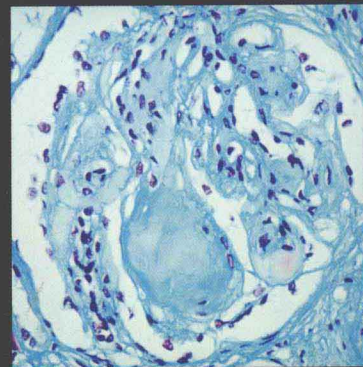
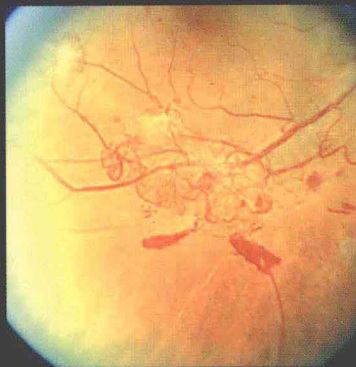
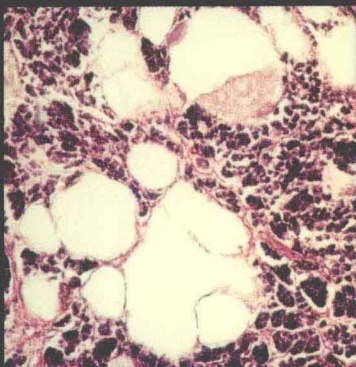


CLINICAL DIABETES

TRANSLATING RESEARCH INTO PRACTICE



VIVIAN A. FONSECA

SAUNDERS



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Clinical Diabetes

Translating Research into Practice

Vivian A. Fonseca, MD

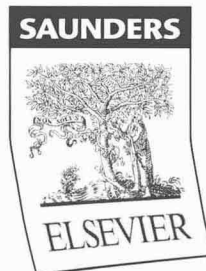
Professor of Medicine

Tullis-Tulane Alumni Chair in Diabetes

Chief, Section of Endocrinology, Department of Medicine

Tulane University Health Sciences Center

New Orleans, Louisiana



SAUNDERS
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1600 John F. Kennedy Blvd.
Ste 1800
Philadelphia, PA 19103-2899

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I dedicate this book to Sarita, Neil, and Adam, without whose support this book would not have been possible.

Vivian Fonseca

Contributors

Emily Lee Albertson, MD

Intern, Fellowship in Medical Research, Sansum Diabetes Research Institute, Santa Barbara, California
Diabetes and Pregnancy

Ahmad Aljada, PhD

Research Assistant Professor, Department of Medicine, State University of New York at Buffalo School of Medicine and Biomedical Sciences; Diabetes-Endocrine Center of Western NY, Buffalo, New York
Endothelial Dysfunction in Diabetes

Jonathan Anolik, MD

Chief, Section of Endocrinology, Department of Medicine, Virtua-Memorial Hospital, Mount Holly; Endocrine Associates of South Jersey, Moorestown, New Jersey
Insulin-Sensitizing and Insulin-Sparing Drugs: Thiazolidinediones and Metformin

David G. Armstrong, MSc, DPM, PhD

Professor of Surgery, Chair of Research, and Assistant Dean, Dr. William M. Scholl College of Podiatric Medicine at Rosalind Franklin University of Medicine and Science; Director, Center for Lower Extremity Ambulatory Research (CLEAR), North Chicago, Illinois
The Diabetic Foot

Sunil Asnani, MD

Assistant Professor of Medicine, Department of Medicine/Endocrinology, Tulane University School of Medicine; Department of Medicine, Geriatrics and Endocrinology, Veterans Affairs Medical Center, New Orleans, Louisiana
Diabetes in Older Adults

George L. Bakris, MD

Professor and Vice-Chairman, Department of Preventive Medicine, Rush Medical College of Rush University; Director, Hypertension/Clinical Research Center, Rush University Medical Center, Chicago, Illinois
Diabetic Nephropathy

Salomon Banarer, MD

Assistant Professor, Department of Medicine, University of Louisville School of Medicine; Staff Physician, Department of Medicine, Louisville VA Medical Center, Louisville, Kentucky
Insulin Strategies in Type 1 and Type 2 Diabetes Mellitus

Lawrence Blonde, MD, FACP, FACE

Director, Ochsner Diabetes Clinical Research Unit, Section of Endocrinology, Diabetes, and Metabolic Diseases, and Associate Residency Program Director, Department of Internal Medicine, Ochsner Clinic Foundation, New Orleans, Louisiana
Using Computers and Technology for Diabetes Care

