

Introduction

This review issue of *Diabetes Care* completes the series on Molecular Biology and Diabetes and introduces the topic Insulin and Diabetes Mellitus: Use and Abuse.

Insulin remains the mainstay of treatment for insulin-dependent (IDDM) and non-insulin-dependent (NIDDM) diabetic individuals who have failed on standard therapeutic interventions (diet, exercise, sulfonylureas). However, the judicious use of insulin requires an understanding of the hormone's many actions on intermediary metabolism and its potential side effects. A considerable body of experimental and clinical evidence has accumulated that implicates poor glycemic control in the pathogenesis of diabetic microvascular complications (nephropathy, retinopathy, neuropathy) as well as in the development of impaired insulin secretion and insulin resistance. Therefore, it makes sense to strive for the best possible glycemic control with insulin while avoiding undue side effects from hypoglycemia. On the other hand, recent data suggest that insulin per se may be atherogenic. This is of particular concern for the NIDDM patient, who usually requires large doses of insulin to normalize the plasma glucose concentration.

In the first two articles on insulin, this therapeutic dilemma is placed into perspective. The deleterious effects of hyperglycemia on glucose metabolism are discussed by Drs. Rossetti, Giaccari, and DeFronzo, and

the atherogenic potential of insulin is examined by Dr. Robert Stout. Further insights into the pathophysiology of insulin secretion and the specific role of hyperglycemia in impaired β -cell function are offered by Drs. Zawalich and Leahy. A rational approach to insulin therapy in NIDDM is provided by Drs. Genuth and Turner, and Dr. Skyler reviews insulin treatment in IDDM. Drs. Brange, Galloway, and Spangler review experimental and clinical data on newer, more novel insulin regimens, including monomeric insulins, proinsulin, nasal insulin, and liposome-encapsulated insulin. Combination therapy of insulin with sulfonylureas and metformin is discussed by Drs. Lebovitz, Riddle, Mezitis, and Klip. Finally, Dr. Charles reviews the available devices for insulin administration, and Dr. Hirsch focuses on insulin therapy in the surgical patient. After careful digestion of all of the material in the current and subsequent review issues of *Diabetes Care*, it is anticipated that the reader will have a more comprehensive understanding of insulin therapy in NIDDM and IDDM and the directions of future research concerning the development of more effective insulin therapy and insulin-delivery systems.

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