1954

A general survey of insulin treated patients who have received electric shock prior to insulin shock therapy and also corrective and occupational as ancillary therapies.

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Boston University

https://hdl.handle.net/2144/8813

Boston University
A GENERAL SURVEY OF INSULIN TREATED PATIENTS WHO HAVE RECEIVED ELECTRIC SHOCK PRIOR TO INSULIN SHOCK THERAPY AND ALSO CORRECTIVE AND OCCUPATIONAL AS ANCILLARY THERAPIES

by

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A service paper submitted to the School of Education, Boston University, in partial fulfillment of the requirements for the Degree of Master of Education.

BOSTON, MASSACHUSETTS
JULY 1954
First Reader: Dr. Leslie Irwin
Second Reader: Dr. Clem Thompson
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ACKNOWLEDGMENT

The writer wishes to acknowledge the kind cooperation and assistance of the following Doctors in preparation of this study:

Dr. Israel Zelteman, Chief Medical Officer, Togus V.A. Hospital, Togus, Maine

Dr. Leon Burnham, Chief of Physical Medicine, Rehabilitation Togus V.A. Hospital, Togus, Maine

Dr. Robert Dunn, Chief Psychiatric Division, Togus V.A. Hospital, Togus, Maine.

Dr. W. O. Lippmann, Dr. in charge of Insulin Program, Togus V.A. Hospital, Togus, Maine.

The writer wishes also to express his appreciation to Doctors Cummings, Staciva and English of the Psychiatric Division for their many valuable suggestions.
PREFACE

The Insulin Shock treatments in psychiatry have now been used all over the world between the past ten to fifteen years. The introduction of these ancillary (Occupational Therapy-Corrective Therapy) treatments and some other somatic treatments has made a great impression on psychiatric theory and practice, and as a consequence a large proportion of the psychiatric literature has been devoted to the problems arising from these methods of therapy. The writer believes that it is timely to offer a concise account of this much disputed subject of shock and other new therapeutic procedure, discussing the clinical as well as the therapeutic issues involved and relating the experience and idea of the various psychiatric schools with their different concepts, in an effort to arrive at a fair and unbiased appraisal of the widened therapeutic field.

This paper is intended to serve, not as an encyclopedia, but as an outline of the various practical and scientific aspects of both the ancillary and shock treatment, at this particular Veterans Hospital at Togus, Maine. For this reason not all the literature
is available, has been quoted nor have all the technical
details or theoretical aspects been reported. However,
an effort was made to mention the more important problems
and to give specific references which would permit the
reader to seek further details on any point of special
interest to him. The writer has striven to present the
material objectively, avoiding over-enthusiasm and over-
skepticism.

Corrective Therapy and Occupational Therapy
at this hospital, at the present time, are considered
to be indispensable tools of the total psychiatric in-
sulin program. They will stay with us until better
methods are evolved. All the available evidence indicates
that they are effective weapons in the treatment of
certain type of mental diseases.
CHAPTER I
INTRODUCTION

A. PREVIOUS WORK IN THE FIELD

In reviewing the literature, the writer was unable to find a study which determines if Electric Shock has any effect on patients receiving this treatment prior to Insulin Shock Therapy and also combining Corrective or Occupational Therapy as ancillary treatments in this particular type program. However, several studies have been conducted with comparisons between Electric Shock and Insulin, Chronic and Acute types of Schizophrenic patients and also the effect of Insulin on the Male as compared to the Female Schizophrenic patient.

Listed below are some of the better known studies that have been made in the past fifteen years:

1. Tomlinson, P.J., Insulin and Electric Therapy in General Paresis. Psychiatric Quarterly 16, 413; 1943.


4. Rennie, T.A.C. Use of Insulin as Sedation Therapy Control of Basic Anxiety in the Psychoses.

B. THE NEED FOR THIS INVESTIGATION

The schizophrenic disorganization is typically progressive, although potentially reversible. Understanding and kindly treatment will usually help the schizophrenic and in a recent acute stage may be sufficient to enable him to re-establish some tolerance for his frustration. There is a crucial need, however, to rebuild the patient's capacity for success, and for this purpose relatively simple and concrete tasks which are not too far removed from past experience of the individual are invaluable. Here is the great contribution of Corrective and Occupational Therapy.

