**Table I. Insulin Therapy for CFRD**

**(adapted from Moran et al, Diabetes Care 33:2010, online appendix)**

Patients are generally treated with standard basal-bolus insulin therapy by multiple subcutaneous injections or by insulin pump according to the following principles. They should be taught to adjust their insulin dose for special circumstances such as exercise, travel, and acute illness. Those already on insulin therapy usually require 2-4 times as much insulin during illness or steroid therapy. The dose must subsequently be reduced to baseline when the patient recovers

**Basal insulin**

* Many CF patients require a 50:50 basal:bolus insulin ratio. Some require lower amounts of basal insulin, likely because of residual endogenous insulin secretion.
* Subcutaneous basal insulin is often given in the morning or at mid-day rather than bedtime to reduce the risk of nocturnal hypoglycemia.
* Fasting glucose levels help determine if the basal insulin dose is appropriate.
* CFRD without fasting hyperglycemia does not require basal insulin therapy to normalize fasting glucose levels. Whether basal insulin is beneficial for anabolic purposes is a research question.

**Meal Coverage**

* Usual doses of rapid-acting insulin for meal coverage range from 0.5 units to about 2.0 units per 15 grams of carbohydrate, with the lower doses being more common when patients are in their stable baseline state of health.
* If meal coverage doses greater than ~2.0 units per 15 grams of carbohydrate are needed, the basal insulin dose is probably not high enough.
* If the meal coverage dose is appropriate (the insulin is matched to the carbohydrate intake), glucose levels pre- and 2-3 hours post-prandially should be about the same.

**Correction Dose (“Sensitivity Factor”)**

* A typical starting correction dose is 1 unit of rapid-acting insulin to lower the glucose by about 50 mg/dl (2.8 mmol/L).
* During a period when the patient is not eating or exercising, the correction dose can be tested and readjusted as necessary by determining how much it lowers the glucose level over a 2-3 hour period.

**Overnight Continuous Drip Gastrostomy Feedings**

* These are “long” meals which require about 8-10 hours of insulin coverage.
* A single injection of regular and NPH insulin prior to the feeding (with or without rapid-acting insulin as correction for the pre-feeding glucose level) covers the feeding. The regular insulin covers the first half and the NPH covers the last half.
* The usual starting dose is 0.5-1.0 units per 15 grams carbohydrate in the total feeding, divided as half regular and half NPH insulin.
* Glucose levels 3-4 hours into the feeding are used to adjust the regular insulin dose and at the end of the feeding to adjust the NPH insulin.