

# DIABETES CARE<sup>®</sup>

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

## ORIGINAL ARTICLES

<b>Effects of Fish Oil Supplements in NIDDM Subjects: Controlled Study</b> T.J. HENDRA, M.E. BRITTON, D.R. ROPER, D. WAGAIN-TWABWE, J.Y. JEREMY, P. DANDONA, A.P. HAINES, J.S. YUDKIN	821
<b>Diabetes, Hyperinsulinemia, and Hyperlipidemia in Small Aboriginal Community in Northern Australia</b> K. O'DEA, R.J. LION, A. LEE, K. TRAIANEDES, J.L. HOPPER, C. RAE	830
<b>Periodontal Disease and NIDDM in Pima Indians</b> R.G. NELSON, M. SHLOSSMAN, L.M. BUDDING, D.J. PETTITT, M.F. SAAD, R.J. GENCO, W.C. KNOWLER	836
<b>Impact of Intensive Educational Approach to Dietary Change in NIDDM</b> L.V. CAMPBELL, R. BARTH, J.K. GOSPER, J.J. JUPP, L.A. SIMONS, D.J. CHISHOLM	841
<b>Effects of Childbearing on Glucose Tolerance and NIDDM Prevalence</b> E.J. BOYKO, B.W. ALDERMAN, E.M. KEANE, A.E. BARON	848
<b>Lowering of Plasma Glucose Concentrations With Bezafibrate in Patients With Moderately Controlled NIDDM</b> I.R. JONES, A. SWAI, R. TAYLOR, M. MILLER, M.F. LAKER, K.G.M.M. ALBERTI	855
<b>Comparison of Albumin Excretion Rate Obtained With Different Times of Collection</b> T.B. WIEGMANN, A.M. CHONKO, M.J. BARNARD, M.L. MACDOUGALL, J. FOLSCROFT, J. STEPHENSON, J.L. KYNER, W.V. MOORE	864
<b>Total Serum Glycosylated Proteins in Detection and Monitoring of Gestational Diabetes</b> W.T. CEFALU, K.L. PRATHER, D.L. CHESTER, C.J. WHEELER, M. BISWAS, M.L. PERNOLL	872
<b>REVIEW ARTICLE</b>	
<b>Influenza Infection and Diabetes Mellitus: Case for Annual Vaccination</b> R.J.A. DIEPERSLOOT, K.P. BOUTER, J.B.L. HOEKSTRA	876
<b>SHORT REPORTS</b>	
<b>Development of IDDM After Donating Kidney to Diabetic Sibling</b> W.J. RILEY, N.K. MACLAREN, R.P. SPILLAR	883
<b>Mail-In Paper Strip vs. Microcolumn Technique for Measurement of Glycosylated Hemoglobin</b> C.W. SLEMENDA, D.G. MARRERO, S.E. FINEBERG, P.S. MOORE, R. GIBSON	886
<b>Effect of Isocaloric Substitution of Chocolate Cake for Potato in Type I Diabetic Patients</b> A.L. PETERS, M.B. DAVIDSON, K. EISENBERG	888
<b>Relationship of Psychiatric Illness to Impotence in Men With Diabetes</b> P.J. LUSTMAN, R.E. CLOUSE	893
<b>Oral Contraceptives in Women With Diabetes</b> B.E.K. KLEIN, S.E. MOSS, R. KLEIN	895
<b>Comparison of HbA<sub>1c</sub> and Fructosamine in Diagnosis of Glucose-Tolerance Abnormalities</b> P.J. GUILLAUSSEAU, M.-A. CHARLES, F. PAOLAGGI, J. TIMSIT, P. CHANSON, J. PEYNET, V. GODARD, E. ESCHWEGE, F. ROUSSELET, J. LUBETZKI	898
<b>LETTERS AND COMMENTS</b>	901
<b>ORGANIZATION SECTION</b>	
<b>SYSTEME INTERNATIONAL (SI) UNITS TABLE</b>	



In non-insulin-dependent diabetes ...