Zachary T. Bloomgarden, MD

Associate Clinical Professor, Division of Endocrinology and Metabolism, Department of Medicine, Mount Sinai School of Medicine, New York, New York
Pearls from Major Clinical Trials: Approaches to Improving Outcome of Persons with Diabetes

Andrew J. M. Boulton, MD, DSc(Hon), FRCP

Professor of Medicine, Department of Medicine, University of Manchester Faculty of Medicine; Consultant Physician, Department of Medicine, Manchester Royal Infirmary, Manchester, United Kingdom; Professor of Medicine, Department of Endocrinology, University of Miami College of Medicine, Miami, Florida
The Diabetic Foot

John B. Buse, MD, PhD, CDE

Associate Professor, Department of Medicine, University of North Carolina School of Medicine; Chief, Division of General Medicine and Clinical Epidemiology; Director, Diabetes Care Center, Chapel Hill, North Carolina
Scope of the Problem: The Diabetes and Metabolic Syndrome Epidemic

William T. Cefalu, MD

Douglas L. Manship Senior Professor in Diabetes, Louisiana State University School of Medicine; Chief, Division of Nutrition and Chronic Diseases, The Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, Louisiana

Pharmacologic Agents and Nutritional Supplements in the Treatment of Obesity

Manisha Chandalia, MD

Associate Professor, Department of Internal Medicine, Division of Endocrinology and Metabolism, The University of Texas Southwestern Medical Center at Dallas Southwestern Medical School; Staff Physician, Center for Human Nutrition, UT Southwestern Medical Center, Dallas, Texas

Diabetes and Inflammation

Ajay Chaudhuri, MBBS, MRCP(UK)

Assistant Professor, Department of Medicine, State University of New York at Buffalo School of Medicine and Biomedical Sciences; Associate Director/Attending Physician, Diabetes Endocrinology Center of Western NY, Kaleida Health, Buffalo, New York

Endothelial Dysfunction in Diabetes

Brian E. Chavez, MD

Endocrinology Fellow, Department of Endocrinology, Diabetes and Metabolism, Veterans Affairs Medical Center, San Diego, California

Type 2 Diabetes: Insulin Resistance, Beta Cell Dysfunction, and Other Metabolic and Hormonal Abnormalities

Jean-Louis Chiasson, MD

Professor, Department of Medicine, University of Montreal Faculty of Medicine; Director, Endocrinology Laboratory, Hôtel-Dieu Hospital, Centre Hospitalier de l'Université de Montréal (CHUM), Montreal, Quebec, Canada

α -Glucosidase Inhibitors

David Conroy Yu Chua, MD, MS

Fellow, Internal Medicine, Division of Cardiovascular Disease, University of Virginia Medical Center, Charlottesville, Virginia

Diabetic Nephropathy

Ellie I. Chuang, MD

Endocrinologist, Joslin Diabetes Center, Southern New Hampshire Medical Center, Nashua, New Hampshire

Hypertension in Diabetes

Mandi D. Conway, MD

Professor of Ophthalmology, Tulane University School of Medicine; Director, Medical Retina and Uveitis Service, Department of Ophthalmology, Tulane University Hospital and Clinics and University Hospital of Medical Center of Louisiana; Attending Physician, Department of Ophthalmology, Lindy Boggs Medical Center, New Orleans, Louisiana

Diabetic Retinopathy

John Crean, PhD

Medical Science Liaison, Department of Medical Affairs, Amylin Pharmaceuticals, Inc., San Diego, California

Beyond Insulin Therapy

Samuel Dagogo-Jack, MD, MBBS, MSc, FRCP

Professor of Medicine and Endocrinology, Department of Medicine, University of Tennessee Health Science Center College of Medicine; Attending Physician, Department of Medicine, Methodist University Hospital, and Regional Medical Center; Associate Director, General Clinical Research Center, Memphis, Tennessee

Primary Prevention of Type 2 Diabetes Mellitus; New Drugs and Diabetes Risk: Antipsychotic and Antiretroviral Agents

Paresh Dandona, MD, PhD

UB Distinguished Professor of Medicine, Division of Endocrinology, Diabetes, and Metabolism, State University of New York at Buffalo School of Medicine and Biomedical Sciences; Staff, Millard Filmore Hospital, Buffalo, New York

