The Alcoholic: How Sick Into Treatment? How Well When Discharged?

Elizabeth Gentaial

With a title such as mine, you need to know where I am coming from. I worked seven years with skid road alcoholics, and later with some of their estranged families on welfare.

We speak of skid roaders derogatorily. They are society's failures, school failures (the majority were learning-disabled), and our treatment program failures. Many once well employed had alcoholism treatment at expensive facilities and later as treatment failures skidded down the road to welfare and Salvation Army-type treatments. Included were a doctor, a public health director, two with law degrees, a civil engineer and then on down to less trained professions. They were jailed, hospitalized, stabbed and beaten, robbed, were starving and dying without care, yet many clung tenaciously to life.

I conducted several projects with them. I visited weekly for a year the residents of a 60-room skid road hotel with cooking facilities, housing about 90 percent alcoholics. In another project my volunteers researched case-record information, including medical reports, on over 400 alcoholics. These alcoholics presented varying degrees of complications from alcoholism; no two were alike, but all were treatment failures. The average cost to the state for medical care for these alcoholics was about $25,000. I began to glimpse the thousands of dollars wasted by lack of a comprehensive approach to their problems. One suicidal alcoholic woman in her late 30's cost over $200,000 for one hospitalization and was discharged totally incapacitated into a nursing home. Being motivated by concern over the terrible financial and mental cost of alcoholism to the patient, relatives, and the general public, and being of a curious mind, I have attended alcoholism conferences and classes — national and abroad — and probed at the problem off and on. Lastly, I studied nutrition to understand the disordered metabolism of alcoholism. This paper is a result.

I have reviewed considerable research on alcoholism (a rapidly expanding field) and have drawn together biochemical approaches. One of the best articles I found was by Robert W. Hillman, "Alcoholism and Malnutrition" in the series **The Advances in Experimental Medicine and Biology,** where he cites about 500 articles, all focused on the clinical aspects of the illness, on human research, on practical not theoretical aspects, and all on the nutritional

Presented at the 13th Annual Conference of the Canadian Addictions Foundation, September 24-29,1978, Calgary, Alberta, Canada Elizabeth Qentala, 802 N.W. 97th Street, Seattle, Washington, U.S.A. 98117.

complications in alcoholism. The extent of alcoholism research and types of treatment is staggering, yet if one evaluates their creating effective programs for the alcoholic, is the expenditure of the time and money involved justified?

In April, 1978, I attended the National Drug Abuse Conference in Seattle, Washington, where about 700 speakers presented papers, including a few on the nutritional and biochemical approaches to addiction. Most of the speakers spoke at the problem, but a practical holistic approach is needed that speaks to the fastest, cheapest, most satisfying sobriety. A basic part of this is in the nutritional-biochemical approach to remove the depression and craving that precludes success in therapy. We need to know what are the derangements in metabolism that the alcoholic has when coming into treatment (how sick is he?) to help him to lasting sobriety when discharged, that is, to supply his body with those nutrients that lead to a feeling of wellness.

I assume that the alcoholic coming to treatment has been detoxified, so is free of the short-range effects of alcohol on his body, and hopefully this detoxification process included a nutritional approach. Then, to determine how sick he is, we need to answer the following: How adequate is his diet? What are the correctable predisposing genetic factors? What are the correctable long-range adverse effects of alcohol on this person? What other toxins disturb his metabolic processes? And are stresses depleting him of nutrients? These are inter-related factors, no one a clear-cut cause of alcoholism, but they act together to lead to the progression of the disease as the body gets depleted of nutrients. Each alcoholic has his own individual biochemical needs, which are influenced by these previously mentioned variables. Each one of us is unique biochemically, and influenced by the same factors.

Here, I want to impress on you Roger Williams' concept of biochemical individuality, quoted and exemplified in Robert Hillman's excellent article previously mentioned. This concept says externally we are different and unique; internally, also, unique. We have varying shapes and sizes of organs and glands — no two of us alike. Bear in mind that these differences also indicate we have differing needs of the 50 or more nutrients our body utilizes in its manufacturing plant, where it chomps food to small particles, chemically separates stores, transfers, and burns up energy substances that keep our motors going.

Remember we are all biochemically different, but can have similar patterns of disease. Load a toxin, such as alcohol, in the body and we will have burnout in our weakest organs.

Some of us with altered metabolic enzymes are genetically predisposed to quickly become alcoholic, but others become alcoholic where dependence develops more slowly because of poor diet, increased regular drinking, and psychological stress, according to Kojic in **Biological Aspects of Alcoholism.** The latter group with a longer progression sequence might be triggered to alcoholism after a spouse's death, when through grief the nutriture is knocked out. Restoration from early alcoholism involves following a good nutritional program (Hillman, 1974), as well as psychotherapy (including AA), multiple vitamins (including stress B vitamins), and minerals to handle the depletions caused by grief or other stress. According to the **Heinz Handbook of Nutrition,** about 98 percent of us are deficient in at least one of five major nutrients. The alcoholic, who eats poorly, increases that possibility, so needs this nutrient insurance.

The majority of alcoholics become hypoglycemic, as reported by the staff at Alcenas Center in Seattle, where hypoglycemia tests are routinely done. Special emphasis should be placed on a diet to alleviate hypoglycemia, similar to the diet researched by T. G. Kiehm and associates (1976) on diabetics who with it were able to decrease or discontinue supplemental insulin. The diet consists of 75 percent of the calories from complex carbohydrates, such as whole grains and fresh raw or lightly cooked vegetables, 15 percent protein (part of this from the complex carbohydrates) and 10 percent fat (unsaturated) to get the

essential fatty acids. In the early stages of alcoholism other nutrients and diet factors may be needed as indicated in the complications to be later mentioned that need specific substances for their correction.