"The Schizophrenic patient has in general, a conspicuous inaptitude in developing good social relations. Verbal activities encourage full play for his morbid ideas and distorted thinking. Concrete manual tasks do not in general encourage such morbid ideas and distorted thinking. They do encourage, at a simple and a usually manageable level, the resumption of simple planning and of checking the result of plan and of effort against experience. This encourages a return to reality testing"
and the use of the mind for realistic appraisal of realities rather than escape from reality.

As the schizophrenic patient regains some capacity and confidence in dealing with his physical environment, he typically tends to become more ready to try to cope with his social environment. Here the Corrective and Occupational activities are very valuable in that they bring the patient together in an emotional climate favorable for the development of good interpersonal relationship. For example, team play encourages group cooperation in goal-directed activities, and offers a bridge for the re-socialization of the reorganizing personality.

The Schizophrenic who in his period of chronic or acute disorganization needs kind and understanding attitudes, and gentle encouragement in the use of his capacities in the pursuit of simple goals he can set for himself, is fortunate and the outlook for his recovery is reasonably good. Special methods of treatment, such as insulin coma or electric shock are commonly indicated, but re-established or realistically oriented goal directed activity is a central objective and the special methods

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of therapy are important largely as they contribute to this.

The therapeutic use of insulin in psychopathologic disorders has become well-established. The originally rigid and elaborate procedure has been adjusted to the varying needs of the individual patient. There is considerable evidence that an insulin reaction above the coma level is the desired effect and that in moderate cases of anxiety, even ambulatory treatment by small amounts of insulin can produce the same results. Satisfactory results have been obtained in catatonic and other schizophrenic excitement, manic reaction and intense anxiety in psychoneuroses. Manic excitement with varying degrees of anxiety react well but less satisfactory results are obtained in depressions.

There is no sufficient explanation for these therapeutic results. It seems the necessary benefit is exerted on anxiety, but the physiologic links are unclear. Coma presents a special type of psychobiologic experience and its psychophysiologic and therapeutic implications should be studied separately from the effect of insulin. Studies in these separate areas have not been undertaken at the present time.
C. STATEMENT OF PROBLEM

This survey includes all schizophrenic patients who started, completed, or terminated Insulin Coma Therapy at the Togus Veterans Hospital between March 1952 to this present writing. Dr. W. C. Lippmann attended the course at the Framingham Veterans Hospital, at Framingham, Massachusetts, given by Dr. Wyatt, is in charge of the program at this installation. He is assisted by Drs. Cummings, English and Staciva when he is not on duty to administer this particular treatment.

Dr. Lippmann has treated 49 cases up to this present writing. This therapy is a method of treatment which has been used continuously since that time (March 1952).

When these treatments were first started, there were facilities for only six patients. Never was a more adequate physical care provided for patients at this Neuropsychiatric Hospital than in the instance of these insulin treated patients. Each patient's bed was equipped with an emergency tray containing stimulants, glucose, gags and all other items which might be necessary for the care of the individual. Two nurses were assigned to this small ward; a charge nurse and one
physician were in constant attendance during the treatment period. Insulin injections were administered at 7 A.M. and the room was darkened; quiet was maintained on the ward throughout the morning. When the patients awoke from their respective comas they were showered and fed. In the afternoon they were taken to the Corrective Therapy Clinic at 1 P.M. for a period of one hour. Upon completion of this treatment, they are then assigned to the Occupational Therapy Clinic for the same duration of time. This program is carried on a five day week level.

Both the Occupational and Corrective Therapists submit monthly progress notes which are submitted to the Psychiatrist (Dr. Lippmann) who is in charge of this program.

It is believed that if these Schizophrenic patients are receiving special care that it would be significant in their eventual recovery, because of this, they had as much personal care and attention as possible under these ideal conditions.

