

Controlled Fasting Treatment of Schizophrenia in the U.S.S.R.

Allan Cott, M.D.

The following is a description of and observations on the treatment of schizophrenia and other mental and physical illnesses with controlled fasting. The treatment as it is used today incorporates the knowledge gained during 23 years of research and clinical experience by Dr. Uri Nickolayev and his staff. The treatment is conducted in a 77-bed unit in the Moscow Psychiatric Institute, a 3,000-bed psychiatric research center.

The fast consists of total abstinence from food for a period of 20-30 days. The large majority of patients request voluntary admission to the unit. A small percentage of the patient population is transferred in from other units when all other conventional treatments have failed to produce improvement. All patients must agree to adhere to the required routine of the treatment and may leave the treatment on request. If the patient

voluntarily breaks the fast, the treatment is ended.

Hunger diminishes greatly by the end of the second or third day and appetite is no longer experienced by the fifth day. Throughout the fasting period the patients receive as much water as they desire but they must take a minimum of one litre each day. They adhere to a regimen which includes outdoor walks and other exercise, breathing exercises, afternoon nap if desired, hydrotherapy procedures (baths and showers), daily cleansing enemas and general massage. A minimum of three hours of exercise is required but the patient may have two periods of exercise consisting of three hours each.

Patients lose 15-16% of their total body weight on a 28-day fast but their clinical appearance is not that of a person who is starving. Their skin color is good and muscle and skin tone is healthy. The patients

CONTROLLED FASTING TREATMENT OF SCHIZOPHRENIA

•do not express any longing or desire for food. Because their prior experiences with treatment have been that of little or no improvement with frequent relapses, many patients request that their fasting period be extended to insure the permanence of their improved state.

When patients are discharged from hospital, they are advised to take prophylactic fasts of three to five days each, but not to exceed a total of 10 days in one month. Fasting is terminated when the patient's appetite is restored, his tongue becomes clean and symptoms are alleviated.

When feeding is begun, the patient remains in hospital for the number of days equal to the length of the fast. Feeding is begun with a salt-free fruit, vegetable and milk diet. The amounts of food and its caloric value are gradually increased. *Meat, eggs and fish are excluded from the diet. Bread is not taken until the sixth or seventh day.*

The treatment has been found to be effective in more than 64% of cases of schizophrenia of many years' duration. Forty-seven percent of patients followed for a period of six years maintained their improvement. Those patients who resume eating a full diet and break the prescribed diet relapse. The maximum effects of the treatment are seen two or three months after the recovery period is started and the diet followed closely.

Paranoid types do very well during the fast, but their improvement diminishes after feeding begins. I observed many patients who suffered from a form of schizophrenia which is characterized by a fear of the escape of offending gases and odors from the body. The patient is convinced that everyone near him can hear the sounds and smell the odors. The syndrome generally includes delusions of cosmetic ugliness, small stature and a variety of similar complaints, which Professor Nickolayev has labeled "delusions of physical shortcomings."

The syndrome was first described by Charcot

and named dysmorphobia. The resulting effect on behavior is similar to that of patients suffering from other forms of paranoid illness: fear of leaving his room and mingling with other people; fear that people are repelled by him and then finding corroboration for this in his misperception of the ordinary changes in the facial expressions of people he passes in the street or on buses or trains. The results in treatment of these cases had in the past been extremely poor, but when treated with fasting the results are very good.

The other types of schizophrenias do well throughout the fasting and recovery period. The manic phase of the manic-depressive illness is brought under control within five to seven days on the fast. Psychotropic drugs and antidepressants are used when necessary in the beginning of the fast.

Use of the fast in the treatment of alcoholism has produced results which bear further investigation, for it has been the experience that patients do not become abstinent, but continue to drink. However, their drinking is described as "like that of children," drinking very small amounts. Professor Nickolayev has made the observation that after one has fasted the body will not accept unphysiologic substances like alcoholic beverages, drugs, cigarettes, etc. Ingestion of alcohol under these circumstances can be injurious and may even cause death if taken in the large amounts to which one was formerly accustomed.