Alcohol has a toxic effect on the gastrointestinal tract, pancreas, and liver (Roe, 1976), which can cause malabsorption and attendant malnutrition. We will follow the nutrients through the body, showing the disturbances alcohol can cause. The extent of the malnutrition produced depends on the diet of the person and how much alcohol was drunk and for how long. Malabsorption is the most pronounced in persons with cirrhosis (Leevy, et al., 1971) where liver damage is the greatest.

What is the extent of progression of the disease? What are the other toxins and stresses compounding the deficiencies? Any of the deficiencies delineated subsequently can disturb mental functioning, causing depression and craving. Firstly, alcohol affects the stomach in conjunction with other toxic substances (Leevy, et al., 1971) such as: salicylates (from aspirin) or other insults (such as allergic response in the stomach) leading to ulcers where the mucosae are damaged, inhibiting hydrochloric acid and pepsin secretion, thus partially blocking protein digestion.

Further problems with protein can be caused by alcohol irritating the pancreas, thus decreasing secretion of the enzyme trypsin (Orten and Sardesai, 1971). If all these three secretions are blocked, the undigested protein will cause putrifaction in the bowel with attendant bowel troubles, gas, diarrhea, and reduced absorption of other nutrients. The doctor can test for this lack of enzymes. Supplemental hydrochloric acid and digestive enzymes as needed can be given, to eventually have proper protein digestion, until normal secretions are restored, janis (1971) reports that out of 92 alcoholics tested, 43 had below-normal levels of hydrochloric acid.

Proteins are needed to build our enzymes (the facilitators of our body processes), for our hormones (sexual included, whose under-functioning is notable in alcoholics), for our neurotransmitters that help send messages between the brain and the body. One of the most important brain messengers rendered deficient in the alcoholic is serotonin (Orten and Sardesai, 1971), the mood-elevating-type substance, whose precurser tryptophan is rendered deficient in the diet by alcohol. The tryptophan absorbed may not be converted to serotonin, because of alcohol-caused lack of vitamins and minerals on the conversion pathways. The reduced serotonin (the more alcohol ingested the greater the lack) causes depression and sleep disturbances. The different neurotransmitters have effect on different areas of the brain, so lack of serotonin triggers a computer section of the brain where external cues can bring out negative responses and depressed thinking. The following exemplifies what happens. A young psychiatrist-turned-nutritionist, Terry Tyler, said recently when he tested foods on himself for cerebral allergic response, that peanuts brought on such a severe depression that he forgot he had been well a few minutes before. In fact, he forgot that he was food-testing. He said in this depressed state his mind conjured up many causes to explain the depression, when the real cause was peanuts. In four hours he was free of peanut-induced depression. Later, I will refer to allergies, as they affect the mental functioning of the alcoholic.

The disturbance of pancreatic function blocks release of enzymes to digest fats and carbohydrates (starches and sugars), our other two main energy foods, so again we need oral enzymes to facilitate digestion until the body rebuilds this function.

The small intestinal lining, the mucosa, is damaged by the heavy load of alcohol, so that food cannot properly be absorbed through the gut into the liver (Roe, 1976). Other substances that damage intestinal mucosa are high intakes of sugars and salts. The liver is our manufacturing plant that converts fats, carbohydrates, and proteins into energy or into glycogen as storage for later use. The liver also produces and stores vitamins, makes enzymes and hormones, and detoxifies our body from our insults. Our next problem is the damaged liver. Most researchers agree that alcohol causes fatty liver. Alcohol takes the place of energy

foods, the carbohydrates and proteins, which are instead changed when ingested into fat-type molecules — triglycerides — and stored in the muscle and liver. This accounts for the flabby appearance of the alcoholic. Remember, not much fat is digested (for lack of fat-digesting enzymes), but is eliminated via the bowel, causing steatorrhea, a frothy light-colored stool that floats in the toilet.

As the liver becomes more damaged, other problems ensue.

The alcoholic uses more alcohol for energy, thus he fails to have available the building blocks for repair and proper mental functioning. One problem is that he can no longer make enough glucose (sugar) from fats and protein, and also there are insufficient stores of glucose in the liver, because it is damaged. We then come to the problem of hypoglycemia, which can be of two main types in the alcoholic. The first type, fasting hypoglycemia, is caused by the lack of stored glucose and lack of the ability to make glucose (gluconeogenesis) (Badawy, 1977). When the alcoholic is active, he uses up the glucose in his body. Then, with lack of stores to supply the glucose, the brain glucose level goes down and all the numerous confusional, emotional states of the very low-sugar hypoglycemic are exhibited. He is faint, sweats, trembles, is anxious and depressed. He badly needs a drink to build up his energy level and as he drinks, he yo-yos his sugar metabolism.

The other type of hypoglycemia (the most common and associated with malnourishment), the functional, comes from insult to the pancreas from alcohol, as well as other toxins: caffeine in coffee, large quantities of sugar and simple starches, nicotine from cigarettes, stimulants in chocolate and tea, and other drugs and foods (Pfeiffer, 1975). When these are overused, they cause over-reaction in the pancreas, so that the pancreas continues to secrete insulin (Moynihan and Benjafield, 1967). The shut-down mechanism in the brain does not work, so that from the first to the third hour after ingestion of food, the alcoholic suffers hypoglycemic symptoms. With depleted diets the alcoholic can lack chromium, a part of the glucose tolerance factor, whose loss causes prediabetic hypoglycemia. Dr. Louis Smith, a psychiatrist, formerly alcoholic, finds in the thousands of alcohol and drug abusers he has contacted, either as patients in drug programs he directs, or in AA groups he attends in or out of prisons, that most of them ate poorly, have been sugar freaks, and started smoking and using drugs early. Low blood sugar is often associated with violent behavior.