At no time during this period between March 1952 to the present writing has this group enlarged. One of the major factor for keeping this group at this number is of a personal nature.

The 49 cases treated at this Veterans Administration Hospital with Insulin Therapy were diagnosed
in the Schizophrenic category. However, they were not of the selective types which were recommended by many of the previous studies. In this group, the following type patients were selected; Schizophrenic, Paranoid, Manic Depressive, Catatonic, Hebephrenic and those in the affective and ineffective groups. Twenty-one of the forty-nine who were treated from this grouping were classified as chronic, manic depressive psychosis, hebephrenic and involutional psychosis patients have far less a chance of recovery than those patients on the acute service or who have been hospitalized for a short term.

The findings of this survey were made up from the thirty patients out of the forty-nine who had completed their full course of Insulin treatment. The other nineteen patients had to discontinue treatment because of the following factors; unable to have coma, developed a cardiac condition, were unmanageable or were a feeding problem.

The prognosis up to this writing in so far as the determination, whether a patient was much improved, improved, slightly improved or unimproved, was made by each individual case psychiatrist. His opinion was

Lothar B. Kalinowsky, M.D.-P.H. Hock, M.D.
Nolan D.C. Lewis, M.D. - Grune & Stratton,
p. 11, 1952
formulated from two to six weeks after his patients completed Insulin treatment, by psychotherapeutic meet-
ings, observation of each patient in regards to his en-
vironment with hospital personal, other patients and psychological tests.

With this general purpose in mind, the fol-
lowing questions were formulated:

1. Is there any difference in the condition at the end of treat-
ment between the cases first receiving Electric Shock Therapy and then given Insulin and those cases who received Insulin Shock Therapy, exclusively, and is there any difference in the condi-
tion between these two cases six weeks after treatment?

2. What difference exists between chronic and acute patients re-
ceiving Electric Shock prior to Insulin Shock treatment?
CHAPTER II

METHOD

A. PROCEDURE

"Every patient in reasonably good health is suitable for treatment. The most important contraindications are active pulmonary tuberculosis, acute or chronic kidney and liver disease, diseases of the pancreas, thyroid or adrenal glands. Diabetes is also considered a contra-indication. "No patient should be treated during a febrile disease of any kind and no patient is to be pregnant.

Before this treatment begins, patient should have detailed psychiatric examination. This should include reaction during treatment and his ultimate grade of recovery can be ascertained reliably only if mental symptoms prior to treatment are accurately described and personality and social and sexual adjustments are


investigated. The psychodynamics of the patient's psychosis should also be described in detail if possible, for comparison with his altered mental attitude during and after treatment. The recovery of the patient should be judged on this basis and not only by superficial impression alone.

The selection of patients for Insulin treatment from a psychiatric point of view is relatively simple. Insulin shock treatment was introduced for the cure of schizophrenia. In manic depressive psychosis and involutional psychosis, insulin is far less effective. Not enough work has been done with psychoneurosis and psychoneuroses and psychopathic personalities to judge the efficiency of the treatment. In organic psychosis insulin is little used. It is considered too radical and there is an unwillingness to expose an organically ill, nervous system to its effects. Principally, patients suffering from any form of schizophrenia will be selected for treatment, although various subgroups respond differently. Acute cases of schizophrenia should have preference, because it is an established fact that chronically ill patients in this category respond less. However, it must be made clear that at this hospital (Togus Veterans Hospital) the patients were not of the highest selected type. Forty-nine cases were treated
and twenty-two of this total number were chronic cases.

Attempts for working out prognostic criteria and tests have been made. Some of these, such as the Rorschach test and intravenous sodium amytal are interesting, but far from infallable and should be accepted as indicators of good or bad therapeutic result, but not as absolute criteria for the non application of treatment.

B. VARIATIONS IN TECHNICAL PROCEDURE

The most important distinction is between that in which hypoglycemic coma is avoided and that in which it is produced purposely and maintained for a definite period of time. In either case, the preparatory examination, the equipment of the treatment room, and the precautionary measures are the same.