According to the clinical and laboratory data (studies of secretory and vascular reflexes, of food-conditioned reflex leucocytosis, electroencephalography, etc.), the patients subjected to treatment pass through six consecutive stages; three of these belong to the fasting period and three to the recovery period.

Stage I (first two or three days of fasting) is characterized by an initial hunger excitation. Conditioned and unconditioned secretory and vascular reflexes are sharply

accentuated, the food-conditioned reflex leukocytosis is considerably increased and the EEG shows intensified electrical activity in all leads with a prevalence of fast rhythms. Thus, excitative processes are increased and the processes of active inhibition are relatively weakened.

Stage II (from the second or third to the seventh or twelfth day of fasting) is a stage of growing acidosis. It is characterized by a stage of growing excitability of all systems concerned with nutrition, by hypoglycemia and general psychomotor depression. The patient loses appetite, his tongue is covered with a white film, his breath acquires the odor of acetone. Conditioned reflexes cannot be elicited and unconditioned reflexes are greatly diminished. The EEG demonstrates a decrease in electrical activity, the food-conditioned reflex leukocytosis is sharply reduced. In this phase inhibition prevails over the excitative processes. This reduction in excitation extends to the cortex and produces a state of inhibition similar to "passive" sleep caused by the blocking of stimuli. Stage II ends abruptly in an "acidotic crisis."

After a period of depression the physical and mental condition of the patient suddenly improves, he feels stronger and is in a better mood. This marks the beginning of Stage III, when acidosis diminishes. During this stage the tongue gradually loses its white coating, the odor of acetone disappears, the patient's complexion improves and psychotic symptoms recede. Unconditioned secretory and vascular reflexes remain diminished and conditioned reflexes, including reflex leukocytosis, are absent. By the end of Stage III, however, when the tongue is completely cleared and appetite is restored, secretory and vascular reflexes increase.

Stage I of the recovery period (the first three to five days of feeding) is characterized by asthenia and irritability. Unconditioned secretory and vascular reflexes are irregular and there exists a pathological

lability of the inhibitive processes.

Stage II of the recovery period is associated with a significant increase of excitability, accentuation of secretory and vascular reflexes, the appearance of stable conditioned reflexes and a marked rise of food-conditioned reflex leukocytosis.

Stage III is a stage of normalization. It is characterized by a steady improvement of the patient's physical and mental condition. Nutrition excitability is restored to normal, both conditioned and unconditioned reflexes are lowered and food-conditioned reflex leukocytosis is reduced, yet these reflexes remain significantly above the control level. The EEG, as a rule, becomes normal only at a considerably later date.

The enumerated stages of the controlled fasting treatment are to be regarded as a continuous sequence of events, each stage being a prerequisite for the development of the next one. According to the degree in which the stages were manifested, as well as to the results of the fasting treatment, all patients are classified in three groups. Well-defined stages with a clear-cut "acidotic crisis" were associated with the best therapeutic effect. The unimproved cases revealed no appreciable changes either in their mental condition or in the dynamics of their nervous processes throughout the course of treatment. Professor Nickolayev states that the therapy seemingly has the following mode of action:

- (1) While leading to acute exhaustion, fasting serves as a powerful stimulus to subsequent recuperation.
- (2) Fasting ensures rest of the digestive tract and the structures of the CNS which receive stimuli from the chemo- and interoceptive analyser. This rest helps to normalize function.
- (3) Acidosis provoked by fasting and its compensation reflects a mobilization of detoxifying defense mechanisms

CONTROLLED FASTING TREATMENT OF SCHIZOPHRENIA

which probably *play an important role in the neutralization of toxins associated with the schizophrenic process*. As the acidosis decreases, the blood sugar level rises. The pH of the blood remains constant after acidosis decreases. Other parameters of the blood continue to remain constant. Insulin levels become normal. The biochemical dynamics during fasting are the same for mental illness and for normals.

