

DIABETES MELLITUS

FOR THE HOUSE OFFICER

**Edited by
PAUL M. BEIGELMAN
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Diabetes Mellitus for the House Officer

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Accurate indications, adverse reactions, and dosage schedules for drugs are provided in this book, but it is possible that they may change. The reader is urged to review the package information data of the manufacturers of the medications mentioned.

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Dedication

**To Helen Eastman Martin, M.D.
Professor of Medicine
University of Southern California
Chief, Diabetes Service
County General Hospital 1946–1968**

This book is presented as a source of practical information for the care of the diabetic patient. Emphasis, in this handbook, is upon practical steps to be taken by the physician in diagnosis and therapy. The common problems and emergencies of diabetes mellitus are presented in a simple, pragmatic fashion and directions given are based upon long-term experience in a major diabetes clinic. Much of the day to day direct clinical care in this clinic, including care at catastrophic emergencies, had of necessity been given by house staff. The verbal and written instructions of faculty and staff physician under such circumstances provide much of the material in this book. While written for the house officer, this book may be of use to others involved in the care of diabetic patients.

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New concepts concerning the etiology of diabetes are emerging. It is increasingly evident that diabetes mellitus is of heterogeneous origin. Insulin receptor, postreceptor, autoimmunity, and insulin secretory defects are all being implicated.

Aside from reemergence of the importance of diet and control of obesity, the most important recent therapeutic development is detailed methodology for constant "tight" control with insulin. Hopefully, this will arrest the "complications" of diabetes mellitus.

Diabetes mellitus was first described in the Egyptian Ebers Papyrus (3000 - 1500 B.C.). The first accurate clinical description of this disease, and the term "diabetes mellitus," is credited to Arateos of Cappadocia, a Greek physician, of the 2nd century A.D. His eloquent description of the symptoms of diabetes remains a classic.

Willis, in the 17th century, described the association of "sweet" urine with diabetes mellitus. In 1796, Rollo described clinical diabetes mellitus accurately, and recommended diet as treatment. Bouchardat, a half century later, advocated exercise and routine testing for urine sugar. He noted the presence of sugar in the blood, and also described diabetic cataract and proteinuria.

Claude Bernard, who began his major work in the mid-19th century, demonstrated hepatic glycogenolysis, gluconeogenesis and the relationship of hyperglycemia to glycosuria. He performed pioneer studies of intermediary metabolism, the diabetic state, and of the "milieu interieur".

In 1869, Paul Langerhans described areas of "islets" of the pancreas histologically distinct from the well-known exocrine structure, but ascribed no function to them. In 1874, Adolph Kussmaul associated extreme, rapid, dyspnea, and also dehydration, with diabetic coma. Naunyn, in the late 19th and early 20th century presented important clinical observations, including precise studies of diet and of acidosis, effect of heredity on diabetes mellitus, and contrasted juvenile and adult-onset type diabetes.

In 1889, Von Mering and Minkowski demonstrated that glycosuria of diabetes mellitus was directly associated with pancreatic extirpation, perhaps the most important single contribution to the understanding of diabetes mellitus. Considerable further evidence was amassed associating pancreatic islet cell pathology with diabetes. Banting and Best, working with borrowed facilities in Professor McCleod's Toronto laboratory, discovered insulin during the summer of 1921. The dramatic, and unlikely, circumstances of this great discovery have been recounted in abundant detail. In 1955, Sanger determined the precise amino acid sequence of insulin. Steiner, in 1960, demonstrated that insulin biosynthesis originates by formation of proinsulin. Meanwhile, Berson and Yalow developed a sensitive, precise, specific immunoassay for insulin that revolutionized basic and clinical research.

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Section I

BACKGROUND