Endothelial Dysfunction in Diabetes

Jaime A. Davidson, MD, FACP, FACE

Clinical Associate Professor of Internal Medicine, The University of Texas Southwestern Medical Center at Dallas Southwestern Medical School; Physician on Staff, Medical City Dallas Hospital; Endocrine & Diabetes Associates of Texas, Dallas, Texas

Diabetes in Latin Americans

Stephen N. Davis, MD

Rudolph Kampmeier Professor of Medicine and Professor of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine; Chief, Division of Diabetes, Endocrinology, and Metabolism, and Attending Physician, Department of Medicine, Division of Diabetes, Endocrinology and Metabolism, Vanderbilt University Medical Center; Attending Physician, Department of Diabetes, Tennessee Valley Health Care System, Veterans Affairs Medical Center, Nashville, Tennessee

Hypoglycemia in Diabetes

Prakash C. Deedwania, MD, FACC, FCCP, FACP, FAHA

Professor of Medicine, University of California, San Francisco, School of Medicine, San Francisco; Chief, Cardiology Division, Department of Medicine, VACCHCS/UCSF Program, Fresno, California
The Metabolic Syndrome and Its Effects on Cardiovascular Risks

Orlando Deffer, MD

Fellow, Non-Invasive Imaging, Department of Cardiology, Tulane University Health Sciences Center and Tulane University Hospital, New Orleans, Louisiana
Diagnostic Testing for Coronary Artery Disease in Diabetic Patients

Sridevi Devaraj, PhD

Associate Professor of Pathology, University of California, Davis, School of Medicine, Davis; Director of Toxicology, Laboratory for Atherosclerosis and Metabolic Research, UC Davis Medical Center, Sacramento, California
Diabetes and Inflammation

Jayant Dey, MD

Staff, Department of Endocrinology, Ochsner Clinical Foundation, New Orleans, Louisiana
Using Computers and Technology for Diabetes Care

Shehab A. Ebrahim, MD

Vitreoretinal Surgery Fellow, Department of Ophthalmology, Tulane University Health Sciences Center, New Orleans, Louisiana
Diabetic Retinopathy

Steven V. Edelman, MD

Founder and Director, Taking Control of Your Diabetes; Professor of Medicine, Division of Endocrinology and Metabolism, University of California, San Diego, School of Medicine; Staff, Veterans Affairs Medical Center, San Diego, California
Physiologic Insulin Replacement with Continuous Subcutaneous Insulin Infusion: Insulin Pump Therapy

Vivian A. Fonseca, MD, MRCP

Professor of Medicine and Director, Tullis-Tulane Alumni Chair in Diabetes, Chief, Section of Endocrinology, Department of Medicine, Tulane University Health Sciences Center, New Orleans, Louisiana
Erectile Dysfunction in Diabetes: An Endothelial Disorder

Om P. Ganda, MD

Associate Clinical Professor, Department of Medicine, Harvard Medical School; Attending Physician, Department of Medicine, Beth-Israel Deaconess Medical Center; Director, Lipid Clinic, Joslin Diabetes Center, Boston, Massachusetts
Lipid Management in Diabetes

Satish K. Garg, MD

Professor, Departments of Medicine and Pediatrics, University of Colorado School of Medicine; Staff Pediatrician, The Children's Hospital; Clinical Director, Adult Program, Endowed Clinical & Research Chairs, Barbara Davis Center for Childhood Diabetes at Fitzsimons, Aurora, Colorado
Glucose Monitoring of the Present and Future

John E. Gerich, MD

Professor of Medicine, University of Rochester School of Medicine and Dentistry; Staff Physician, Endocrinology & Metabolism Unit, Strong Memorial Hospital, Rochester, New York
Insulin Secretagogues

Barry J. Goldstein, MD, PhD

Professor of Medicine and Professor of Biochemistry and Molecular Pharmacology, Department of Medicine, Jefferson Medical College of Thomas Jefferson University; Director, Division of Endocrinology, Diabetes and Metabolic Diseases, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania
Insulin-Sensitizing and Insulin-Sparing Drugs: Thiazolidinediones and Metformin

Dina E. Green, MD

Assistant Clinical Professor of Medicine, Department of Medicine, Columbia University College of Physicians and Surgeons; Staff Physician, The Naomi Berrie Diabetes Center at Columbia University Medical Center, New York, New York
Exercise in Diabetes