**BREAKFAST-TO-BREAKFAST  
CONTROL... *One dose a day.***

**Upjohn**

© 1988 The Upjohn Company



## 24-hour glycemic control can begin at the breakfast table.

When diet and exercise aren't enough, once-a-day MICRONASE provides 24-hour control of both postprandial and fasting blood glucose levels. The usual starting dosage, 2.5 mg to 5 mg once a day, should be taken with breakfast or the first main meal of the day. Some patients, particularly those receiving more than 10 mg daily, may have a more satisfactory response with twice-a-day dosage.

All sulfonylureas, including MICRONASE, can cause severe hypoglycemia. Proper patient selection, dosage, and instructions are important.

**Micronase<sup>®</sup>**  
Tablets (glyburide) **Usual starting dosage**  
**2.5 mg-5 mg once a day**

Please see adjacent page for brief summary of prescribing information.

# Micronase<sup>®</sup>

Tablets (glyburide) Usual starting dosage  
2.5 mg-5 mg once a day

**CONTRAINDICATIONS:** MICRONASE Tablets are contraindicated in patients with: 1. Known hypersensitivity or allergy to the drug. 2. Diabetic ketoacidosis, with or without coma. This condition should be treated with insulin. 3. Type I diabetes mellitus, as sole therapy.

**SPECIAL WARNING ON INCREASED RISK OF CARDIOVASCULAR MORTALITY:** The administration of oral hypoglycemic drugs has been reported to be associated with increased cardiovascular mortality as compared to treatment with diet alone or diet plus insulin. This warning is based on the study conducted by the University Group Diabetes Program (UGDP), a long-term prospective clinical trial designed to evaluate the effectiveness of glucose-lowering drugs in preventing or delaying vascular complications in patients with noninsulin-dependent diabetes. The study involved 823 patients who were randomly assigned to one of four treatment groups (Diabetes, 19 [Suppl 2]: 747-830, 1970).

UGDP reported that patients treated for 5 to 8 years with diet plus a fixed dose of tolbutamide (1.5 grams per day) had a rate of cardiovascular mortality approximately 2½ times that of patients treated with diet alone. A significant increase in total mortality was not observed, but the use of tolbutamide was discontinued based on the increase in cardiovascular mortality, thus limiting the opportunity for the study to show an increase in overall mortality. Despite controversy regarding the interpretation of these results, the findings of the UGDP study provide an adequate basis for this warning. The patient should be informed of the potential risks and advantages of MICRONASE and of alternative modes of therapy.

Although only one drug in the sulfonylurea class (tolbutamide) was included in this study, it is prudent from a safety standpoint to consider that this warning may apply to other oral hypoglycemic drugs in this class, in view of their close similarities in mode of action and chemical structure.

**PRECAUTIONS: General—Hypoglycemia.** All sulfonylureas are capable of producing severe hypoglycemia. Proper patient selection and dosage and instructions are important to avoid hypoglycemic episodes. Renal or hepatic insufficiency may increase the risk of serious hypoglycemic reactions. Elderly, debilitated or malnourished patients, and those with adrenal or pituitary insufficiency, are particularly susceptible to the hypoglycemic action of glucose-lowering drugs. Hypoglycemia may be difficult to recognize in the elderly and in people who are taking beta-adrenergic blocking drugs. Hypoglycemia is more likely to occur when caloric intake is deficient, after severe or prolonged exercise, when alcohol is ingested, or when more than one glucose-lowering drug is used.

**Loss of Control of Blood Glucose:** In diabetic patients exposed to stress such as fever, trauma, infection or surgery, a loss of control may occur. It may then be necessary to discontinue MICRONASE and administer insulin. Adequate adjustment of dose and adherence to diet should be assessed before classifying a patient as a secondary failure. **Information for Patients** Patients should be informed of the potential risks and advantages of MICRONASE and of alternative modes of therapy. They also should be informed about the importance of adherence to dietary instructions, of a regular exercise program, and of regular testing of urine and/or blood glucose. The risks of hypoglycemia, its symptoms and treatment, and conditions that predispose to its development should be explained to patients and responsible family members. Primary and secondary failure should also be explained.

**Laboratory Tests:** Response to MICRONASE Tablets should be monitored by frequent urine glucose tests and periodic blood glucose tests. Measurement of glycosylated hemoglobin levels may be helpful in some patients.

