The sweet-smelling urine that is the hallmark of type 1 (insulin-dependent) diabetes mellitus was noted as far back as an Egyptian papyrus from 1500 B.C. In A.D. 96 in Greece, Aretaeus of Cappadocia described the condition as a "melting down of limbs and flesh into urine." One of the first to receive as a drug insulin, a hormone that his body could not produce, was a three-year-old boy. In December 1922, before treatment, he weighed only 15 pounds. The boy rapidly improved after beginning insulin treatment, doubling his weight in just two months.

Insulin and the gland that produces it—the pancreas—are familiar components of the endocrine system. Understanding type 1 diabetes mellitus provides a fascinating glimpse into the evolution of medical technology that continues today.

In 1921, Canadian physiologists Sir Frederick Grant Banting and Charles Herbert Best discovered the link between lack of insulin and diabetes. They induced diabetes symptoms in a dog by removing its pancreas, then cured it by administering insulin from another dog's healthy pancreas. Just a year later, people with diabetes—such as the starving three-year-old—began to receive insulin extracted from pigs or cattle.

So it went until 1982, when pure human insulin became available by genetically altering bacteria to produce the human protein. Human insulin helped people with diabetes who were allergic to the product from pigs or cows. Today, people receive insulin in a variety of ways, discussed in Clinical Application 13.4. Although a person with type 1 diabetes mellitus today is considerably healthier than the boy on the brink of the discovery of insulin, the many types of implants, injections, and aerosols that deliver insulin cannot exactly duplicate the function of the pancreas. Better understanding of the endocrine system will lead to better treatment of this and other hormonal disorders. ■