Frank Greenway, MD

Adjunct Professor, Department of Human Ecology, Louisiana State University School of Medicine; Medical Director, Clinical Trials, Pennington Biomedical Research Center, Baton Rouge, Louisiana
Pharmacologic Agents and Nutritional Supplements in the Treatment of Obesity

Gerald C. Groggel, MD

Professor of Medicine, Department of Internal Medicine, University of Nebraska College of Medicine; Chief of Nephrology, Department of Internal Medicine, Nebraska Medical Center, Omaha, Nebraska
Pancreas, Kidney, and Islet Transplantation: What Every Physician Needs to Know

Deanna L. Aftab Guy, MD

Assistant Professor of Pediatrics, Division of Pediatric Endocrinology, Vanderbilt University School of Medicine; Staff, Vanderbilt Children's Hospital, Nashville, Tennessee
Hypoglycemia in Diabetes

Robert R. Henry, MD

Professor of Medicine, University of California, San Diego, School of Medicine; Chief, Division of Diabetes and Endocrinology, Department of Endocrinology, Diabetes and Metabolism, Veterans Affairs Medical Center, San Diego, California
Type 2 Diabetes: Insulin Resistance, Beta Cell Dysfunction, and Other Metabolic and Hormonal Abnormalities

Irl B. Hirsch, MD

Professor, Division of Metabolism, Endocrinology and Nutrition, University of Washington School of Medicine; Medical Director, Diabetes Care Center, Seattle, Washington
Diabetes Management in the Hospital Setting

Silvio E. Inzucchi, MD

Professor, Section of Endocrinology and Metabolism, Department of Internal Medicine, Yale University School of Medicine; Director, Yale Diabetes Center, Yale-New Haven Hospital, New Haven, Connecticut
Type 2 Diabetes Therapy: Choosing Oral Agents

Deepika Israni, MHS, PT

University of Indianapolis Krannert School of Physical Therapy, Indianapolis, Indiana; Staff, Department of Rehab Services, Ochsner Clinic Foundation, New Orleans, Louisiana
Diabetes in Older Adults

Serge A. Jabbour, MD, FACP, FACE

Associate Professor of Clinical Medicine, Department of Medicine, Division of Endocrinology, Diabetes and Metabolic Diseases, Jefferson Medical College of Thomas Jefferson University; Staff, Thomas Jefferson Hospital, Philadelphia, Pennsylvania
Insulin-Sensitizing and Insulin-Sparing Drugs: Thiazolidinediones and Metformin

Ali Jawa, MD

Assistant Professor, Department of Medicine, Section of Endocrinology, Tulane University School of Medicine; Staff, Department of Medicine, Tulane University Hospital and Clinic, New Orleans, Louisiana
Erectile Dysfunction in Diabetes: An Endothelial Disorder

Ishwarlal Jialal, MD, PhD

Professor of Medicine and Pathology, University of California, Davis, School of Medicine, Davis; Staff, Laboratory for Atherosclerosis and Metabolic Research, UC Davis Medical Center, Sacramento, California
Diabetes and Inflammation

Lois Jovanovic, MD

Adjunct Professor, Bioengineering and Science, University of California, Santa Barbara, Santa Barbara; Clinical Professor of Medicine, University of Southern California, Los Angeles; Director and Chief Scientific Officer, Sansum Diabetes Research Institute, Santa Barbara, California
Diabetes and Pregnancy

Janet L. Kelly, PharmD, BC-ADM

Associate Clinical Professor, Department of Pharmacy, University of Washington School of Pharmacy; Outcomes & Cost Management Pharmacist, Department of Pharmacy, University of Washington Medical Center, Seattle, Washington
Diabetes Management in the Hospital Setting

Philip A. Kern, MD

Professor, Department of Internal Medicine, University of Arkansas for Medical Sciences; Associate Chief of Staff, Department of Research, Central Arkansas Veterans Healthcare System, Little Rock, Arkansas
The Pathogenesis and Treatment of High-Risk Obesity

Mehdi A. Khan, DO

Fellow, Vitreo-Retinal Surgery, Department of Ophthalmology, Tulane University Medical Center, and Lindy-Boggs Medical Center, New Orleans, Louisiana
Diabetic Retinopathy

Kristin E. Koenekamp, BS

Intern, Fellowship in Medical Research, Sansum Diabetes Research Institute, Santa Barbara, California
Diabetes and Pregnancy

