression, fatigue, and vague somatic complaints (Joliffe, 1939; Joliffe, Bowman, Roseblum & Fein, 1940; Frostig & Spies, 1940; Hoffer, 1973). Frostig and Spies (1940) examined 60 patients with subclinical and mild pellagra, with an initial syndrome of hyperesthesia, hyperactivity, depression, apprehension, fatigue, headaches, and insomnia.

As the disease progresses, patients often complain of failing vision, hypersensitivity to light, illusions, vertigo, visual and auditory hallucinations, hyperacute sense of smell, dulled sense of taste and persistent salty taste. These perceptual changes are very similar to those produced by schizophrenia and by the hallucinogens (Hoffer & Osmond, 1966).

Vitamin B6 (pyridoxin)

Pyridoxin plays an important role as a coenzyme in the breakdown and utilization of carbohydrates, fats, and proteins. It must be present for the production of antibodies and red blood cells. Of the 12 known disorders involving genetic vitamin dependency, pyridoxin is involved in 5 (Rosenberg, 1970). This vitamin is the precursor to 50 enzymes, necessary for the metabolism of all amino

acids and required for the maintenance of a stable immunological system (Axelrod & Trakatellis, 1964; Davis, Nelson & Shepard, 1970; Ellis, 1973; Philpott, 1974). The best sources of pyridoxin are meats and whole grains.

Cyannocobalamine (B12)

Cyannocobalamine is necessary for normal metabolism of nerve tissue. The best sources of B12 are fish, pork, eggs, cheeses, and milk products. A higher incident of low B12 concentration has been found in mental patients than in the normal population. Deficiencies cause pernicious anemia, with mental symptoms ranging from poor concentration to stuporous depression, severe agitation and hallucinations (Hart, 1971).

Pantothenic acid

Pantothenic acid plays a vital role in cellular metabolism. Organ meats, brewer's yeast, egg yolks, and whole grain cereals are the richest sources. Volunteers fed a diet deficient in pantothenic acid became easily upset, irritable, sullen, tense, dizzy, depressed, and numb (Wormsley & Darrough, 1955; Eiduson, Geller, Yuiviler & Eiduson, 1964). Both animal and humans withstand stress better after receiving large doses of pantothenic acid (Williams, 1971).

Folic acid

Folic acid combines with B12 and Vitamin C, in the breakdown and the utilization of proteins. The best sources are green leafy vegetables, liver, and brewer's yeast. Several surveys revealed

low folic acid levels in the blood of 40 to 80 percent of the geriatric psychiatric patients. A number of the subjects were benefited by administration of high levels of folic acid (Williams, 1971). However, deficiency reappeared unless sufficient Vitamin C was supplied to convert folic acid into usable form (Scheid, 1952; Greenberg, 1957; Herbert, 1963).

Vitamin C (ascorbic acid)

A primary function of Vitamin C is maintaining collagen, a protein necessary for the formation of connective tissue in skin, ligaments, and bones. Vitamin C is present in most fresh fruits and vegetables. Research indicates that almost any physical or mental stress significantly reduces Vitamin C levels in plasma (Urbach, Hickman & Harris, 1952; Mass, Gleser & Gottschalk, 1961; Baker, 1967). Deficiencies of Vitamin C can cause listlessness, decreased epinephrine response, and increased susceptibility to vascular stress (Dayton & Weiner, 1961).

The Recommended Daily Allowances (RDA) of vitamins are considered "to be adequate to meet the known nutritional needs of practically all healthy persons" (National Academy of Science, 1980, p. 1). The estimate is dependent on two assumptions: first, that nutrient requirements in normal, healthy people are distributed according to the Bell-Curve distribution, and second, that the standard deviation for nutrient requirements is generally about 15 percent of the mean.

The RDA fails to consider the concept of "biochemical individuality." Simply put, it means there are no "average human beings. Instead, each of us is biologically unique. Williams has demonstrated that virtually everything about us--the size and shape of our organs, the speed of our metabolism and our requirements for nutrients--can vary enormously from one individual to the next.