Hematologic studies by Dr. Juli Shapiro, Department of Hematology and Genetics of the Moscow Psychiatric Institute, have shown that controlled fasting, far from causing any irreversible alterations in the blood picture, stimulates a striking intensification of regenerative and consequently of metabolic processes.

Shapiro's research into the biochemical dynamics of the fast reveals the vast changes stimulated in all the systems of the body. It has been proven that the fasting therapy mobilizes the proteins in the body, and this reaches a peak in seven days. When the recovery period begins, the protein level is found to be lower than at the beginning of the fast.

Schizophrenics have a higher *protein* level than non-schizophrenics and after the fast the protein level is normal. After three to six months the schizophrenics' protein level tends to rise to the prefast level, therefore they are put on recurrent short fasts to keep their protein levels at that of non-schizophrenics.

Transaminase increases during the fast, up to the same level as that produced by noise, vibration, temperature or heat.

Cholesterol is increased during the third to fifth day of the fast, decreases during the recovery period and stabilizes at a normal level after two to three months.

Bilirubin increases during the third to fifth day of the fast and returns to normal during the seventh to tenth day.

The fast has a dangerous period during which thrombosis may occur in predisposed patients and this period extends from the seventh to the tenth day. A similar danger period occurs during the seventh to the twelfth day of the recovery period. Great care must be taken in those patients who have a history of thrombosis and anticoagulants should be used. During these periods the *prothrombin* level is elevated above the prefast level. (At the Moscow Psychiatric Institute leeches in place of anticoagulants are frequently used.)

The *glucose* level falls from the third to twelfth day of the fast and returns to prefast levels by the twentieth to twenty-fifth day. During the recovery period the glucose level returns to normal. If a patient has hypoglycemia, his glucose tolerance curve is normal at the end of the recovery period.

Serotonin increases from the seventh to fifteenth day and by the end of the fast the level is lower than it was in the prefasting period. A high concentration of serotonin in the prefasting stage was found in schizophrenic patients, a low concentration was found in neurotics. Both groups reach an optimum level during the fast and after the fast each group slowly returns to prefasting levels.

Histamine and heparin are both formed in the tissues which surround the blood vessels and *during the fast large amounts of heparin are formed, which lowers the histamine level*.

Albumin levels in the blood are not greatly changed during the fast. When this was observed in groups of patients and related to the results achieved, three subgroups appeared. In one group the albumin level rose during the fast and in the second group the level dropped. Both of these groups achieved good results in the fast. In the third group the albumin level remained stable and this group achieved the least improvement. During the recovery period each group returned to its prefast level.

All *catecholamines* in the urine of ill people are found to be lower than in normals. During the fast catecholamines increase and levels rise to that of normals. During the recovery period catecholamines increase above prefast levels and are later maintained at normal levels.

During the recovery period feeding is begun slowly and with great care, as follows:

First day: 500 gm. of fruit juice (half juice, half water) taken very slowly. A teaspoonful is put into the mouth and held, and when it disappears another spoonful is taken. An ideal way to begin is to extract the juice from an orange by sucking the orange and discarding the pulp.

Second day: One litre of clear strained juice without water, taken slowly. The litre is consumed in seven feedings taken at two-hour intervals. The juice may be varied daily.

Third day: 100 gm. of scraped apple (with skin) added to 150 grams of yogurt or sour milk. The scraped apple is mixed with the yogurt and the 250-gm. mixture is divided into five portions and eaten every three hours. One orange is added to each of the five meals and is sucked as described above.

Fourth day: Same routine as on the third day, but 50 gm. of carrot are added to each of the five meals. One orange is added to each meal.

Fifth day. Breakfast and lunch are the same as on the fourth day, but 150 gm. of vegetable salad are added to the lunch feeding. Three more meals are taken between lunch and bedtime, and 150 gm. of any juice are added to each of these three meals. The vegetable salad should contain some of every vegetable available.

Sixth day: Cottage cheese is added in very small quantities (100 gm. for the entire day). Four

meals are eaten on this day and consist of the foods eaten on the previous days. Ten to fifteen grams of honey are given with one of the meals. One small piece of dry brown bread may be taken during the day. One or two pieces of nut may be started and gradually increased.