The preparatory examination should include a complete physical examination, routine urine examination, complete blood count, blood Wasserman or comparable tests for syphilis, posterior-anterior x-ray examination of the thorax and electrocardiogram.

The psychologic preparation of the patient should vary individually and be directed mainly toward obtaining the patient's cooperation by explaining the purpose of the treatment, and alleviating anxiety.
On the day of the treatment, breakfast is withheld. Artificial dentures are removed.

**Equipment of the treatment room:** It is desirable that the room be darkened and that loud noises be eliminated. Small dormitories of three to five patients are suitable, with screens separating individual patients. Larger dormitories are usually undesirable if one wishes to be in a position to offer adequate nursing care at any given moment. A nurse should record regularly every 15 minutes pulse, respirations, and general observation (twitchings, convulsions, disorientation, emotional outbursts, onset and depth of coma). A small table should contain supplies for the treatment of emergencies, a gavage tray with 50% solution of glucose and 30cc syringe and needles with supplies of 50% glucose for intravenous administration.

**Administration of coma treatment:** At 7 a.m. the patient who is resting in bed is given the appropriate dose of insulin subcutaneously. Regular insulin (as distinguished from crystalline or protamine zinc insulin). Starting with a dose of 40 units, and increasing ordinarily by 20 units per day, the dose for each day is determined by the physician from the preceding day's reaction. Apparent increasing sensitivity to insulin influences the dosage. The goal is to obtain a prolonged
hypoglycemic reaction of drowsiness or sleep which is terminated after 1 to 2 hours. Indications for earlier termination are the occurrence of convulsions, marked excitement or coma. Coma from which the patient cannot be aroused is usually preceded by marked clouded consciousness and evidence of sympathetic nervous system, over-activity (pupillary dilatation, increased pulse rate, and perspiration). Changes in the patient's behavior will determine the daily dosage as seen in his total reaction and in the signs of impending coma. The guide to the amount of insulin necessary should be the changing psychopathologic picture. A full course of treatments has been set arbitrarily at 50. This number should be revised considerably if psychopathologic change indicate shortening or lengthening. In acute panics, 20 treatments may be sufficient; in some excitement 50 treatments may finally give the desired results. At times, a lowering of the dosage by 10 or 20 units may be indicated. At other times, an increase of 5 units is sufficient to reach the right dosage.

Termination is routinely affected by the oral administration of 275 cc of glucose, 50% orange juice flavored. In the event that the patient cannot drink this mixture, 275 cc. of 50% glucose is administered by
gavage or preferably 30 to 60 cc. of 50% glucose is given by intravenous injection. Patients should remain in bed until return of full consciousness, then a shower is given and the noon meal taken. Care should be taken that the meals later in the day are eaten and that glucose solution is available for patients who may suffer a delayed hypoglycemic reaction in the afternoon or evening.

**Administration of Insulin Therapy Producing Coma:** Whereas previously the aim was to produce coma with the smallest possible dosage, in recent years efforts have been directed toward prolonging the coma, regarding convulsions desirable. The advantage of this type of insulin treatment over the previously described is not clear from the literature on the subject. The danger of death is a definite concern and seems to be related to the occurrence of prolonged coma, respiratory and circulatory complications, and also intracranial hemorrhage. In order to obtain coma, one may start with 40 units, increasing by 20 units per day until brief period of coma occurs. If patient does not go into coma with gradual increases up to 500 units, then his dosage is juggled to 40 units for the first day and double every day there after until patient reaches coma level. If, however, no coma occurs with high dosage of insulin, one
may increase by 30 to 40 units a day. When a definite coma reaction has been obtained, one should determine the lowest amount of insulin by which the coma can be maintained. The length of the coma is increased gradually from a minimum of 15 minutes to the maximum duration which can be reached without danger (one hour). The signs which necessitate termination are a fall in blood pressure below 100mm., poor peripheral circulation and a drop in pulse rate to below 55. A dangerous stage of coma, but one recommended as therapeutically desirable for a maximum of 15 to 20 minutes, is deep coma characterized by contracted pupils which do not respond to light, absent corneal reflexes, pulse rate between 50 and 60, respiratory irregularities, and muscular hypotonia. The daily average coma is about 30 minutes. Coma should be interrupted by the administration of glucose given by nasal tube. In case of danger, glucose must be given intravenously. Treatment may be successful after two weeks or it may take a much longer period of time. If satisfactory results are not obtained by the end of three months, treatment should be terminated.
CHAPTER III

