

unable to produce. However, insulin needs are also affected by emotions, nutritional intake, activity, and other life events, such as illnesses and puberty. The complexity of the disease and its management requires that the child and family incorporate diabetes needs into their lifestyle. Medical and nutritional guidance are primary, but management also includes continuing diabetes education, family guidance, and emotional support.

Insulin Therapy

Insulin replacement is the cornerstone of management of type 1 DM. Insulin dosage is tailored to each child based on home blood glucose monitoring. The goal of insulin therapy is maintaining near-normal blood glucose values while avoiding too frequent episodes of hypoglycemia. Insulin is administered as two or more injections per day or as continuous subcutaneous infusion using a portable insulin pump.

Healthy pancreatic cells secrete insulin at a low but steady basal rate with superimposed bursts of increased secretion that coincide with intake of nutrients. Consequently, insulin levels in the blood increase and decrease coincidentally, with the rise and fall in blood glucose levels. In addition, insulin is secreted directly into the portal circulation; therefore, the liver, which is the major site of glucose disposal, receives the largest concentration of insulin. No matter which method of insulin replacement is used, this normal pattern cannot be duplicated. Subcutaneous injection results in absorption of the drug into the general circulation, thus reducing the concentrations of insulin to which the liver is exposed.

Insulin Preparations

Insulin is available in highly purified pork preparations and in human insulin biosynthesized by and extracted from bacterial or yeast cultures. Most clinicians suggest human insulin as the treatment of choice. Insulin is available in rapid-, intermediate-, and long-acting preparations; and all are packaged in the strength of 100 units/ml. Some insulins are available as premixed insulins, such as 70/30 and 50/50 ratios, the first number indicating the percentage of intermediate-acting insulin and the second number the percentage of rapid-acting insulin. The different types of insulin are found in [Box 28-14](#).