Seventh day: A porridge of grits is added to the above.

The menu is increased gradually and when the patient goes home he eats a diet of fruits, vegetables and milk, sour milk or yogurt, not to exceed one litre each day. Not all patients can remain vegetarian, but they must not take meat for at least six months, and then in very small portions. Meals should be taken four times daily and later reduced to three. One hundred grams of salad oiled with 10 to 15 gm. of sunflower oil may be taken. Butter may be started on the twelfth day, but should not exceed 30 gm. daily. Starting on the tenth day, 25 gm. of sour cream may be taken to vary the bland taste of the diet. After the twelfth day oranges and apples should be taken in large quantities. Honey may be used daily for the sweet taste. During the recovery period calcium chloride is useful, particularly if the patient has experienced vomiting.

Contraindications for the use of the fasting treatment are:

1. Heart—post-infarct condition, heart block, murmurs, history of thrombosis.
2. Tumors, sarcomas, etc.
3. Bleeding ulcer.
4. Blood dyscrasias.
5. Active pulmonary disease; if the condition is arrested, patient may be treated.

CONTROLLED FASTING TREATMENT OF SCHIZOPHRENIA

The indications for interrupting the fast are:

1. The development of an abnormal cardiac rhythm or permanently rapid pulse beat.
2. Gastric or intestinal spasm or symptoms of a surgical abdomen. If the spasm is functional, atropine may be used and the fast continued.
3. Cardiac asthma.
4. Persistence of appetite beyond the third to fifth day.
5. Unwillingness to exercise for a minimum period of three hours each day.

Upper respiratory infections or colds are not indications for stopping the fast, since the experience has been that intercurrent infections most frequently clear more quickly during the fast.

Vital signs are checked daily and electrocardiographic tracings are made every other day during the danger period. Prior to starting the patient on the fast a routine, thorough examination is done; this includes ECG, chest X-ray, complete blood and urine studies and in elderly patients the examination should include urological studies.

The following cases are reported in detail because the history, the mode of onset and the symptoms so closely parallel the cases we see.

The patient was a 22-year-old male who was on a full pension because his illness had so disabled him that he was unable to work. The family history was negative for mental illness. (If the family history is found to be negative for mental illness, then genetic transmission is ruled out as an etiological factor.) His early development was normal. His neurological organization was intact, his cognitive functions developed normally. His father was described as a jealous man with a temper, his mother as a soft, loving woman. The patient developed an interest in radio and began to collect transistors.

At age 14 he experienced his first breakdown, suffering from a "dissolution of his thoughts." He made a spontaneous recovery, continued in school and in the seventh grade joined a society for First Aid because he had developed an interest in medicine.

Later his interest focused on physiology and Pavlov's work. He became shy and embarrassed that people would laugh at this interest. His condition rapidly deteriorated. His memory began to fail, concentration was impaired and he was unable to study. He left school and worked as a telephone technician. He became paranoid and complained to his superior. He then left his job when, after a production meeting, it was decided that he was not being subjected to discrimination.

He took other jobs and left them for the same reasons. He felt depressed and apathetic and believed that his friends looked at him "peculiarly." Shortly afterward he was inducted into military service, where he experienced great fear and a crippling fatigue which made it impossible for him to do anything requiring physical effort. His apathy increased, he was unable to express his thoughts and his vision blurred when he tried to read.

In 1968 he became violent and was hospitalized. He refused to eat and found that he felt better during three days of fasting. He did not improve with chlorpromazine treatment, was discharged from the Army, and admitted to the Moscow Psychiatric Institute. He was diagnosed "schizophrenia, simple type with slow development" and started on the therapeutic fast. He was experiencing great fear, an inability to get out of bed in the mornings, and a feeling of extreme exhaustion. He complained that his thoughts streamed through his head without control. Concentration and comprehension were grossly impaired. Conversation was difficult and he had suicidal

thoughts and impulses; he wanted to kill himself by hanging. Improvement was felt after the third day on the fast, at which time he reported that his head felt clear, his mood was even, he experienced an improvement in thinking and he could communicate more easily.

