Milestones in the history of insulin development

- 1922: Insulin is first used to treat diabetes
- 1923: Frederick Banting and John Macleod are jointly awarded the Nobel Prize in Physiology or Medicine for the discovery of insulin
- 1929: Purified animal insulins are manufactured and sold
- 1949: Standardized insulin syringes are produced
- 1953: Frederick Sanger characterizes the amino acid sequence of insulin, the first protein to be sequenced
- 1958: Frederick Sanger is awarded the Nobel Prize in Chemistry for sequencing insulin
- 1963: The first insulin pump is invented
- 1966: Synthetic insulin is produced
- 1969: Dorothy Hodgkin determines the three-dimensional crystal structure of insulin using X-ray crystallography, after 35 years of study
- 1972: Standardized U100 insulin is introduced
- 1976: Wearable insulin pumps are invented
- 1977: Rosalyn Sussman Yalow receives the Nobel Prize in Medicine for developing a radioimmunoassay to measure insulin in the body
- 1978: Recombinant “human” insulin is produced using E. coli bacteria
- 1980: Portable insulin pumps are developed
- 1982: The “basal-bolus” concept and intensive insulin therapy are introduced
- 1983: Biosynthetic human insulin comes to market, the first commercial therapeutic product using recombinant DNA technology
- 1996: Insulin analogs with fast action are commercialized
- 1998: Long-acting insulin analogs come to market
- 2001: Inhaled insulin becomes commercially available but is later withdrawn
- 2006: Inhaled insulin returns to the market
- 2015: Recombinant “human” insulin is produced using E. coli bacteria