Karmeen Kulkarni, MS, RD, BC-ADM, CDE

Adjunct Faculty, University of Utah College of Health Science, Salt Lake City; Nutrition Department, Utah State University, Logan; and Nutrition Department, Brigham Young University, Provo; Coordinator, St. Mark's Diabetes Center, Salt Lake City, Utah
Medical Nutrition Therapy for Type 1 and Type 2 Diabetes

Jennifer Larsen, MD

Professor, Department of Internal Medicine, University of Nebraska College of Medicine; Chief, Section of Diabetes, Endocrinology and Metabolism, Department of Internal Medicine, University of Nebraska Medical Center, Omaha, Nebraska
Pancreas, Kidney, and Islet Transplantation: What Every Physician Needs to Know

David G. Maggs, MD

Executive Director, Medical Affairs, Amylin Pharmaceuticals, Inc., San Diego, California
Beyond Insulin Therapy

Lawrence J. Mandarino, PhD

Professor and Chair, Department of Kinesiology,
and Director, Center for Metabolic Biology,
Arizona State University School of Life Sciences,
Tempe, Arizona
Exercise in Diabetes

Glenn Matfin, BSc(Hons), MBChB, DGM,
MFPM, MRCP(UK), FACE, FACP

Senior Medical Director, Global Diabetes Clinical
Research, Novartis Pharmaceuticals, East Hanover,
New Jersey
Erectile Dysfunction in Diabetes: An Endothelial Disorder

Roberta Harrison McDuffie, MSN, APRN,
BC, CNS, CDE

Clinical Coordinator/Clinical Nurse Specialist,
Endocrine Department, Tulane University School
of Medicine; Clinical Coordinator/Clinical
Nurse Specialist, General Clinical Research
Center, Medical Center of Louisiana; Clinical
Coordinator/Clinical Nurse Specialist, Endocrine
Research, Veterans Administration Hospital, New
Orleans, Louisiana; Clinical Nurse Specialist/CDE,
Diabetes Wellness Company, Picayune, Mississippi
Diabetes Education

Viswanathan Mohan, MD, FRCP, PhD, DSc,
FNASc

Visiting Professor, Department of Diabetology, Sri
Ramachandra Medical College and Research
Institute (Deemed University); Chairman and
Diabetologist, Department of Diabetology, Dr.
Mohans' M.V. Diabetes Specialities Centre and
Madras Diabetes Research Foundation, Gopala-
puram, Chennai, India
Diabetes in Asians

Priya Mohanty, MD

Clinical Assistant Professor, Department of Medi-
cine, State University of New York at Buffalo
School of Medicine and Biomedical Sciences;
Attending Physician, Diabetes Endocrinology
Center, Millard Fillmore Hospital, Buffalo, New
York
Endothelial Dysfunction in Diabetes

Mark E. Molitch, MD

Professor of Medicine, Division of Endocrinology,
Metabolism and Molecular Medicine, Northwest-
ern University Feinberg School of Medicine;
Attending Physician, Department of Medicine,
Northwestern Memorial Hospital, Chicago,
Illinois
Hypertension in Diabetes

Kwame Osei, MD, FACE, FACP

Professor of Medicine, Department of Endocrinol-
ogy, The Ohio State University College of Medi-
cine and Public Health, Columbus, Ohio
Diabetes in African Americans

David Raymond Owens, CBE, MD, FRCP

Professor, Cardiff University College of Medicine;
Consultant Diabetologist, Centre for Endocrine
and Diabetes Sciences, Cardiff, South Wales;
Professor and Consultant Diabetologist, Diabetes
Research Unit, Landough Hospital, Penarth,
Wales, United Kingdom
Insulin Strategies in Type 1 and Type 2 Diabetes Mellitus

Henri K. Parson, PhD

Director, Microvascular Biology, Strelitz Diabetes
Institutes at Eastern Virginia Medical School,
Norfolk, Virginia
Diabetic Neuropathies

Merri L. Pendergrass, MD, PhD

Associate Professor of Medicine, Harvard Medical
School; Director of Clinical Diabetes and Interim
Chief, Diabetes Section, Brigham and Women's
Hospital, Boston, Massachusetts
Exercise in Diabetes

Anne L. Peters (Harmel), MD

Professor of Clinical Medicine, Department of
Medicine, University of Southern California Keck
School of Medicine; Director, USC Westside
Center for Diabetes, Los Angeles, California
Running a Diabetes Clinic