Hypoglycemia can be the cause of the mood swings, the addictive potential, the dry drunks (precipitated by poor diet or overcharged emotions), and of binge drinking. The inability of the alcoholic to return to drinking is caused by the deranged appestat in the hypothalamus triggered by alcohol's effect on the pancreas, according to Roger Williams. Hypoglycemia also can be the cause of depression (not enough energy [sugar] in the brain) and violence. Barbara Reed, who testified before the Senate Nutrition Committee in June, 1977, and Alex Schauss, both directors of probation and parole offices, found that violent alcoholics, when placed on a hypoglycemic regime, calmed down and had changes of personality, sometimes within two weeks.

Another problem with increasing liver dysfunction (the fatty liver) in the alcoholic is its inability to store vitamins (Tao and Fox, 1976). The B vitamins necessary for the production of energy in the body are malabsorbed and so become deficient. Some researchers claimed they did not find deficiencies among chronic alcoholics; however, frank nutritional deficiency diseases, presently found in alcoholics, have been ascertained by newer studies. Tao and Fox found that pantothenic acid was deficient in alcoholics, but was not utilized when administered orally, because of their poor metabolism, and that restoration of absorption took up to ten weeks. Previous researchers had felt that alcoholics did not suffer deficiencies because in their research, orally administered pantothenic acid was soon excreted, indicating to them a body overload. Similarly, with riboflavin (Rosenthai,

Adham, et al., 1973). It was found that testing the amount of enzyme where riboflavin is the co-factor, rather than plasma or urine for content, gave a truer picture of the deficiency in chronic alcoholics. The researchers noted that two to seven days of administration corrected the problem. There are deficiencies of the fat-soluble vitamins (A, D, and E) which are not absorbed because of lack of pancreatic lipase enzymes. The lack of vitamin A causes breakdown of skin, the linings of the gastrointestinal tract, the lungs (complicated by smoking) and the eyes, producing night blindness. I have listed these nutrients recently researched. There are others depleted, as folic acid, potassium, and niacin, where other types of testing rather than urine and blood would show deficiencies.

Vitamin C acts in the liver to promote metabolism of drugs, including alcohol (Wilson, 1977). Smoking depletes vitamin C, as most of you have heard, so also do pesticides in foods, muscle relaxants, hypnotics, anticonvulsants, and antihistamines. Vitamin C has been found important in fat, protein, and carbohydrate metabolism, in cellular control of endocrine interaction, and is in increased demand in pregnancy (Wilson, 1977) besides many other important functions.

Drs. Irwin Stone and Alfred Libby have been treating heroin addicts with massive doses of vitamin C (by injection and orally), plus predigested proteins (amino acids), and multiple vitamins and minerals. Unfortunately, their type of research could be termed anecdotal by their detractors. I attended their presentation of their film and was impressed that when the addicts experienced withdrawal symptoms, they were given additional vitamin C, and that they were detoxified by this method to a satisfying drug-free condition in four days. Perhaps the success of this method does one of two things I will later expand on: mass action on a defective enzyme or shock altering the body's adaptation mechanisms. Note also that with their therapy, predigested proteins were given with the possibility that these could increase the enzymes necessary for all the metabolic processes that will be mentioned later.

Dr. Hillman speaks of intravenous injections of vitamins when there is evident depletion. By injecting the nutrients, malnourished alcoholics could get faster utilization of the substances, such as pantothenic acid and other B vitamins to get a clearer mind, and thus would be enabled to remain in treatment and benefit more from treatment. Some of the alcoholics I saw were so confused that they couldn't remember their names.

Accepting that alcohol depletes all vitamins to some extent, that all nutrients are essential to body functions, that researchers who claimed few deficiencies were not testing correctly, then we would assume that a stress multiple vitamin should be used after the injected ones, or in place of them. While working with alcoholics, I read about facilities that used Roger Williams' formulated multi-vitamins and minerals successfully. I got Squibbs to donate Theragram M samples and a kind doctor to prescribe them — three a day for two weeks, and one daily after — to several of my test-case alcoholics. One of them, Tim, an ex-logging camp cook, who, when drunk, successfully passed himself off as an ex-art professor from Columbia University, was one of my first successes. Tim, when working, had tried a posh alcohol aversion program and had been through numerous programs numerous times. He became a neat periodic drinker. When he received his welfare check, he bought about 18 bottles of wine, which he arranged near his bed, spread the floor with newspaper, placed an oblong dishpan on this, and put about five bottles of malox on the dresser. He then proceeded to drink in bed; somewhere along the way he vomited; took Malox; and so on for about a week. With the vitamins, the first month he drank, the second he came to the door cheerfully, had bought shirts he needed, was playing cards at the firehouse nearby, visited friends in the hospital, and had gone down the street whistling, and said to himself, "Tim, you might be happy, but you aren't *that* happy!" The next month Tim had alcohol on his

breath. I asked, "What happened?" He said, "Mrs. Centala, look at that one bottle in the kitchen and note that it is two-thirds full. I can sit here in the chair and look at it, but don't have to drink it." He marveled, because he had that compulsion for years. The vitamins worked. This happened, also, to Pearl, the ex-caseworker alcoholic, and several others. Unfortunately, I did not know enough about nutrition to guide their eating habits, and, of course, got little support from other agencies. Tim has managed for four years, with only a slip or two. What is most important is that he found out he was not hopeless, and in his new self-respect has contacted his family. The vitamins healed the impaired function that brought on the binge drinking. His was a simple case.