Each human being possesses a highly distinctive body chemistry. While the same metabolic processes are operating in all human bodies, the structures are significantly diverse and the genetically determined enzyme efficiencies vary sufficiently from individual to individual so that the sum total of all the reactions taking place in one individual's body may be very different from those taking place in the body of another individual of the same age, sex, and size. (Williams, 1977, p. 166).

Genetrophic Concept

Williams and co-workers (1973) reported the ranges of human requirements for amino acids and other nutrients are from 2 to 7 times with an average range of 4 times in groups of fifteen to fifty-five subjects. Hegsted (1963) concluded that amino acid requirements often vary by more than 2 times the normal range; in fact, analysis of Hegsted's work, can be interpreted as indicating ranges of 3 to 9 times greater in small groups of normal college women.

Inborn genetic differences are the only known factors adequate to explain the large variations in requirements found in normal healthy humans and animals. Genetically based variability might

affect any stage of the nutritional process, including digestion, absorption, transport, storage excretion or utilization.

If genetic impairment is sufficiently crucial and severe, it will be fatal before birth. If its nature and severity are somewhat less profound, an individual may possess a clearly "abnormal" inborn "error of metabolism" which may be more or less mitigated by nutritional adjustments. If the genetic impairment is still less severe, the affected individual may be "normal" but require for his or her optimum health atypical amounts of a specific nutrient. There is no reason to expect a sharp or even a definable division between "abnormal defect" and "normal variation."

Whether the increased needs are primarily caused by the disease or disability or are a cause of it will determine the duration of the appropriate nutrient adjustments. Temporarily enhanced nutrient needs may serve primarily to compensate for increased utilization or losses, or to stimulate and enhance various natural mechanisms of resistance and healing. Temporarily high apparent requirements may be caused by long standing marginal or inadequate intake and a slow process of restoring tissue concentrations to normal.

These genetrophic diseases in humans include a variation of "maple syrup urine disease" which responds to thiamine (only 10-30 mg/day; 7-20 times the RDA), a form of methyl malonic acidemia which responds to vitamin B12 injection (1 mg/day; 300 times the RDA), a variation of propionic acidemia which responds to biotin (10 mg/day; 70 times the RDA) and Hartrup's disease which involves increased

requirements for niacin (Wong & Hsia, 1973; DeLuca, 1979). The best known human examples include severe metabolic disease which respond to increased intake of vitamin B6 (Mudd, 1971), and "vitamin D--resistant rickets," a group of disorders which often responds to increased intakes of vitamin D3 or its normal metabolite (DeLuca, 1979).

These examples illustrate the important point that despite definite sounding names and "diagnostic" biochemical indicators, "inborn errors of metabolism," differ in their severity, the age of onset and the involvement of various organs. It is these nutritional differences, genetic differences and clinical nutritional variances that furthers the concept that the treatment of mental illness is the provision of the optimum molecular concentration of the brain especially the optimum molecular concentration of substances present in the human body from individual to individual.

Biogenic Amine Theory

Three quarters of a century ago a Cambridge graduate student introduced the concept of the neurotransmitter or the biochemical vehicle of neuron impulse transmission, a hypothesis which eventually led to the identification, by Axelrod (1972), of norepinephrine (NE). Since the identification of norepinephrine (NE) at least eight other chemicals have been characterized as neurotransmitters (Maas, 1975): serotonin (5-HT), dopamine (DA), acetylcholine (ACh), histamine, inhibitory amino acids (GABA),

substance P (a polypeptide and prostaglandin). Maas believes dopamine (DA), norepinephrine (NE), and serotonin (5-HT) are related to mental illness, the first, DA, to psychosis, the two NE and 5-HT specifically to depression.

These three substances norepinephrine (NE), dopamine (DA), and serotonin (5-HT) have come to represent the Biogenic Amines Theory.

Norepinephrine (NE)

This neural system has a major role in affecting states. The destruction of NE neurons can result in withdrawn, asocial, anhedonistic "depressive-like" behavior. During states of emotional stress an increase in NE turnover occurs. Since NE is involved in the pleasure and reward center of the hypothalamus, dysfunction in its metabolism could result in distinct mood change.

Dopamine (DA)

Excessive amounts of dopamine may result in abnormal motor and mood states. Latent schizophrenic states have been activated in patients by L-Dopa (precursor to dopamine) and manic-like states have been evoked in depressed patients and manic-depressive patients.