Kevin Arthur Peterson, MD, MPH,
FRCS(Ed), FAAFP

Assistant Professor, Department of Family Medicine
and Community Health, University of Minnesota
Medical School, Minneapolis, Minnesota
Using Computers and Technology for Diabetes Care

Nikolai Petrovsky, MD, PhD

Director, Department of Diabetes and Endocrinol-
ogy Department, Flinders University Medical
Centre, Adelaide, South Australia, Australia
Type 1 Diabetes: Immunology and Genetics

Raymond A. Plodkowski, MD

Chief of Endocrinology, Diabetes, and Metabolism
Division, University of Nevada School of Medi-
cine; Reno Veterans Affairs Medical Center, Reno,
Nevada
*Physiologic Insulin Replacement with Continuous Subcuta-
neous Insulin Infusion: Insulin Pump Therapy*

Rajendra Pradeepa, MSc

Research Nutritionist, Department of Diabetology,
Madras Diabetes Research Foundation, Gopala-
puram, Chennai, India
Diabetes in Asians

Paolo Raggi, MD

Professor of Medicine, Division of Cardiology,
Department of Medicine, Tulane University
School of Medicine; Staff, Tulane University Hos-
pital and Clinics, New Orleans, Louisiana
*Diagnostic Testing for Coronary Artery Disease in Diabetic
Patients*

Neda Rasouli, MD

Assistant Professor, Division of Endocrinology and Metabolism, University of Arkansas for Medical Sciences, Little Rock, Arkansas
The Pathogenesis and Treatment of High-Risk Obesity

Ravi Retnakaran, MD, FRCPC

Endocrine Research Fellow, Division of Endocrinology and Metabolism, Department of Medicine, University of Toronto Faculty of Medicine, and Leadership Sinai Centre for Diabetes, Mount Sinai Hospital, Toronto, Ontario, Canada
The Biochemical Consequences of Hyperglycemia

Byron C. Richard, MS, RD, CDE

Director, Food Service, and Clinical Nutrition Manager, Houston Northwest Medical Center, Houston, Texas
Medical Nutrition Therapy for Type 1 and Type 2 Diabetes

Julio Rosenstock, MD

Clinical Professor of Medicine, The University of Texas Southwestern Medical Center at Dallas Southwestern Medical School; Staff Physician, Medical City Dallas Hospital/Dallas Diabetes and Endocrine Center, Dallas, Texas
Insulin Strategies in Type 1 and Type 2 Diabetes Mellitus

Richard R. Rubin, PhD

Associate Professor, Departments of Medicine and Pediatrics, Johns Hopkins University School of Medicine, Baltimore, Maryland
Stress and Depression in Disease

Darleen A. Sandoval, PhD

Research Associate Professor, Department of Psychiatry, University of Cincinnati College of Medicine, Cincinnati, Ohio
Hypoglycemia in Diabetes

Desmond A. Schatz, MD

Professor of Endocrinology and Associate Chairman, Department of Pediatrics, University of Florida College of Medicine; Medical Director, Diabetes Center of Excellence, Gainesville, Florida
Type 1 Diabetes: Immunology and Genetics

Dara P. Schuster, MD

Associate Professor, Department of Endocrinology, The Ohio State University College of Medicine and Public Health, Columbus, Ohio
Diabetes in African Americans

Leita Sharp, BA

Professional Research Assistant, Barbara Davis Center for Childhood Diabetes, University of Colorado Health Sciences Center, Aurora, Colorado
Glucose Monitoring of the Present and Future

Leslee J. Shaw, PhD

Director of Outcomes, American Cardiovascular Research Institute, Atlanta, Georgia
Diagnostic Testing for Coronary Artery Disease in Diabetic Patients

Dawn Smiley, MD

Endocrine Fellow, Internal Medicine, Division of Endocrinology, Emory University School of Medicine, Atlanta, Georgia
Diabetic Ketoacidosis and Hyperglycemic Hyperosmolar Syndrome

Tamar Smith, MD

Department of Internal Medicine, Franklin Square Hospital Center, Baltimore, Maryland
Insulin Secretagogues

R. Brian Stevens, MD, PhD

Associate Professor, Department of Surgery, University of Nebraska College of Medicine, Omaha, Nebraska
Pancreas, Kidney, and Islet Transplantation: What Every Physician Needs to Know

Mary Stults, PA-S

Barbara Davis Center for Childhood Diabetes, University of Colorado Health Sciences Center, Denver, Colorado
Glucose Monitoring of the Present and Future