More complicated cases are those where mental dysfunctions, which have a genetic basis, cause complications. The first I will discuss are the allergies. I have heard disparaging comments about allergies not causing alcoholism in the days when only a few allergy specialists were giving skin tests to determine causes for asthma, hay fever, etc. Now, much more is known about allergic responses in the brain tissue, and newer types of tests are performed (Ulett, Itil, and Perry, 1974). In the February 25, 1978 **Lancet** Finn and Cohen of the University of Liverpool, did research with six patients showing mental disturbances, along with physical symptoms not helped by any previous therapy. The researchers determined these were allergic symptoms by using a nasogastric tube (through the nose to the stomach) to test reactions to foods put into the tube where the patient did not know what was given. One patient's abdominal pains and mental symptoms were due to alcohol and tea. Another researcher in the United States, Dr. Randolph quoted by Mandell, whose results were rejected or ignored, also found that alcoholics could be allergic to the protein factor of substances from which alcohol is made, such as the grains or corn. They might be allergic to one type of beverage and not another. Ulett and associates did cytotoxic food testing on alcoholics and did not find strong allergic correlation, but Dr. Wm. Philpott notes that the alcoholics were given tranquilizers and vitamins that might have negated results. Hemmings, from the University College of South Wales, also reports in the **Lancet** from his laboratory studies that when protein has not been properly digested, these breakdown products pass through the gut wall and through the blood/brain barrier. There they can cause psychotic symptoms, a cerebral allergic response.

Dr. Coca (1956) has indicated another important effect of allergies on alcoholics, that is, that the allergic response to allergens, such as house dust, can cause the person to crave alcohol. Reducing allergen exposure stopped the craving. It appears that the inhalant allergen could cause a reaction in the part of the hypothalamus controlling appetite (addiction).

Philpott reports that hypoglycemia can be evoked by allergic response and that there is a close association between allergies and addictions. You crave substances to which you are allergic. As health builds up, the craving is reduced. Russell Smith and Hawkins use mega-doses of niacin for alcoholics to reduce their anxiety and depression. Interestingly enough, niacin releases histamine from the mast cells (the allergic cellular response product). Newbold, Philpott, and Mandell (1973) also found that the alcoholics tested allergic to practically everything. Their patients were more psychotic. This could be caused by the alcoholics' incomplete digestion of protein factor in those foods. About 20 percent of the schizophrenics display cerebral food allergies; perhaps about the same percentage of alcoholics might, also. When the allergic response is in the brain tissue, the psychosis or other reaction can be periodic, lasting from four to twenty days, or can be seasonal depending on the allergens to which one responds. Some allergic alcoholics would probably be the periodic, binge drinkers.

In accordance with Roger Williams' **Biochemical Individuality** concept, we have differing amount of enzymes, about 15,000. These are facilitators of body processes. The exact amount and functioning of any kind

differ in each of us, so that they require differing amounts of nutrients from which they are formed.

Enzymes are catalysts produced by living tissue (protein) to increase the rate of reaction in another tissue. They are like the match that sets the paper on fire. They are involved in converting foodstuffs to absorbable and usable forms for storage or reconverting to energy (fuel for body functioning). Genetically, we can inherit the increased probability of manufacturing defective enzymes — that is, enzymes that can't fulfill their function unless they are bombarded by the co-factors, a mineral or vitamin. In alcoholics several enzyme defects may cause nutritional problems. A deficient enzyme in the intestinal wall, which should digest gluten in wheat, rye and barley, is implicated in celiac disease, a flattening out of the intestinal villi, so nutrients are poorly absorbed, mainly fats, fat soluble vitamins, also carbohydrates, minerals, and proteins. Dohan (1969) found celiac disease common in the mentally ill, and it could cause part of the psychotic alcoholic group. Its presence in mild form could lead to a rapid addiction process; with poor absorption of energy foods, the celiac could use alcohol for his energy needs. Interestingly enough, Solomons and associates also found that celiacs were highly zinc deficient, due to malabsorption and protein loss. They are deficient in other minerals for the same reason to a lesser degree. Perhaps, the gluten-sensitive person becomes the cirrhotic who lacks zinc that we will discuss later. French cites Wisgird et al. on research showing chronic B6 deficient alcoholic monkeys developed cirrhosis, which follows with the B6 deficiency in celiacs. (Reinken et al., 1976). Because gluten and milk lactose reactions (lack of the enzyme lactase) seem to act together (Dohan, 1969), the alcoholic with this problem should go on a milk-free, cereal-free diet. This will cause reversal of symptoms in up to six months, including reversal of psychosis (Singh and Kay, 1976). Physical symptoms of celiac disease are diarrhea with offensive fatty light yellow stools that float in the toilet, consequent thinness, skin rash, and anemia.

Numerous articles on celiac disease and its association with immune (allergic) response have been published in recent medical journals, **Lancet:** April, June, and August, 1976. Gluten, the culprit causing celiac disease, is a protein factor in grains — the highest in wheat, then rye and barley. Since alcohol is made from these grains, minute quantities of protein (gluten) could get into the beverages. Hekkens quoted Osborne that the gluten factor gliadin that causes the problem is soluble in alcohol. He says that celiacs have genetically inherited an increased membrane permeability. Gluten and milk intolerance may be associated, because the lack of lactase to digest the milk sugar causes that sugar to putrefy in the bowel; thus we have two bowel irritants or toxins. Milk intolerance affects 30 percent of the Caucasian population and about 70 percent of Indians, Blacks and Orientals. The Indian could have the greater reaction because as they changed from their native diet to one of wheat bread, macaroni and spaghetti (all high in gluten), and also of milk, along with the added protein fraction in alcohol, they could get the celiac-type reaction quickly. Indians have higher incidences of cirrhosis, which could be caused by the malabsorption of celiac disease.