Serotonin (5-HT)

There appears to be significant disturbances of serotonin in depressed patients. Evidence indicates a basic deficiency in serotonin turnover in the central nervous system of patients during both remitted and depressed states.

Fischer (1973) presented an extensive review and discussion of the Biogenic Amine Theory.

One can look for the effect of vitamins on neurotransmitters for a possible explanation for the management of mental illness. Niacin or niacinamide in mega (meaning massive) doses impedes the breakdown of tryptophan, a precursor of serotonin; thus it would be helpful in those states of depression with deficiency of serotonin, the type of depression expected to react to drugs blocking the reuptake of serotonin. Adequate levels of pyridoxin (vitamin B6) are necessary for the synthesis of serotonin and for the conversion of dopa to dopamine, the precursor of norepinephrine; therefore, vitamin B6 is potentially helpful in both chemical types of depression, the "serotonin depression" and the "norepinephrine depression." Ascorbic acid (vitamin C) is essential in the conversion of dopamine to norepinephrine. Therefore, both B6 and vitamin C in megadoses could have beneficial effects in those individuals who have shown a reduction of depression to drugs inhibiting norepinephrine reuptake.

Neuropharmacologists now have ample evidence nutrition can influence the production and concentration of neurotransmitters which they have always equated with the action of drugs to influence behavior, such as tranquilizers and antidepressants.

Thomas and Zemp (1977), and Tolbert, Thomas, Middaugh and Zemp, (1979), found that ascorbic acid is as potent a substance as Haldol in blocking dopamine receptors in the brain. Nicotinamide, one of the B3 members also has an effect on brain receptors. A class of antianxiety drugs, the diazepines (Valium, Librium, Serax) are

attracted to diazepam receptors in the brain. Mohler, Polc, Cumin, Pieri and Kettler (1979), discovered that nicotinamide is also attracted to these receptors. They suggest nicotinamide is the natural molecule with benzo-diazepam-like action. These findings have clearly shown how vitamins can have a direct effect on brain receptors that are independent of how they are made or from which precursor.

Vitamin Therapy

The first use of a vitamin in treating mental illness in patients without pellagra was Cleckley, Sydenstricker, and Gieslin (1939), who successfully treated 19 patients with 100 mg to 300 mg of niacin. It was also recognized at the time that therapeutic (larger than normal) doses of nutrients are needed to overcome illness of various kinds (McLester, 1939).

Some states which are psychologically diagnosed as functional illness may originate from nutritional deficiencies, and some states which are psychologically diagnosed as functional mental illness may be relieved by appropriate nutritional therapy. (p. 326)

A study by Hoffer, Osmond, Callbeck and Kahan (1957) reported successful use of three grams of vitamin B3 for treating schizophrenia. They conducted the first double blind studies in psychiatry in which neither the evaluators nor the caretakers knew which patients were receiving experimental treatment. In their niacin studies they did extensive follow-up evaluation of patients discharged from the hospital over a five year period in which they evaluated

treatment effectiveness on several different levels having to do with perceptual distortions and family and community adjustment. They were thus able to demonstrate that niacin B3 decreases schizophrenia symptoms in a statistically significant number of patients (Hoffer, 1962). Likewise, Wittenborn (1974), showed that acute schizophrenics improved on a large variety of measures when given three grams of niacin per day for two years.

Green (1970) described a schizophrenic-like syndrome in both children and adults who appeared healthy, having no clinical symptoms but many physical complaints. He called this syndrome subclinical pellagra, since vitamin B3 was able to relieve the symptoms. He found that in 1100 public school children in Prince Albert, Saskatchewan, 17 percent showed signs of subclinical pellagra.

Alan Cott (1971) reported clinical evidence that massive doses of vitamin B3, B6, C and E decrease the symptoms of schizophrenic children and adults and of autistic children. He also reported that the less disturbed learning disabled child responds to vitamin B3, B6, C and pantothenic acid within three to six months of treatment. Thiessen and Mills (1975) reported in a matched control study that these four vitamins, given over a period of a year to learning disabled children with normal I.Q., reduced hyperkinesis, sleep disturbances, nystagmus and certain perceptual disturbances. Some basic language skills as measured by four subtests of the Illinois Test of Psycholinguistics Ability (ITPA) were also improved.