RESULTS

A. THE OBJECTIVES

It should be understood that any formulation
of objectives of the combined therapy for the mentally
ill must be most general and tentative and subject to a
wide range of variation. Many seemingly remote and
apparently unrelated aims must be included as well as to
enlist the initial participation of particularly re-
sistive cases and to stabilize and sustain the activity
of others during unfavorable moods. The Therapists and
nurses must as a primary consideration, individualize
their therapeutic approaches and in so doing will find
that a wide category of objectives may serve in provid-
ing most efficient therapeutic tools.

More specific therapeutic aims for the follow-
ing broad types; the alert, active, mildly regressed
and regressed provide practicable working objectives if
carefully individualized to meet each distinctive problem
of motivation, interest and capacity for attention and
skills. The therapist and nurse will find many who can-
ot approach these objectivities. Those essentially
psychogenic may never be fully understood or evaluated by the patient. The adaptation to higher levels of a social sensory, mental or physical nature is, in the case of the psychotic patient, essentially a most complex and in many cases a very slow process and may not be completely achieved. As desirable stimulating therapeutic goals however, objectives of a general nature will be found most valuable in their provision for the necessary motivation and content for most effective re-educational approaches.

It should be understood further, that there can not be rigidly accurate differentiation between the various type such as active and the regressed. Such terms are used since they provide convenient classification.

B. ACTIVITIES

Corrective Therapy, an ancillary service of the Department of Medicine and Surgery, was established at the Togus Veterans Administration Hospital approximately eight years ago under the supervision of Leon R. Burnham, M.D., Chief of Physical Medicine and Rehabilitation Service.
A Corrective Therapy program is most valuable in all types of hospitals, but particularly so in psychiatric hospitals, where patients are up and about but lead a more or less restricted life. Pent up energy is directed into constructive rather than destructive channels, excessive energy is utilized to the patient's advantage and through channeling, the patient is expected to be better adjusted. It is believed that after the corrective activities, the patient will be more relaxed, sleep better, eat well and make an easier adjustment to others in his group. The program must, of course, be keyed to the patient's needs in making recommendations, particularly for participation in adapted sports activities.

While the patients are engaged in these activities, the therapist and the nurse will usually watch for signs of fatigue resulting from over-exertion while patients are engaged in the Corrective Therapy program. Signs of fatigue and excessive perspiration, if recognized immediately, will prevent the Insulin patient from going into convulsive reaction. The Therapists also recognize a patient being depressed, because he is easily discouraged and his condition aggravated by a moderate competitive activity. The activities in this program consist of medically prescribed exercise and activities
to relieve aggressions, hostilities, and to awaken and stimulate dormant interests, helps build the confidence and assurance of the patient through a personalized and understanding approach. In the Corrective Therapy program an outdoor area of thirty-five modified activities is set up to accomplish the above aims. For the hyperactive, seclusive patient, there is a stationary bicycling and rowing tetherball exercise, light and heavy bag punching, chinning, rope skipping, pulley weights, sit up, etc., for the non-seclusive patient, there are vigorous socializing activities. Instruction in basic skills is given in boxing, wrestling, bowling, basketball and badminton. For older, more regressive or physically handicapped patients, there are quieter and more relaxing activities involving basic skills in ping pong, horseshoes, shuffle board, croquet, golf and target toss using quoits, bean bags, triangular and cylindrical frames, etc. During the winter months the same activities are carried on in the corrective therapy gymnasium. In summarizing, Corrective Therapy is the treatment modality which utilizes physical exercise and activity to promote and aid in the recovery of the patient through a direct, inter-personal relationship. In addition to embracing sports and hobbies, Corrective Therapy possesses inter-
lectual and aesthetic possibilities. The Corrective Therapist is able to accomplish this objective by helping to develop in the patient the proper attitude toward himself, other patients and his environment for better social adjustment in society upon discharge from the hospital. To enable the patients to gain the most from Corrective Therapy, the therapist must stimulate activity and trial, without which little learning occurs. This can only be accomplished when the therapist has a progression of goals in mind. It is not meant by this statement, that the therapist should have all the goals, or even a single specific goal for each man, but that the therapist should put continual emphasis upon the principle of growth and development change, rather than upon the constant reaplication of the same patterns of evaluation over a prolonged period of time. Corrective Therapy, as treatment modality is sound, because it emphasises just this learning through activity and trial, which is believed the most effective sort of learning.