I examined him with the aid of an interpreter during the latter part of his recovery period and he expressed himself as follows:

"I felt full of apathy, I was not concentrated and when reading I had to read a line over and over. When I spoke to people I couldn't remember what I said. I felt a complete weakness in my muscles. When I was punished by being isolated when I was in the Army I refused to eat for three days and I found that I felt better. I then decided to fast or eat very little. I read about the fasting treatment in Science and Life Magazine and applied to Professor Nickolayev for treatment after my discharge from the Army.

From the first to the fifth day I had headaches. On the fifth day my feelings of tension left and a feeling of indifference appeared. My feelings changed rapidly until the eighteenth day. On the nineteenth day I became restless and had to pace around the room. On the twentieth day I felt that something changed in . . . inside and that there was something in my head and it had to come out. After that I felt better.

On the twenty-first day I felt like I was covered with a sack. By the twenty-second day I began to feel better. I felt the sun, the air, the forest and I no longer felt alienated. The next day I felt like exploding and all my hostile feelings returned. The doctors felt that the return of these feelings was an indication that the fast should be stopped. The fast was terminated on

the twenty-seventh day but I had a very poor appetite. My appetite gradually improved and my spirits improved. I felt joy for the first time in a long while." Another patient was a 27-year-old student from Poznan, Poland. His early development was normal and he was robust and athletic. At age 15 he became excited and overactive and his attitude toward his parents changed abruptly. He left his parents' home and went to live with his grandparents. He graduated from high school and shortly after became involved in a fight during which he suffered a stab wound of the kidney. During the period of hospitalization which followed, he had an episode of euphoria which continued after he was discharged. He believed that he was an important figure in the Academy of Filmmakers and considered himself as highly talented in this art form.

He was examined by a psychiatrist who advised hospitalization but his mother rejected this advice. He entered Poznan University but found studying to be extremely difficult because of an inability to concentrate. Comprehension was very poor and he was extremely depressed. He felt withdrawn and isolated, slept all day and walked the streets of the city all night. His apathy increased, his general condition deteriorated and he was diagnosed asthenic and given a leave of absence from school.

He traveled to Moscow and was admitted the Psychiatric Institute. On admission he was described as being well oriented, exhibiting circumstantial speech and feelings of unreality. He complained of weakness, poverty of ideation, poor memory and quick exhaustion, most marked after reading. His facial expression was rigid, speech was monotonous and he found great

CONTROLLED FASTING TREATMENT OF SCHIZOPHRENIA

difficulty in communicating. He felt hopeless and saw no future for himself. He was diagnosed "schizophrenia with slow onset." He was treated with insulin coma (15u-156u) and his condition remained essentially unchanged.

He was seen on consultation by Professor Nickolayev and transferred to the Therapeutic Fasting Unit. On admission there he was oriented, spoke in a low, well modulated voice and appeared depressed. His primary complaints were apathy, fatigue, blank mind, recurring periods of intense excitement* and great ambivalence.

His sleep pattern was disturbed and capability for any work was drastically diminished. His fasting period lasted for 28 days. The acidotic crisis began on the seventh day and after that his spirits rose. Weakness appeared on the seventh and eighth days and he found it difficult to continue

""Excitement" is used by the patients and doctors to describe the symptom or syndrome to which we append the term or diagnosis of "anxiety." During my period of observation at the Moscow Psychiatric Institute I did not hear the description of anxiety applied to any patient nor did any patients use this term in the description of their symptoms.

Excitement is, in my opinion, a far better description of the feelings which a schizophrenic patient experiences, for excitement is by definition a feeling of agitation, mental excitement, perturbation. To be excited is the experience of being overwrought, ready to bursty to flare up, be overwhelmed, to fly into a passion, to be alarmed or enraged.