The Japanese eat rice (gluten-free), less of other cereal grains, and less milk, so may not have the problem. They also drink rice-based liquors. As they change to our diet, do more become alcoholics?

Other substances disturbing intestinal metabolism in an alcoholic with intestinal problems are excessive sugar and salt and lack of fiber, as well as previously-mentioned alcohol, all of which delay peristalsis, movement of fecal mass, which can allow growth of toxic bacteria in the gut with decreased absorption of nutrients.

Minerals are depleted when the bowels become toxic from undigested foods. Two minerals — zinc and magnesium — are additionally excreted in the urine. The Alcenas Alcoholism Clinic near Seattle, which tests for biochemical disorders and hypoglycemia, runs a hair analysis to determine cellular levels of minerals. This is an accepted medical test not yet widely used,

which is more effective to determine body cellular level of minerals than that of the blood and urine. Miller Laboratories in Chicago is doing research on hair analysis for alcoholics, which they hope to publish soon. I urge you to get a copy of it. Alcenas found generally low zinc, magnesium, manganese, and some individuals who had low iron, chromium, and calcium. A Mineral Laboratories representative, Hayward, California, reported that their tests showed low zinc, but often high magnesium, indicating a malabsorption problem. The restorative incorporation of these nutrients in the diet depends on the levels and the balances with other minerals.

Toxic metals found in hair analysis can cause depression and other emotional problems in the alcoholic. Smoking will bring up cadmium levels, living near a busy highway can raise lead levels, certain paints used to have lead and now have mercury, all of which can build up in the tissue on exposure and cause mental depression. Mega-doses of vitamin C and penicillamine can reduce these levels. High copper, an excitant causing psychotic symptoms, can be lowered by zinc (Pfeiffer, 1975).

Next, we will discuss defective enzymes, implicated in pediatrically recognized dependency diseases requiring massive B6, B3, etc., (Rosenthal, 1973) that may be associated with later mental illness. By the way, this is an Orthomolecular concept, slowly becoming accepted. Dr. Nathan Brody, active in New Hampshire state and county alcoholism programs, recognized biochemically treatable psychosis among the alcoholics coming to his hospital. He differentiated between the alcohol-induced psychosis and other mental illness by means of a simple true or false card-sorting test called the H.O.D. test, which tests for disturbances in mood, thought processes, and perception, parts of the schizophrenic symptomatology. Dr. Osmond, an originator of the H.O.D. test, says that results from the test can indicate suicidal or violent tendencies. It would be an important adjunct to a treatment program, and is easily administered.

The psychotic alcoholics have been the treatment failures. About 15 percent of alcoholics fall into psychotic biochemistries (about two to three percent of the world have it) and about 15 percent are neurotics (hypoglycemics) (Lesser, 1977). Dr. Brody found the psychotics fell into several distinct groupings. One of these is zinc-and-B6-dependent (about 30 percent) who exhibit nervous exhaustion, depression, fear of people, flat affect, insomnia, and lack of dreams. Physical complaints are abdominal pains, no appetite for breakfast, severe headache, rapid pulse, weight loss, sensitivity to cold, and white spots on the fingernails. The test for this deficiency is a kryptopyrole test of the urine. These persons could use alcohol to mask symptoms.

Other imbalances are seen in the high histamine psychotic, deficient in calcium, methionine, and zinc-manganese. These persons are suicidal, compulsive, and obsessive and may lose contact with reality. They may suffer from blank-mindedness. Dr. Brody tested these for the basophil count, which will be high. The low basophil count denotes the next group, the low histamine psychotic.

Low histamine elicits thought disorders, over-arousal, hallucinations, mania, and paranoia. Among this group are the cerebral-allergic and food-sensitive previously discussed. These persons are deficient in niacin, folic acid, vitamin B-12 pantothenic acid, and zinc-manganese. They usually have a high copper level, which acts as a brain stimulant and destroys histamine.

Now we return to specific genetic enzyme deficiencies. One recently discovered defective enzyme, fibroblast transketolase, is implicated in Wernicke-Korsakoff syndrome, which causes brain deterioration (Bias and Gibson, 1977) and peripheral neuropathy, that is in gradual paralysis of the hands and feet. The co-factor thiamine, B1, is needed in massive amounts to correct this defect. Dietary lack of thiamine by alcoholics who eat poor diets increases the deterioration. Mardones (1972) has implicated low thiamine as inducing high alcohol drinking in mice. Thiamine deficiency is implicated in lack of appetite, weight loss, weakness, depression, inflamed gastrointestinal tract, liver degeneration and skin edema. Of course, other nutrient lacks may

be involved. Alcoholics who appeared hopeless have recovered from this brain syndrome. I saw several in a dumpy-appearing nursing home. When provided a good diet, they recovered lucidity in several months. One man with more severe brain syndrome was talkative, but disoriented, had delusions of grandeur. He was amusing, because he was happy in his delusion. He probably would have benefited from thiamine administration. The others may not have needed nursing homes if the doctor had prescribed the nutritional adjunct thiamine and probably a multi-vitamin.

