

1922: Determining insulin dosages for diabetic patients

When researchers at the University of Toronto announced their discovery of insulin therapy for diabetes in 1921, the news prompted enthusiasm—and confusion—around the world.

Until that time diabetes was a grim diagnosis. Insulin, normally produced by the pancreas, helps control levels of glucose (sugar) in the blood. When the pancreas stops producing insulin, the body is flooded with glucose, causing a condition called diabetes mellitus, often leading to coma or death.

Insulin therapy promised transformative benefit to patients. But it was not clear to doctors how to administer insulin to improve their patients' daily lives or how to set treatment standards for the widely varied population of diabetic patients.

Mayo Clinic helped solve the mystery.

Bringing clarity

Led by nutrition and metabolism expert Dr. Russell M. Wilder, a team from Mayo Clinic validated the safety of the new drug and determined proper dosages for patients. By setting protocols for injection of insulin, they revolutionized the care of people with diabetes.

With his colleagues, Dr. Wilder was among the earliest to provide convincing laboratory proof of the insulin link to diabetes. Starting in the spring of 1922, only a few months after the discovery was announced, Dr. Wilder was one of the first to use insulin in regular clinical treatment of diabetes.

Administering insulin successfully to manage each patient's blood sugar is a highly individualized art: Too little and a patient can lapse into life-threatening lethargy ... too much and the patient risks low blood sugar complications such as blurred vision, sweat, dizziness, even death.

In recognition of his innovative contributions, Dr. Wilder was invited to participate in the first clinical trials of insulin treatment for diabetes, which were held in Canada in November 1922. "Never again was I to experience a thrill equal to that of being invited to attend the meeting in Toronto of a small committee of experts ... to undertake an extensive clinical evaluation of the product, insulin," Dr. Wilder later wrote.

Dr. Wilder and other specialists compared their experiences in treating patients with insulin. They noted which methods revived patients from a diabetic coma and identified symptoms that could signal fatal complications. In a larger sense, Dr. Wilder's efforts also affirmed the role of clinical trials in medical research. Today, clinical trials are an essential tool to test the effectiveness of drugs and other treatment plans.

To help standardize insulin therapy for diabetes, Dr. Wilder and Mayo Clinic colleagues published “A Primer for the Diabetic Patient.” A landmark publication that was updated for decades and reprinted in nine editions, it influenced diabetes care and patient education around the world.

In a process of continuous refinement, Dr. Wilder and generations of his successors documented cases, published reports and set internationally recognized standards for the use of insulin for diabetic patients.

One of the early patients to receive insulin therapy was Randall Sprague, who was cared for by Dr. Wilder’s mentor at the University of Chicago. Sprague did well with the new treatment, went to medical school and became an acclaimed physician on the staff of Mayo Clinic. Dr. Sprague was a close colleague of Dr. Wilder and wrote his friend’s obituary in 1959.

Today, Mayo Clinic has among the most effective metabolic diets for patients with diabetes and a highly regarded program in diabetes treatment, education and research. The legacy of Dr. Wilder and his colleagues continues today as millions of diabetic patients have improved quality of life by taking carefully monitored doses of insulin to control their condition.

SOURCES

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