Occupational Therapy is also another ancillary service of the Department of Medicine and Surgery, at the Togus Veterans Administration Hospital, under the supervision of Leon R. Burnham, M.D. Chief of Physical Medicine and Rehabilitation Service.
By definition, occupational therapy is a form of treatment characterized by the assignment of patients to purposeful physical and mental tasks on the prescription of a physician for remedial needs. Its aim is to provide functional and constructive activities for the purpose of hastening the recovery of the individual patient. The results are in direct proportion to the degree of individual prescription and care in supervising. Experience has repeatedly shown that the greatest benefits are always derived when it is applied specifically to physical and mental disabilities and under direct medical supervision. The value of this form of treatment is also in direct proportion to the amount of interest shown by other persons, not alone on the initial day, but as the patient progresses from the simple to the more complex activity.

The depressed patient is overwhelmed by a sense of personal failure and ideas of guilt. Retardation in thought and activity are frequent symptoms as are easy frustrations and a low level of work tolerance. One must re-establish feelings of personal value and of achievement and stimulate interests outside the patient, or provide, at times, a means of atonement of guilt. Previous hobbies and work interests of the patient must
be explored and work prepared in small units that can easily be achieved within the allotted time. If simple tasks are chosen at the start, there is less chance for bewilderment or lack of concentration and interest. Arts and crafts usually are most acceptable, but industrial (work) therapy is also helpful. Occasionally menial tasks may assist the individual in punishing himself and in atoning for his "sinful" ideas. The need for an ever constant guard against suicide when working with depressed patients is also mandatory.

Excited patients are aided in clinging to rational behavior through an opportunity to discharge tension in work. Patients with extreme over-activity seldom work well within the close confinement of the occupational therapy shop. Frictions and irritations inevitably result from too intimate contacts with other patients. Industrial (work) therapy is usually the best for this group. Work that requires fatiguing vigorous bodily action is desirable in a place that provides enough room to move about freely without coming closely in contact with others. Gardening, outdoor labor, "rough" salvage, and construction are jobs suited to the needs of excited patients.

Schizophrenic patients suffer from a loss of
interest and initiative. They lack the capacity for forming attachments with others and are beset with notions of inferiority and insecurity. Living as they do in a dream world, it is often difficult to penetrate their wall of fantasy. The therapist must know how to captivate the interest of such an individual. The abrupt onset and the importance of situational factors in military cases of schizophrenia combine to effect a more favorable prognosis. Stimulating group activities, with an opportunity for socialization and with some work pressure forcing group interaction are sometimes most helpful. The organized activities of patients engaged in printing a news sheet in the shop is an example of group work. Typsetting, press operation, cutting and folding demand cooperation if the task is to be smoothly done. Industrial (work) therapy also offers many opportunities. Gardening is one of the best of such means. Many will find ego satisfaction in creative areas and the first signs of renewed interest in the world of reality may come through painting or music.