William V. Tamborlane, MD

Professor, Department of Pediatrics, Yale University School of Medicine, Chief of Pediatric Endocrinology and Attending Physician, Department of Pediatrics, Yale-New Haven Children's Hospital, New Haven, Connecticut
Diabetes Mellitus in Children and Adolescents

Jagdeesh Ullal, MD, MS

Resident, Department of Internal Medicine, Eastern Virginia Medical School, Norfolk, Virginia
Diabetic Neuropathies

Guillermo Umpierrez, MD, FACP, FACE

Associate Professor of Medicine, Emory University School of Medicine; Director, Diabetes and Endocrinology, Grady Health Care System, Atlanta, Georgia
Diabetic Ketoacidosis and Hyperglycemic Hyperosmolar Syndrome

Aaron I. Vinik, MD, PhD

Director, Strelitz Diabetes Institutes at Eastern Virginia Medical School, Norfolk, Virginia
Diabetic Neuropathies

Natalia Volkova, MD

Assistant Professor, Department of Medicine, University of California San Francisco-Fresno, Fresno, California
The Metabolic Syndrome and Its Effects on Cardiovascular Risks

Stuart A. Weinzimer, MD

Associate Professor, Department of Pediatrics, Yale University School of Medicine; Attending Physician, Department of Pediatrics, Yale–New Haven Hospital, New Haven, Connecticut
Diabetes Mellitus in Children and Adolescents

Jeff D. Williamson MD, MHS

Director, Roena Kulynych Center for Memory and Cognition Research, J. Sticht Aging Center; Wake Forest University School of Medicine, Winston-Salem, North Carolina
Diabetes in Older Adults

William E. Winter, MD

Professor of Pathology and Pediatrics, Department of Immunology and Laboratory Medicine, University of Florida College of Medicine, Gainesville, Florida
Type 1 Diabetes: Immunology and Genetics

Kathleen Wyne, MD, PhD, FACE

Assistant Professor, Division of Endocrinology and Metabolism, Department of Internal Medicine, The University of Texas Southwestern Medical Center at Dallas Southwestern Medical School; Staff, Parkland Memorial Hospital; Medical Director, St. Paul Diabetes Management Institute, St. Paul University Hospital; Staff, Zale Lipshy University Hospital; Staff, Dallas Veterans Affairs Medical Center, Dallas, Texas
Managing Cardiovascular Disease and Events in the Patient with Diabetes

Bernard Zinman, MDCM, FRCPC, FACP

Professor of Medicine, Department of Medicine, University of Toronto Faculty of Medicine; Director, Leadership Sinai Centre for Diabetes, Mount Sinai Hospital; Samuel Lumenfeld Research Institute, Toronto, Ontario, Canada
The Biochemical Consequences of Hyperglycemia

Foreword

Diabetes mellitus has rapidly emerged as a major health problem in developed and developing countries throughout the world. The numerous factors contributing to this epidemic are related primarily to social, economic, technological, and scientific advances that have resulted in increased life expectancy, more adequate or abundant supplies of food, and a marked decrease in physical activity. These changes in environment and lifestyle interact with multiple, as-yet poorly understood genetic factors that predispose susceptible persons to what has been called the “dual epidemic” of obesity and diabetes. Type 1 diabetes, predominantly an autoimmune disease, also has been linked to environmental exposure to antigens that alter immune function and is increasing in prevalence, although not at the same rate as for type 2 diabetes.

Although the prevalence of diabetes is increasing rapidly in all age groups, in many parts of the world it is affecting younger segments of the population at alarmingly high rates. The need for early diagnosis and effective treatment is clear, and much emphasis is now being placed on identifying high-risk populations and implementing strategies for prevention.

There have been rapid advances in our understanding of the pathophysiology of both type 1 and type 2 diabetes, and of the long-term complications of diabetes. This achievement, combined with tech-

nological advances in self-monitoring of blood glucose, the development of new insulins and methods of insulin administration, and availability of new medications that target the underlying mechanisms of disease, has provided the possibility of and challenge for better, more effective care for people with diabetes.

This book provides comprehensive, up-to-date information on the pathophysiology of diabetes and its complications, and on the most current approaches to treatment. The chapters are written by leading authorities in the field, who present concise, easy-to-read discussions of practical, state-of-the-art approaches to diagnosis and management of this complex disease. In *Clinical Diabetes: Translating Research into Practice*, Dr. Vivian Fonseca has created an extremely valuable resource for health care professionals at all levels, from student to seasoned practitioner. I am sure that you will enjoy reading it, and that your patients will be grateful too.