When we use "anxiety" to describe feeling, I believe that we are not describing that which the patient is feeling, but are rather applying a concept which has not changed since Freud's formulation. He distinguished between real anxiety and morbid anxiety and described the latter as transformed libido, and in one place in his writing added that it was better described as a discharge of libido into anxiety.

This has no relevance in the description of the symptoms experienced in schizophrenia. Anxiety is a term used by schizophrenic patients who have had exposure to psychoanalytic treatment or literature. The 12-year-old daughter of a psychiatrist once complained bitterly to me

that she can never have a simple case of diarrhea, she can only have "an attack of anxiety."

the fast. He wanted to stay in bed all day. After the eighth day his sugar level increased, the pH of his blood remained constant and clinically he was markedly improved.

On the twenty-sixth day appetite appeared and on the twenty-eighth day he complained of generalized weakness. His tongue cleared, the fast was ended and the recovery period was started. On the fifth day of recovery he stated that he felt well, his head felt clear, thinking was clear and concentration was markedly improved. On the twenty-third day of recovery he felt "greatly helped" but expressed the concern that he might relapse in the future and asked for a short prophylactic fast. Professor Nickolayev refused this, explaining that if he exercised daily, continued his hydrotherapy and diet, led a good life without drinking or smoking he would not relapse. He was advised that he may do three to five day prophylactic fasts, but not more than 10 days per month.

In an interview on the twenty-third day of the recovery period the patient described his experiences as follows:

"Weakness appeared on the second day, increased through the sixth or seventh day and continued to the tenth day (he distinguished between weakness and fatigue when I raised the question and described the crippling fatigue of schizophrenia which he suffered prior to the fasting treatment). For the next two days I felt very well and after that everything improved rapidly. When I began to drink juice during the recovery period the world changed, colors became brighter, thinking became easier. I no longer feel the emptiness and my perception of the world has changed completely. I feel that I have a bright future.



Allan Cott, M.D.
Psychiatrist (private practice) 303
Lexington Avenue New York, New
York 10016

I do not want to return to school now, I want to live a normal, healthy life and I will decide later whether I will return to school."

The patient was pleased to relate that he had convinced Professor Nickolayev to give him five more days of fasting. This was resumed after a laxative (magnesium citrate) and daily enemas for several days.

On the tenth to the fourteenth day of the recovery period the patient had an exacerbation of some of his symptoms. The experience has been that this occurs in the majority of patients and is related to the absorption of proteins in large quantities.

Following this brief period, stabilization occurs and improvement continues.

When a patient in the U.S.S.R. is discharged from any psychiatric hospital, his discharge summary is sent to his district dispensary and he is followed for a 10-year period. The patient is visited at home and at his place of employment. These visits are made by physicians. If the patient remains well for 10 years the visits are discontinued and the patient is discharged.

My associates and I will in the future use the fasting therapy in cases in which we have been unsuccessful with the Orthomolecular treatment. We will add the mega vitamins to the fruit and vegetable diet described above after the patients have been fasted for 20-30 days.

In a recent communication from Professor Nickolayev he advised me that he will be using the mega vitamins during the recovery period and will continue after the patient has been established on the fruit and vegetable diet. He feels that with the addition of the mega vitamins to his fasting therapy his unit can improve the results in those patients who are not helped fully by the fast.

Editorial Comment Continued from Inside Front Cover

Schizophrenia Association will sponsor its First Annual Award Luncheon, honoring Dr. Linus Pauling for his pioneering work in the development of orthomolecular psychiatry. On the same day there will be a scientific meeting concerned with "Modern Chemotherapy of Brain Disorders," with papers to be presented by members of our Scientific Advisory Committee and other scientists.

During the Fall of this year we are planning a major public conference on the crisis in mental health care. This conference will

bring together leaders of science, medicine, education, government, business, labor and the communications media to develop a program of action that will significantly affect the quality and availability of mental health care.

The participation and support of readers of this Journal are crucial to the success of the Association's expanded program. We hope that you will join us in our journey into a future of great promise for millions of those afflicted by schizophrenia.

J. Ross MACLEAN, M.D.