The paranoid individual, who is suspicious and distrustful, often responds best if given an individual work assignment of trust. The assigned task must satisfy the cravings for self-importance. These patients work best alone. Individual job assignments
or hobby interests or art projects should encourage a standard of excellence that may recreate a true sense of self-importance.
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<td>Puzzles</td>
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<td>Puzzles</td>
<td>Games, etc.</td>
<td>Games, etc.</td>
<td>Games, etc.</td>
<td>Games, etc.</td>
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<tr>
<td>5-5:30 p.m.</td>
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</tr>
<tr>
<td>6-9 p.m.</td>
<td>Finger-</td>
<td>Dance</td>
<td>Finger-</td>
<td>Finger-</td>
<td>Beano</td>
<td>Movies</td>
<td>Movies</td>
</tr>
<tr>
<td></td>
<td>painting</td>
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<td>painting</td>
<td>painting</td>
<td></td>
<td>Ward 14</td>
<td>Ward 14</td>
</tr>
<tr>
<td></td>
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<td>Watercolors</td>
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<td>Theater</td>
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<tr>
<td>9-10 p.m.</td>
<td>Prepare</td>
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</tbody>
</table>
C. OBSERVATION

Of necessity, this study had to be limited to the comparatively small number of patients available who had received Insulin Shock Therapy at this hospital. The writer recognizes that no definitive conclusions can therefore be drawn from the data. What follows is, an analysis of trends rather than any conclusive findings.

Table #1 was composed of those patients who had Electric Shock Therapy prior to Insulin Shock Therapy. The findings were as follows: 40% of the patients who received Insulin Shock Treatment had Electric Shock Treatment first and it was found that the patients who fell in the ranges from "much improved" to "slightly improved" were 23.33%. The other 16.67% were in the "no improvement" group.

Also in Table #1, 60% of the patients who did not receive Electric Shock Therapy were in this group. 43.34% were in the range of "slightly improved" to "much improved", the 16.67% were in the "no improvement" area.

Analyzing the results in terms of improvement versus non-improvement, 55% of the patients receiving Electric Shock Treatment prior to Insulin Shock Treatment showed some degree of improvement, whereas 72% of
those receiving Insulin Shock Treatment exclusively showed some degree of improvement.

From all indications it would seem that patients who did not receive Electric Shock Therapy gave evidence of better improvement in the final analysis. It does not mean Electric Shock Treatment necessarily lessens chances of recovery. It does seem to mean that patients in any acute state are the best candidates for treatment of any kind. Patients with Electric Shock Treatment before Insulin Shock treatment are those who had already failed to profit from one treatment modality and hence presumably had a poorer prognostic outlook anyway.

For a further break down the writer felt that the patients who received Electric Shock Therapy and were on the acute and chronic level would reflect more light in the final results. He also included the acute and chronic patients who did not have Electric Shock Therapy prior to Insulin Therapy.

Most psychiatrists categorize patients who are chronics as persons who have been mentally ill for over a period of six months and those patients classified as acute, were ill for less than six months. The findings from this break in Table #II are as follows: Patients on the acute service receiving Electric Shock Therapy had a 13.34% between "improved" to "slightly improved"
range, 06.67% were in the no improvement range. Patients who received Electric Shock Therapy and were classified as "Chronic" had the following findings: 10% of the patients were in the range between "improved" and "much improved", whereas, none were noted in the "slightly improved" range; the other 10% gave evidence of "no improvement".

From all observations with the Chronic and Acute patients receiving Electric Shock Therapy, it was noted that six chronic patients improved or were much improved, with none in the slightly improved group; the others did not improve. In other words, of the six patients in this grouping of chronic patients, three were in the areas of improvement, to much improved and three were in the no improvement area with none in the slightly improved range.

In the acute grouping of the six patients in this group, four of the patients either gave evidence from being slightly improved to improved, and the other two did not improve at all.

On Table#III, the patients who did not receive any Electric Shock Therapy prior to Insulin Shock Therapy and were on the acute level had the following findings: 23.33% of these patients were in the range from slightly improved to much improved, the other 13.33% patients did
not improve. Patients who were on the chronic level and in this same listing of patients, who did not receive Electric Shock prior to Insulin Shock Therapy, had 20% who ranged from slightly improved to much improved and 3.33% did not improve.