Watson (1965); Pfeiffer, Ilier and Goldstein (1973); Rimland (1973); and Blackwood (1975) reported the need to individualize nutrient supplements for either the mentally disturbed child or adult. While certain adults with mental and emotional illnesses benefit from nutritional supplementation programs, others developed metabolic disturbances with either no improvement or exacerbation of their symptoms. Pursuing this observation with metabolic studies and a step-by-step evaluation of separate nutrients, Watson (1965) discovered that he could divide such individuals into what he called "slow and fast glucose oxidizers." Slow oxidizers particularly benefited from vitamins B1, B2, and B6 while fast oxidizers were especially improved with pantothenic acid, choline and vitamin E. Other nutrients play a paradoxical role but to a lesser degree.

Rimland (1973) started autistic children on a Recommended Dietary Allowance (RDA) level B complex with 10 mg of iron and 500 mg of vitamin C; two weeks later added 500 mg of niacinamide and 75 mg of B6, and finally three weeks later added 100 mg of pantothenic acid. He found that most children benefited directly with the clearing of skin problems; normalization of appetite, whether excessive or lacking; increased alertness and social awareness; greater calmness; more assessibility; greater fluidity of speech; and greater pressure to talk. However, he found that 4 of 190 children became either more wild or more withdrawn on niacinamide and pyridoxin (B6). He also found, in keeping with Watson's work,

that a few children improved dramatically when pantothenic acid was added, while in others this led to deteriorated behavior.

The invention of other theories regularly and appropriately evokes the same response from some of the specialists on whose area of special competence they impinge. For these men the new theory implies a change in the rules governing the prior practice of normal science. Inevitably, therefore, it reflects upon much scientific work they have already successfully completed. That is why a new theory, however special its range of application is, is seldom or never just an increment to what is already known. Its stimulation requires the reconstruction of prior theory and the re-evaluation of prior fact, an intrinsically revolutionary process that is seldom completed by a single man and never overnight. (Kuhn, 1970, p. 20)

Vitamin Therapy Resistance

To comprehend the resistance found in the use of orthomolecular therapy, it is useful to review what communication research indicates are some of the problems involved in introducing ideas and changing professional opinion.

Besides an open channel and the acknowledged expertise of the communicator, other factors which determine the effectiveness of a communication involve the receiver of the message. For the receiver to accept the message he must feel his self-esteem to be enhanced by it. An approach such as orthomolecular therapy is a criticism and an embarrassment to the average physician who has no training in nutrition in medical school and for the psychiatrist whom the idea is especially difficult because of his commitment to the psychogenic

etiology of mental illness. Also, the psychotherapy he offers provides him with compelling, interesting work for which he has in-depth training and in which he has a great investment. Doctors whose income would be threatened if patients turned elsewhere for a different treatment modality are not likely to feel their self-esteem enhanced by the orthomolecular approach. The receiver to accept a message must also find that it provides some significant compensation, like money.

Acceptance of the message is influenced also by the discrepancy between message and what the receiver believes. The policy of orthomolecular therapy, to support the body's constructive mechanisms, runs counter to current medical practice with its emphasis on suppressing the body's defenses, that is, the symptoms which often are labeled as diseases. Discomfort in the presence of such discrepancy leads to avoidance by means of dismissing the influence with statements of "anecdotal", "unscientific", and "no double-blind studies".

In July 1973, a Task Force (APA, 1973) of five physicians and one consultant issued a 54-page report "Megavitamin and Orthomolecular Therapy in Psychiatry." The Task Force reports to present both theoretical and empirical reasons for the achievement and preservation of good mental health.

The Task Force expresses rather limited understanding of the nature of vitamins. "By common definition a vitamin is not only an essential nutrient, but it is essential because it is transformed

into a coenzyme vital for metabolic reactions" (p. 41). This is not the common definition of a vitamin. Some vitamins, including vitamin C, are not known to be transformed into a coenzyme. This limited definition by the Task Force may have contributed to the misinterpretation of the evidence for the theoretical basis of orthomolecular therapy.