Another disease process in alcoholics, cirrhosis of the liver, is associated with zinc deficiency (Vallee), and may be linked with its apo-enzymes, alcohol dehydrogenase and glutamic dehydrogenase (Hillman, 1974). Zinc is deficient in alcoholics, but the greater deficiency is in cirrhotics, who excrete large quantities of zinc in their urine. Here, research on hair sample tests which reflect cellular stores better than does blood plasma (Strain, Steadman, et al., 1966) could clarify this problem. Strain and his associates reporting in 1966 in the **Journal of Laboratory and Clinical Medicine** on research with hair analysis for zinc levels in dwarfs found they were very low in zinc, and found some of the normal controls with low levels, ranging at the higher levels of the dwarfs. The dwarfs, when supplemented with zinc, grew up to five and one-half inches the first year of treatment, but what is most important, they had maturation of their external genitals and growth of pubic hair. The alcoholic patients of Vallee and associates had sparse body hair. Chest hair, also associated with male hormone levels, was low in Omenn and Motulsk/s 85 cirrhotic males, 85.8 percent of whom had no chest hair. Regressed sexual activity also is common in alcoholics. Zinc and free fatty acids, both deficient in alcoholics, are necessary for sex hormone production. Depleted diets and large quantities of alcohol have been implicated in alcoholics with cirrhosis, both of which would deplete zinc. Strain and associates also explain that zinc deficiency is prevalent in glaciated soils, plants and food animals, so it could also be in man, who uses these for foods. Oysters, nuts, and green leafy vegetables are the richest sources of zinc and are absent from diets of most alcoholics.

One important function for zinc is for growth and healing, as the co-factor for the enzyme system involved in synthesis of proteins and nucleic acid. Zinc, as with other nutrients, may not be adequately supplied to all parts of the body if one has suffered a severe deficiency, even if one part is supplied. Zinc supplements should be taken over a long period of time and another hair sample test given to determine if the cellular level has returned to normal.

Another mineral, magnesium, in short supply in alcoholics through urinary loss, has been implicated in seizures, withdrawal symptoms and delirium tremens (French, 1971). All human tissue contains a small amount of magnesium and it is essential for enzyme systems responsible for transfer of energy. In the alcoholic it can be associated with low calcium and potassium, so depletion of these could be associated, as could all the vitamins in withdrawal symptoms. The main problem is to have adequate amounts prescribed by the doctor, and a hair test made to see that the cells are receiving adequate amounts.

Alcohol has been used in the depressant phase by the manic-depressive as a tranquilizer. A number of them become alcoholic after long imbibing. Interestingly enough, Louis and Brenda Herzberg (1977) found significantly deficient magnesium in depressed patients as opposed to controls. They stated it is possible that lithium, now administered to manic-depressives, may interfere with the metabolism or binding of magnesium and that the cause of the illness may be a defect in magnesium metabolism. One of the functions of magnesium is the transmission of nerve impulses. Deficient magnesium causes the depression in the cycle of manic-depression.

Recent research on alcoholic hepatitis by Carrol Leevy indicates that acetaldehyde, the metabolite of alcohol, is toxic to the liver of 40 percent of the alcoholics who are deficient in vitamin B6. This deficiency, due to under-conversion of B6, is corrected by

administering pyridoxal 5 phosphate. Another substance protective to the liver he administers is glutathione.

Other drugs and stimulants common in our diets can perpetuate the addictive state. Mentioned previously were caffeine in coffee, tea, and colas, theophilline in tea, theobromine in chocolate and cola nuts, and in cola drinks. Use of tranquilizing drugs to reduce the effects of alcohol, such as depression and tremors, causes reduction in body nutriments, and eventually adds to the problem, as many of these are addictive. Jerry, one of my ex-alcoholics, continued to smoke and take phenobarbitol, which made his hypoglycemia worse. He worked for the welfare office four years before he died from cancer.

Sugar and white flour cause an insult to the pancreas and add to the hypoglycemic problem. Unfortunately, most institutions and most alcoholics eat highly-refined carbohydrate diets. We need to return to our forefathers' unrefined carbohydrate diets that contain the needed vitamins, minerals, and proteins in a balance for proper metabolism.

Stress causes depletion of nutrients. Under stress, the brain can use up to 50 percent of the body's glucose output. Reducing stress in the life of your alcoholics is the psycho-therapist/counselor's function. There are specific stresses to consider that affect the alcoholic nutritionally. The alcoholic with surgical dissections, such as gastrectomy, needs certain nutrients, as does the accidental brain-injured, the woman on the pill needing B6, the pregnant woman needing extra supplementation of all the nutrients previously mentioned. It is interesting in the alcohol fetal syndrome that many of the mothers had cirrhosis, where a zinc deficiency is implicated. It would be interesting to see if low zinc in hair analysis of the mother would correlate with a dwarfed child and if zinc might correct the growth failure, since zinc is an active growth factor.

Another stress is lack of exercise, and the stress of craving alcohol is very real. The means of alleviating this craving included in this paper are niacin for hypoglycemia, a hypoglycemic diet and reducing allergies.

Williams mentions glutamine. The Russians use pangamic acid (B15) to reduce alcoholic craving.

One type of stress to the alcoholic is his adaptational set to his lowered nutritional state that makes all his thinking negative. As with the depressed young psychiatrist, name any subject and he can find something wrong with the situation. The negative alcoholic becomes hard to help unless he has "hit bottom", had a shock out of this set. My approach to motivation to stop drinking was to encourage the alcoholic when drunk to tell what a rotter he was to get him to a high emotional pitch as learning takes place under emotion. I then told him he could change his life, be proud of himself, be a credit to the family, that he was no different from others who did it, etc. One needs to know the individual's concerns and interests to do this, also have his respect. I found the strong motivation to change lasted one or two months. The reason for this effect is that during intoxication, when acetaldehyde is present in the brain, it has a stronger hypnotic effect, about 35 times, that of alcohol (Truitt and Walsh, 1971). It is as though one used hypnosis to effect the change in attitude. I used this on about six persons. One woman was so drunk she was barely able to talk. I conned her into a reversal of attitude. She went to jail for her violent behavior, was released to a nursing home at my suggestion, woke up next morning, called to tell me she had a brilliant idea as to what to do to help her fellow man. It was an involved realistic plan. She did not know why the thought came to her. She said, "Maybe you think I am crazy." Another told me when drunk, "I am a no-good drunken Indian." I replied, "That’s a lie; all but for one word. You are Indian." I proceeded to tell her how great she was, real things. She became a beautiful, dedicated AA member in an Indian group. One old man, running out ot nursing homes who would accept him, stayed sober several months for the first time in years. I saw him flying down the street with his cane to a grocery store thai sold wine and watched as he came out witn an ice cream bar and razor blades.