Finally, table #1 would indicate that a patient who does not profit from one treatment modality has less of a chance of profiting from another treatment modality, and the indications from tables #11 and #111 are other things being equal, acute illness has a better prognosis for treatment than do chronic illnesses.
<table>
<thead>
<tr>
<th></th>
<th>Group Receiving Electric Shock Prior to Insulin</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td>03.33%</td>
<td></td>
</tr>
<tr>
<td>Improved</td>
<td>13.33%</td>
<td></td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>06.67%</td>
<td></td>
</tr>
<tr>
<td>No Improvement</td>
<td>16.67%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40.00%</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Group Receiving No Electric Shock Prior to Insulin</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td>16.67%</td>
<td></td>
</tr>
<tr>
<td>Improved</td>
<td>06.67%</td>
<td></td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>20.00%</td>
<td></td>
</tr>
<tr>
<td>No Improvement</td>
<td>16.67%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80.01%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Complete total for this grouping 100.01%
## Table #II

**Electric Shock Group on the Acute Service**

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td></td>
</tr>
<tr>
<td>Improved</td>
<td>06.67%</td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>06.67%</td>
</tr>
<tr>
<td>No Improvement</td>
<td>06.67%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20.01%</strong></td>
</tr>
</tbody>
</table>

**Electric Shock Group on the Chronic Service**

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td>03.33%</td>
</tr>
<tr>
<td>Improved</td>
<td>06.67%</td>
</tr>
<tr>
<td>Slightly Improved</td>
<td></td>
</tr>
<tr>
<td>No Improvement</td>
<td>10.00%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20.00%</strong></td>
</tr>
</tbody>
</table>
### TABLE #III

**NO ELECTRIC SHOCK GROUP PRIOR TO INSULIN ON ACUTE SERVICE**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td>13.33%</td>
</tr>
<tr>
<td>Improved</td>
<td>10.00%</td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>13.33%</td>
</tr>
<tr>
<td>No Improvement</td>
<td>13.33%</td>
</tr>
</tbody>
</table>

**Total** 36.66%

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**NO ELECTRIC SHOCK GROUP PRIOR TO INSULIN ON CHRONIC SERVICE**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Improved</td>
<td>03.33%</td>
</tr>
<tr>
<td>Improved</td>
<td>03.33%</td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>13.33%</td>
</tr>
<tr>
<td>No Improvement</td>
<td>03.33%</td>
</tr>
</tbody>
</table>

**Total** 23.33%

Complete total for Tables #II & #III 100.00%
CONCLUSION

A. SUMMARY

The rate of improvement in schizophrenic patients following Insulin Therapy, varies directly with the amount of constitutional predisposition, with the duration of the illness and with the amount of the present combined therapies. One can determine the constitutional predisposition only directly. Such factors as: (1) a well balanced prepsychotic personality, (2) an acute onset or chronic type person, especially in the (3) presence of an obvious precipitating factor together with such evidence of strong emotional tones, as (4) marked affect in the psychotic symptoms, or even (5) manic depressions or neuroses are the bases on which a prognosis may be made. The more such positive factors are present the more likely is the patient to recover, the less or more negative they are, the more guarded the prognosis.

More simply put, the more adjusted and the more extravert (in the sense of adjustment to reality), the person before the illness, the more likely is he to return to a normal state after treatment.

The duration of the illness is of utmost
importance. 90% of these patients recover if they were treated during the first six months of their illness and that only 25% recover if they were treated after two years of illness. While these figures do not hold today, the general statement is true; treatment within the first few months of illness will result in a majority of schizophrenic patients improving or recovering, whereas, after two years only a small minority will be improved. Without knowledge of other methods in the treatment of schizophrenia, it seems highly advisable to suggest insulin treatment early in the illness.

Finally, the use of Insulin, psycho therapy, Corrective and Occupational Therapies are invaluable and indeed often makes the difference between success and failure in the treatment of these cases. Many of these patients are accustomed to live in a world of phantasy, and every effort must be made to acquaint them both with the importance this element had in the production of their illness and with the need for living in and dealing more directly with reality. Many of these patients are full of inhibitions, of fears and misconceptions, and with the afore mentioned therapies will in all probability relieve this abnormal state and restore a more balanced prospective with the patients.
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