1950: Mrs. G Gets Compound E – Mayo Clinic Researchers Receive Nobel Prize

After years of collaborative research, a Mayo Clinic team was the first to isolate cortisone, a hormone from the adrenal glands. They administered it to a patient in 1948 – and received a Nobel Prize for their discovery just two years later. Cortisone is an iconic example of Mayo's philosophy of going from "bench to bedside" – translating laboratory discoveries into effective treatments for patients.

The two Mayo Clinic staff members, rheumatologist Dr. Philip S. Hench and biochemist Dr. Edward C. Kendall, shared the 1950 Nobel Prize for Medicine or Physiology for their co-discovery of the structure and biology of cortisone, along with a Polish-Swiss chemist, Professor Tadeus Reichstein of the University of Basel. Dr. Kendall had already achieved international recognition for isolating another hormone, from the thyroid, in 1914.

The adrenal glands are small, triangular-shaped glands that sit atop each kidney. Researchers in the early 20th century studied their potential for treating inflammatory diseases such as rheumatoid arthritis. In this common, chronic and painfully debilitating disease, the body's immune system mistakenly attacks the body's joints.

Relief of pain

The Mayo team's laboratory discovery gained speed on Sept. 4, 1948, when Dr. Hench wrote to Merck & Co, Inc., manufacturers of a Mayo experimental compound. He asked for permission to administer what researchers called "Compound E" to a patient with rheumatoid arthritis in the hope of relieving her disabling pain and impaired movement.

Permission was granted. On Sept. 21, Dr. Hench and his colleague Dr. Charles H. Slocumb administered 100 mg of the adrenal gland corticosterone Compound E to the 29-year-old patient known as Mrs. G. This was the first use of the substance in history. Results were dramatic. By the third day, only few symptoms remained. Dr. Hench coined the term "cortisone" to describe the active agent in Compound E. More patients and positive results followed, along with increasing refinement of standards for administering the drug and controlling its side effects.

Mayo Clinic rheumatologist Dr. Howard F. Polley had medical responsibility for most of the patients in the initial trial of cortisone, capably assisted at Saint Marys Hospital by Sister Pantaleon Navratil, who served as nursing supervisor. In the team culture of Mayo Clinic, Dr. Hench shared the money he received as part of his Nobel Prize with colleagues who worked with him on the project. Because of her vow of poverty, Sister Pantaleon could not accept such a gift. Dr. Hench described Sister Pantaleon as "my valuable colleague" and, ever-resourceful, established a travel fund for her to visit Europe and have an audience with the Pope.

The Nobel Prize ceremony in Stockholm, Sweden, was a memorable event for Drs. Kendall

and Hench and their families, who traveled there from small-town Rochester, Minnesota. The dress code mandated formal attire – white tie and tails for the men. As Dr. Hench wrote, protocol for the ceremony involved further requirements: "After the awards were presented … one was supposed to walk backwards about 15 or 20 feet, keeping one's face to the Royal Family, until the steps leading back up to the platform were reached. … Having seen the motion pictures, I must conclude that walking backward is not one of the things well taught to members of the staff of the Mayo Clinic. But from what I heard of the good humor and democratic instincts of King Gustav Adolf, I feel certain that he gave everyone an 'A' for effort."

As a therapeutic agent, cortisone has received high marks from patients around the world since its introduction in 1948. At the same time, the potency of the drug and its risk of side effects make it important for patients and health care providers to work carefully together for safe, effective use.

SOURCES

1. Division of Rheumatology; submission for Mayo Clinic Sesquicentennial, 2013.
2. Hunder, G. et al., 2010. "Rheumatology Practice at Mayo Clinic: The First 40 Years–1920 to 1960." Mayo Clinic Proceedings. Vol. 85:4; pp. 17-30.
3. Lloyd, M. 2002. "Philip Showalter Hench, 1896–1965." Rheumatology. Vol. 41:5; pp. 582–584.
4. Rooke, T. The Quest for Cortisone. Published by Michigan State University. Mayo Foundation for Medical Education and Research, 2012.
5. Whelan, Sister E. The Sisters' Story Part II. Saint Marys Hospital-Mayo Clinic, 1939 to 1980. Mayo Foundation for Medical Education and Research, 2007.