Previously, I mentioned most alcoholics

eat poorly, as do too many of the rest of us. Treatment facilities should hire a nutritionist or someone on staff to teach proper nutrition, planning, and preparing meals.

What are you serving in your treatment facilities? Is it the type of food served in hospitals where patients die of malnutrition? The standard nursing home diet served in institutions is a depleting diet, mostly carbohydrates that do not provide the needed vitamins and minerals for rebuilding depleted bodies. Dr. Cheraskin says of most of our diets that they are depleted of nutrients by processing and improper over-cooking, so that we are on a 100-year experiment to see how long man can survive.

I hope my paper has given you cues from how sick the alcoholic is, to what you can do in improving his nutriture. Starting at his mouth, see that he ingests proper foods. He needs zinc and thiamine to restore his appetite. Arrange a hypoglycemic diet, such as Alcenas and other nutritionally-minded facilities have for their patients. Make sure he is absorbing his food and has no hindrances to its utilization. To insure this, find a doctor for your patient who is concerned about nutrition. Doctors, you owe it to all of us to treat alcoholics nutritionally. Do a hair analysis and a good blood work-up. Test for allergies. Be aware of new research, especially in bacterial complications in alcoholism. Doctors and counselors, give the H.O.D. test to determine if he has suicidal, depressed, or violent tendencies. Help your alcoholic toward nutritional relief of depressive thinking and alcoholic craving and continue with your psychological and sociological support systems, so that when he comes out, he is weller than his previous wells.

REFERENCES

BAOAWY. A.: A Review of the Effects of Alcohol on Carbohydrate Metabolism. British Journal on Alcohol 6 Alcoholism, Vol. 12,1977.

BLAS, J. and GIBSON, G.: Abnormality of a Thiemine-requiring Enzyme in Patients with Wernicke-Korsakoff Syndrome. The New England Journal of Medicine 297,25.1367-1370,1977.

BRODY, N.: Guidelines in Treating the Alcoholic Patient in the General Hospital: Orthomolecular Therapy. Orthomolecular Psychiatry 6, 4, 299-344,1977.

BURTON. B.: The Heinz Handbook of Nutrition, McGraw-Hill, 1976. COCA, A.F.: The Pulse Test. Lyle Stuart, Inc., 1956.

DOHAN, F.D.. GRASBERGER, J.D., LOWELL, F.M.. JOHNSON, H.T., ARBEGAST, A.W.: British Journal of Psychiatry 115,595,1969.

FINN, R. and COHEN, H.N.: Food Allergy: Fact or Fiction? The Lancet, pp. 426-428, Feb. 25,1978.

FUNK, E.B.: Mineral Metabolism in Alcoholism. In: The Biology of Alcoholism, Vol. 1: Biochemistry, Kissin, B. and Begleiter, H., editors. Plenum Press, 1971.

FRENCH, S.W.: Acute and Chronic Toxicity of Alcohol. The Biology of Alcoholism, Vol. 1: Biochemistry, Kissin, B. and Begleiter, H., editors. Plenum Press, 1971.

HEMMINGS. W.A.: Food Allergy. The Lancet, p.608, March 18,1978.

HEKKENS, J.M.: The Relation of Gliadin Structure and its Toxicity to Gluten-sensitive Patients. Minerva Pediatrica 29,2191-2196,1977.

HERZBERG, L and HERZBERG, B.: Mood Change and Magnesium. The Journal of Nervous and Mental Diseases 165,423-426,1977.

HILLMAN, W.: Alcoholism and Malnutrition. The Biology of Alcoholism, Vol. 3: Clinical Pathology, Kissin, B. and Begleiter, H., editors. Plenum Press, 1974.

HOFFER, A.: Mechanism of Action of Nicotinic Acid and Nicotinamide in the Treatment of Schizophrenia. Orthomolecular Psychiatry: Treatment of Schizophrenia, Hawkins, D. and Pauling, L, editors, W.H. Freeman &Co., 1973.

JANIS, L.B.: Achkxhydria in Alcoholics. Med. Annuals D.C. 40, 651, 1971.

KIEHM. T.G., ANDERSON, J.W., and WARD, K.: Beneficial Effects of a High Carbohydrate, High Fiber Diet on Hyperglycemic Diabetic Men. The American Journal of Clinical Nutrition 29,895-899, August, 1976.

KOJIC, T., DOJCINOVA, A., DOJCINOV, D., STOJANOVIC, 0., JAKULIC, S.. SUSAKOVIC, N., AND GLIGOROVIC, V.: Possible Genetic Predisposition for Alcohol Addiction. Alcohol Intoxication and Withdrawal-Ilia Biological Aspects of Ethanol, Milton M. Gross, ed., New York, Plenum Press, 1977.

LEEVY, CM. AND BAKER, H.: Vitamins and Alcoholism. American Journal of Clinical Nutrition 21,1325-1327,1978.

