INSULIN SHOCK THERAPY

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Insulin Shock Therapy

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1. Core Definition and Mechanism

Insulin Shock Therapy (IST), sometimes referred to historically as insulin coma therapy (ICT), is a somatic psychiatric treatment involving the therapeutic induction of prolonged periods of deep coma. This state is achieved through the controlled administration of heavy doses of **insulin**. The technique was developed primarily for treating serious mental disorders, most notably severe **schizophrenia**, though its application has been almost entirely abandoned in modern medical practice. The underlying physiological rationale for IST centers on the dependence of the brain on glucose as its principal metabolic fuel, rather than fats or proteins. Insulin, acting as a powerful regulator of blood sugar, rapidly and significantly reduces the glucose content available in the bloodstream, thereby inducing severe systemic **hypoglycemia** (low blood sugar). When the administered doses are sufficiently large, this deprivation of essential fuel causes brain cell oxidation to decrease drastically, leading sequentially to a shock state and then a controlled, deep coma.

2. Historical Development and Proponent

The development of **Insulin Shock Therapy** is credited to the Austrian psychiatrist, Manfred Sakel, in the early 1930s. Sakel's initial observations were made serendipitously while he was treating morphine-addicted patients undergoing withdrawal. He noted that insulin administration appeared to relieve the accompanying manic symptoms experienced by these patients. Based on this incidental finding, Sakel hypothesized that insulin could be beneficial in managing other forms of psychological excitation, leading him to apply the treatment to excited schizophrenic patients. It was through systematic experimentation that he discovered optimal therapeutic results were obtained only when the dosage was substantial enough to induce a profound, deep coma, thereby establishing the fundamental methodology of IST. Although subsequent advancements have rendered his original method obsolete, Sakel's work represents a critical, early milestone in the history of somatic treatments for severe mental illness.

3. Procedure and Administration Techniques

The application of **Insulin Shock Therapy** required a highly rigorous and demanding protocol. Prior to undertaking the treatment, patients were subjected to an exhaustive series of psychiatric, physical, and neurological examinations to assess their fitness and mitigate serious risks. Typically, insulin was injected intramuscularly in the morning before the patient had consumed any food. Several hours following the injection, the patient would begin manifesting symptoms of

declining glucose levels, including increasing weakness, intense hunger, and deep drowsiness. As the patient's somnolence intensified, they entered a typical shock state marked by involuntary muscular spasms, body tremors, heavy, labored breathing, and mumbling or disorganized speech. This period was followed by the onset of a deep coma.

Various specialized techniques were developed for administering insulin, and practitioners often differed regarding the optimal depth, total length, and frequency of the induced comas. Generally, the treatment regimen involved administration five or six times weekly, aiming for an accumulation of thirty to fifty coma hours over the course of the therapy. One significant variation was the "subshock" technique, which involved injecting smaller, regulated amounts of insulin designed to stop the reaction short of inducing a full coma. This subshock method was primarily employed to calm anxious or excitable patients, but it was not considered effective for treating the core symptoms of schizophrenia itself. In the most severe instances of mental disorder, convulsions were sometimes intentionally induced during the shock process, although this significantly escalated the requirement for precautionary medical measures.

4. Physiological Stages and Supervision

Sakel's pioneering work established that **hypoglycemia** affects the higher brain centers before it impacts the lower, more basic centers. He leveraged this differential impact to define five distinct stages of the insulin coma, allowing therapists to regulate doses precisely to control the depth of the patient's reaction. Due to the inherent danger associated with artificially inducing profound hypoglycemia, the procedure required exceptional medical oversight. Constant medical supervision and vigilant nursing care were absolutely necessary throughout the entire treatment period, and this intensive monitoring had to be maintained for a crucial twenty-four hours following the termination of the coma to prevent potentially fatal complications known as "after-shock."

Methods for terminating the coma were standardized, utilizing the rapid administration of **glucose**--typically given intravenously--which usually produced a swift and effective reversal of the hypoglycemic state. Upon emergence from the coma, the patient was immediately provided a meal deliberately rich in carbohydrates to ensure stabilization of blood sugar levels. IST was associated with strict contraindications, prohibiting its use in patients suffering from active infections, pre-existing **diabetes**, or serious heart, liver, or kidney diseases. Furthermore, the therapy was restricted by age, contraindicated for individuals below sixteen and above forty-five, due to elevated health risks.

5. Indications and Prognostic Factors

The clinical use of Insulin Shock Therapy was strictly restricted to specific cases of **schizophrenia**. Analysis of outcomes revealed that the best results were obtained when the treatment was initiated

within the first year of the illness. Several prognostic factors were consistently associated with a favorable response: patients in their twenties, those possessing a relatively stable pre-illness personality, and individuals whose illness onset was characterized as sudden and acute showed the highest rate of improvement. Phenotypically, paranoid and catatonic schizophrenic patients, particularly those with noticeable affective (emotional) overtones, responded considerably better to IST than did simple or hebephrenic types.

Conversely, prognostic outcomes were least favorable in patients exhibiting meager personality resources, an ingrained schizoid personality, or those whose illness manifested with an insidious onset, especially if the onset occurred below the age of fifteen or above the age of forty. Despite its invasive and demanding nature, the remission rate achieved by IST was relatively low, rarely exceeding 40 to 50 percent, and often falling below this range. Furthermore, clinical follow-up indicated that the rate of recurrence following apparent remission tended to be significantly high (Kalinowsky and Hoch, 1961).

6. Limitations and Eventual Decline

The widespread application of **Insulin Shock Therapy** was ultimately curtailed by its inherent limitations in safety, efficiency, and efficacy. The procedure was extremely time-consuming, required specialized clinical environments, and necessitated continuous, resource-intensive monitoring. Crucially, it involved substantial danger to the patient, including the risk of severe neurological damage or fatality resulting from profound or protracted hypoglycemia.

The introduction of effective **psychoactive drugs** and the development of safer, refined electroshock therapy (ECT) in the mid-twentieth century effectively rendered IST obsolete. These newer methods produced higher rates of clinical improvement, offered more durable therapeutic results, were significantly less demanding of staff time, and involved considerably less immediate danger to the patient. Nevertheless, IST persisted marginally in some clinical settings; a few psychiatrists intermittently resorted to it, sometimes combining it with ECT, for schizophrenic patients who failed to improve or showed insufficient response to either drug or electroshock treatments alone. It was also occasionally utilized for acutely unstable patients who were overactive, assaultive, aggressive, suicidal, or locked in a stuporous state.

Reflecting on its legacy, English and Finch (1964) summarized the eventual consensus regarding IST: "While great results were expected from its use, it gradually became evident that this type of treatment did not produce any lasting beneficial results and its use has been almost entirely discontinued." IST is now primarily viewed as a historical footnote, important only for demonstrating the initial viability of biological intervention in psychiatry.

Further Reading

Insulin Coma Therapy - Wikipedia
Manfred Sakel - Wikipedia
Kalinowsky, L. B., & Hoch, P. H. (1961). *Shock Treatments, Psychosurgery and Other Somatic Treatments in Psychiatry.* Grune & Stratton.
English, O. S., & Finch, S. M. (1964). *Introduction to Psychiatry.* W. W. Norton & Co.