Edward S. Horton, MD
VP and Director of Clinical Research
Joslin Diabetes Center
Professor of Medicine
Harvard Medical School
Boston, Massachusetts

Preface

Diabetes has reached epidemic proportions and is one of the most serious public health problems facing the world today. The problem is particularly acute, with the increase in obesity leading to type 2 diabetes in affluent countries, but is rapidly spreading to developing countries as well. Diabetes is one of the leading causes of morbidity and mortality and, because of its chronic nature, over time becomes one of the most expensive diseases, placing a tremendous financial burden on patients, as well as on health care systems. Over the last two decades, research in diabetes, obesity, and the metabolic syndrome has increased considerably and has led to a much-improved understanding of the pathophysiology of this condition. This has resulted in advances in prevention and management of both diabetes itself and its complications; however, many of these advances have not been translated into clinical practice.

With such a background, publication of a textbook of clinical diabetes, with a focus on translating recent research developments into practice, is timely and important. I am honored to be given the privilege of editing such a book written by a team of experts in the field, all of whom have made huge contributions to our understanding of both the pathophysiology and treatment of diabetes. All of the authors have played important roles in research, practice, and education and are published extensively in their areas of expertise.

The emphasis of the book is on translation of research into practice and highlighting lessons and clinical pearls from clinical trials that can be used by the practicing physician to improve patient outcomes. The book is divided into six sections, beginning with the basic pathophysiology of both type 1 and type 2 diabetes. Subsequent chapters in this section discuss the pathophysiology of diabetes complications, including microvascular complications and cardiovascular disease. The important new area of endothelial abnormalities and inflammation, as well as the pathogenesis and consequences of obesity, also has been incorporated into this section. The individual complications of diabetes, both acute and chronic, and complications of treatment such as hypoglycemia, are discussed in depth. Also included is a discussion of the strategies

to screen for and manage these complications.

The next sections discuss management of patients, including the important and often neglected area of lifestyle management. Lifestyle management today must start before the onset of diabetes, so that the disease can be prevented. Continued emphasis on diet, exercise, and treatment of the psychological aspects is crucial. We are fortunate to have several new classes of medications that have become available in the past decade, necessitating separate chapters on the management of various agents to treat not only hypoglycemia but also hypertension and diabetes. Appropriate in this section is a discussion of new technologies for insulin delivery and glucose monitoring, as well as practical aspects of the management of patients following transplantation.

The next section discusses special populations and situations and includes the management of diabetes in pregnant women and children. The controversial topic of inpatient management of hyperglycemia during acute illness is discussed. In recognition of the fact that the pathophysiology of diabetes, insulin resistance, and obesity varies considerably across ethnic groups, and that different approaches are needed in these populations, these topics are addressed in separate chapters in this section.

The last two chapters of the book discuss the important area of organization and delivery of diabetes care, with suggestions on how to run a diabetes clinic, and how to use modern technology, including computers and the Internet, to deliver better care to our patients. Without such a systems approach, we may lack the ability to translate all of our research findings and new medications into improvement in outcomes.

Finally, there have been many major clinical trials that not only have helped us set goals for various parameters in patient management but also have taught us some lessons on the natural history of diabetes and how we can conquer it. For example, the United Kingdom Prospective Diabetes Study (UKPDS) and the Diabetes Control and Complications Trial (DCCT) both highlighted the importance of HbA_{1c} as a surrogate marker for the development of long-term complications and also pointed out

the relative pros and cons of various treatment options. The UKPDS also clearly demonstrated the progressive nature of type 2 diabetes and, it is hoped, has led to increasing use of combination therapy at an earlier stage in the natural history. Major trials of hypertension and lipid-lowering therapy have helped us focus on a multiple-risk-factor approach, with lower and lower targets for the various risk factors. I am confident that if lessons learned from these trials are translated into practice, the burden of diabetes in our communities will be greatly alleviated, if not eliminated.

Although it may result in some overlap, each

chapter stands on its own, being comprehensive from a practicing physician's viewpoint. The quality of the contributions to this book is outstanding, and it has been a pleasure to work with all of the authors. They all offer insights into how we can truly translate the enormous quantity of research that has been published and how to distill these findings into practical clinical applications that can be used by health care professionals every day.

Vivian Fonseca

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