LEEVY, CM., TANRIBIUR, A.K., and SMITH, F.: Biochemistry of Gastrointestinal and Liver Disease in Alcoholism. The Biology of Alcoholism, Vol. 1: Biochemistry, Kissin, B. and Begleiter, H., editors, New York, Plenum Press, 1971.

LEEVY, CM.: Nutrients can Ease Hepatitis, Research Shows. U.S. Journal of Alcohol and Drug Dependence. March 6,1978.

LESSER, M.; Lecture Delivered at the Huxley Institute for Biosocial Research, New York, June 1977.

LIBBY, A.F., and STONE, I.: Hypoascorbemia-kwashkiorkor Approach To Drug Addiction Therapy: a Pilot Study. Journal of Orthomolecular Psychiatry 6,4,300-308,1977.

MANDELL, M.: Cerebral Reactions in Allergic Patients. A Physician's Handbook on Orthomolecular Medicine, Williams, R. and Kalita, D., editors, Pergamon Press, 1977.

MARDONES, J.: Experimentally Induced Changes in Alcohol Appetite. International Symposium, The Finnish Foundation for Alcohol Studies 20,15-27,1972.

MARKS, V.: Alcohol-induced Hypoglycemia. British Medical Journal 28 Jan.. 1978.

MARTIN, J.: The Fetal Alcohol Syndrome: Recent Findings. Alcohol Health and Research World, pp. 8-12, Spring, 1977.

MOYNIHAN, N.Y. and BENJAFIELD, M.B.: Alcohol and Blood Sugar. Practitioner 198,552-589,1967.
Miller Pharmacal Co., Inc.
NEWBOLD, H.L, PHILPOTT, W.H., and MANDELU M.: Psychiatric Syndromes Produced by Allergies: Ecological Mental Illness. Orthomolecular Psychiatry, 2,3,84-92,1973.

OMENN. G.S. and MOTULSKY, A.G.: A Biochemical and Genetic Approach to Alcoholism. Annals, New York Academy of Sciences 197, 126-218.1972.

ORTEN, J.M. and SAROESAI, V.M.: Protein, Nucleotide, and Porphyrin Metabolism. The Biology of Alcoholism, Vol. 1: Biochemistry, Kissin, B. and Begleiter, H., editors. New York, Plenum Press, 1971.

OSMOND, R: Understanding Understanding. Harper & Row, 1974.

PHILPOTT, W. H.: The Value of an Ecologic Examination as an Aspect of the Differencial Diagnosis of Chronic Physical and Chronic Emotional Reactions. Journal, International Academy of Metabology, Vol. Ill, No. 1.

PIHL, R.O. and PARKES, M.: Hair Element Content in Learning-disabled Children, Science 98,204-206.

REED, B.: Statement of, published in the proceedings of the Hearing before the Select Committee on Nutrition and Human Needs of the U.S. Senate, Vol. V: Diet Related to Killer Diseases, Nutrition and Mental Health, June 22,1977.

REINKEN, L, 3EGLAUER, H., and BERGER. H.: Vitamin B6 Nutriture of Children with Acute Celiac Disease, Celiac Disease in Remission and of Children with Normal Mucosa. American Journal of Clinical Nutrition 29,750-753,1976.

ROE, D..° Alcohol and Alcoholism. In: Drug-induced Nutritional Deficiencies, Ch. 9. Avi Publishing Co., 1976.

ROSENTHAL, W.S., ADHAM, N., LOPES, R.. and COOPERMAN, J.: Riboflavin Deficiency in Complicated Chronic Alcoholism. American Journal of Clinical Nutrition 26,868-860,1973.

SMITH, R.F.: A Five-year field Trial of Massive Nicotinic Acid Therapy of Alcoholics in Michigan. Orthomolecular Psychiatry 3, 4, 327-331, 1974.

SOLOMONS, N., ROSENBERG. I., and SANSTEAD, H.: Zinc Nutrition in Celiac Sprue. American Journal of Clinical Nutrition 29, 371-375, 1976.

STRAIN, W., STEADMAN, L, LANKAU, C, BERLINER, W., and PORIES. W.: Analysis of Zinc Levels in Hair for the Diagnosis of Zinc Deficiency in Man. J. Lab. & Clin. Med. 68.244.1966.

TAO, H. and FOX, H.: Measurement of Urinary Pantothenic Acid Excretion of Alcoholic Patients. J. Nutr. Sci. Vitaminol. 22,33-337,1976.

TRUITT, E. and WALSH, M.: The Role of Acetaldehyde in the Actions of Ethanol. The Biology of Alcoholism, Vol. 1: Biochemistry, Kissin, B. and Begleiter, H., editors, Plenum Press, 1971.

ULETT, G., ITIL, E., and PERRY, S.: Cytotoxic Food Testing in Alcoholics. Quart. J. Studies Alcoholism 35,930-942,1974.

VALLEE, 8., WASKER, W., BARTHOLOMAY, A. and HOCH, F.: Hepatic Dysfunction, New England Journal of Medicine 257, 1055-1065,19S7.

WILLIAMS, R.: Alcoholism: The Nutritional Approach. Univ. of Texas Press, Austin & London, 1959.

WILLIAMS, R.: Biochemical Individuality; The Basis for the GenetonttpMc Concept John Wiley & Sons, 1956, Univ. of Texas Press, 1973.

WILSON, C: Ascorbic Acid Metabolism and the Clinical Factors which Affect Tissue Saturation with Ascorbic Acid. Acta Vitamin. Enzymol. (Milano)31,35,1977.

New research to be published on hair analysis of alcoholics by:

P.O. Box 299
West Chicago, Illinois 60186