Before the introduction of insulin the management of diabetes was bleak. In 1897, according to Elliott P. Joslin, master clinician and founder of the famed Joslin Diabetes Foundation in Boston, the average life expectancy for a ten year-old child identified with diabetes was 1.3 years; at thirty diagnosis meant 4.1 more years of life; and a fifty-year-old recently detected diabetic could expect to live eight more years.\(^1\) Diabetics had to be hospitalized for weeks on end, not much different from the treatment they received in the eighteenth century. Their diets were rigidly controlled and their inflexible caloric intake monitored, mainly by specialists in biochemistry who understood urine but not patient needs. Just as earlier physicians like John Pechey had ridiculed the personal habits of diabetics as “lax and crude,” victims on the eve of discovery found themselves still subject to unjust bias and demeaning institutional supervision. By 1900, though less than two percent of the population of industrialized countries had diabetes, its victims, young and old, suffered greatly from collateral damage to their eyes and lower extremities, from lowered resistance to disease of all kinds, from unhealed wounds and boils, impotency, sterility, tuberculosis and pneumonia.\(^2\) Becoming apparent was the connection between “civilization,” meaning industrialization and westernization, and diabetes, although some who emphasized this link still blamed sufferers for their slothful ways. In a 1907 address to the British Medical Association, Sir Havelock Charles, Surgeon-General President of the Medical Board of India, depicted diabetes as a plague among “the lazy and indolent rich”

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\(^1\) Elliott P. Joslin, “The Unknown Diabetic,” *Postgraduate Medicine* 4 (1948): 302–306. The long-lived Joslin (1869–1962) was a contemporary of the discoverers of insulin and saw over 50,000 patients during his career.

of the subcontinent. He asserted that ten percent of Bengali men had diabetes, due in part to a diet of rice, flour and beans, hardly, it would seem, the food of the wealthy. Other medical scientists began to associate high consumption of sugar with a rising incidence of diabetes, a correlation born out by later studies of non-western peoples, such as Maoris, Natal Indians and urbanized Zulus, who ate large amounts—90 pounds annually per person—of sugar.3

At the beginning of the twentieth century, following experiments with pancreatectomies on dogs that then developed fatal diabetes, physiologists focused professional and public attention on the lack of an internally secreted pancreas hormone in human diabetics. The pancreas, it was known, exuded a digestive enzyme into the gut, but medical researchers came to understand that diabetes resulted from the body's failure to metabolize food, especially carbohydrates, due to the absence of a second, internal secretion that enabled the body to use its fuel. In 1907 George Ludwig Zuelzer published the results of his attempt to treat six diabetics with alcohol extracts of pancreas he called acomatrol. Though there seemed to be initial improvement in these cases, toxic reactions in the treated patients, especially raging hypoglycemia, ended the experiments.

However, until the First World War, disagreement over the cause of the disease continued in Britain as some specialists still favored the nervous system, the thyroid, or the pituitary as the seat of diabetes. Moreover, no one had come up with a successful way to use pancreas extracts to alleviate diabetes; neither had anyone found pancreatic lesions in diabetic necropsies. Meanwhile, human sufferers died while waiting for the innovation that might save them. Diabetes rose in the ranks of fatal diseases in Europe and North America from being the twenty-eighth leading cause of death in 1900 to twelfth in 1920.4 The American researcher Frederick M. Allen, based at the Rockefeller Institute in New York, insisted that the origin of diabetes must lie in the pancreas and, as long as attempts to reduce glycosuria and improve patients continued to fall short, prescribed starvation diets for diabetics, nutritional regimes with fewer than 1000 daily calories. One of his