The APA Task Force report repeatedly mentions the use of 1 to 30 grams of ascorbic acid a day by orthomolecular psychiatrists. There are, however, no references to the literature. In addition, there are significant omissions. Milner's double-blind study, (1963), is not mentioned, nor is there any discussion of the many papers in which a low level of ascorbic acid in the blood of schizophrenics was reported (Horwitt, 1942; Vanderkamp, 1966; & Herjanic, 1973). Neither the general theory of orthomolecular therapy, nor any of the special arguments about the value of ascorbic acid are presented or discussed in any significant way. There is, moreover, no discussion in the report of pyridoxin and no reference to Ananth, Ban, and Lehman (1973), work on the potentiation by pyridoxin of the effectiveness of niacin in controlling chronic schizophrenia.

The Task Force refers to the low credibility of the orthomolecular proponents; "their credibility is further diminished by the consistent refusal over the past decade to perform controlled experiments and to report their new results in a scientifically acceptable fashion" (p. 49). However, Osmond and Hoffer (1962)

and Denson (1962) carried out controlled trials. They became convinced that orthomolecular therapy, along with conventional treatment, was beneficial to almost every patient. From that time on their ethical principles have required that they give this treatment and not withhold it from half of their patients.

Nutritional Counseling

There is a transition occurring, slowly, in the conceptualization of the process of treatment provided in counseling and psychology. There is movement towards preventative health care with an emphasis on wellness and self-responsibility. However, counselors and psychologists are trained that what they will encounter in their clients is psychological in origin. There is a great deal of evidence that this is mistaken and that most of mental illness is misdiagnosed as a result of this dualistic approach to human behavior (Fredericks, 1976; Hoffer & Walker, 1978; Schauss, 1978, 1980).

A number of correctional and residential programs have instituted nutritional and lifestyle assessments in their diagnostic procedures with effectiveness of treatment increasing dramatically (Schauss, 1978; Wordon & Rosellini, 1978; Reed, 1983). However, a review of the literature on nutritional training for counselors, psychologists and medical students reveal some startling facts. Vass (1983) found that counseling programs have little emphasis on nutrition information in their training programs. Only one program indicated a separate course available and none of the programs

offered more than one course. The receptivity of the students for nutritional education was greater (17.4%) than the faculty support (10.5%). The possibility of future curriculum development is not encouraging.

The counseling field is falling far behind the nutritional fields in the exploration of the literature and the relevance of this literature in training programs. It is disturbing that health care professionals are being turned out with so little knowledge on the relationship of nutrition to mental illness.

All health care professionals cannot be experts in nutrition. It is reasonable to expect that dietary history along with basic questions on lifestyle be included in any diagnostic procedure. There are a number of assessment tools available to assist counselors in utilizing differential diagnostic procedures (Kaslow & Miles, 1979; Schauss, 1980; Vass, 1981; Reed, 1983, 1984).

The most limiting factor a counselor encounters in an orthomolecular practice is his credentials. Orthomolecular therapy is a medical procedure and to practice requires a medical degree. Thus, a counselor must move from a psychological counseling framework to a medical model and a medical practice.

One must consider that any statement on the counselors part that implies a person's difficulties may be due to a chemical imbalance, hypoglycemia, vitamin deficiency or allergies, rather than psychological, represents a medical judgement and moves the counselor into diagnosing a medical problem. By being unable to

diagnose, the counselor's role is reduced to history taking. The history procedure involves only information gathering with the medical problems being kept to description of symptoms and not the identification of physical problems that cause the symptoms. This is complicated further, in that a counselor cannot make recommendations for medication, vitamin therapy or diets, basic to orthomolecular therapy. Again, this implies a medical diagnosis of a physical problem.

Presently, a counselor in an orthomolecular practice is a potential liability for the supervising physician rather than an asset. Because the physician is ultimately responsible for the decisions of the counselor, the counselor must be limited in his duties. This provides the physician with optimum supervision and patient management. Limiting the duties of the counselor ensures each patient is seen by the physician, diagnosed by the physician and the treatment is established and maintained by the physician.

If the medical establishment is not ready to accept orthomolecular physicians, they are not willing to accept orthomolecular counselors.

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