**Drug Interactions:** The hypoglycemic action of sulfonylureas may be potentiated by certain drugs including nonsteroidal anti-inflammatory agents and other drugs that are highly protein bound, salicylates, sulfonamides, chloramphenicol, probenecid, coumarins, monoamine oxidase inhibitors, and beta adrenergic blocking agents.

Certain drugs tend to produce hyperglycemia and may lead to loss of control. These drugs include the thiazides and other diuretics, corticosteroids, phenothiazines, thyroid products, estrogens, oral contraceptives, phenytoin, nicotinic acid, sympathomimetics, calcium channel blocking drugs, and isoniazid.

A potential interaction between oral miconazole and oral hypoglycemic agents leading to severe hypoglycemia has been reported.

**Carcinogenesis, Mutagenesis, and Impairment of Fertility:** Studies in rats at doses up to 300 mg/kg/day for 18 months showed no carcinogenic effects. Glyburide is nonmutagenic when studied in the Salmonella microsome test (Ames test) and in the DNA damage/alkaline elution assay.

**Pregnancy: Teratogenic effects.** Pregnancy Category B. Reproduction studies in rats and rabbits have revealed no evidence of impaired fertility or harm to the fetus due to glyburide. There are no adequate and well controlled studies in pregnant women. This drug should be used during pregnancy only if clearly needed. Insulin should be used during pregnancy to maintain blood glucose as close to normal as possible. **Nonteratogenic Effects:** Prolonged severe hypoglycemia (4 to 10 days) has been reported in neonates born to mothers who were receiving a sulfonylurea drug at the time of delivery. MICRONASE should be discontinued at least two weeks before the expected delivery date.

**Nursing Mothers:** Some sulfonylurea drugs are known to be excreted in human milk. Insulin therapy should be considered.

**Pediatric Use:** Safety and effectiveness in children have not been established.

**ADVERSE REACTIONS: Hypoglycemia:** See Precautions and Overdosage sections. **Gastrointestinal Reactions:** Cholestatic jaundice and hepatitis may occur rarely. MICRONASE Tablets should be discontinued if this occurs. Gastrointestinal disturbances (nausea, epigastric fullness, and heartburn) occurred in 1.8% of patients during clinical trials. They were the most commonly reported adverse reactions. They tend to be dose related and may disappear when dosage is reduced. Liver function abnormalities have been reported.

**Dermatologic Reactions:** Allergic skin reactions, e.g. pruritus, erythema, urticaria, and morbilliform or maculopapular eruptions occurred in 1.5% of patients during trials. These may be transient and may disappear despite continued use of MICRONASE. If skin reactions persist, the drug should be discontinued. **Porphyria cutanea tarda** and photosensitivity reactions have been reported with sulfonylureas.

**Hematologic Reactions:** Leukopenia, agranulocytosis, thrombocytopenia, hemolytic anemia, aplastic anemia, and pancytopenia have been reported with sulfonylureas. **Metabolic Reactions:** Hepatic porphyria and disulfiram-like reactions have been reported with sulfonylureas; however, hepatic porphyria has not been reported with MICRONASE and disulfiram-like reactions have been reported very rarely. Cases of hyponatremia have been reported with glyburide and all other sulfonylureas, most often in patients who are on other medications or have medical conditions known to cause hyponatremia or increase release of antidiuretic hormone (SIADH) secretion has been reported with certain other sulfonylureas, and it has been suggested that these sulfonylureas may augment the peripheral (antidiuretic) action of ADH and/or increase release of ADH.

**OVERDOSAGE:** Overdosage of sulfonylureas, including MICRONASE Tablets, can produce hypoglycemia. If hypoglycemic coma is diagnosed or suspected, the patient should be given a rapid intravenous injection of concentrated (50%) glucose solution. This should be followed by a continuous infusion of a more dilute (10%) glucose solution at a rate which will maintain the blood glucose at a level above 100 mg/dL. Patients should be closely monitored for a minimum of 24 to 48 hours, since hypoglycemia may recur after apparent clinical recovery.

**Maximum Dose:** Daily doses of more than 20 mg are not recommended.

**Dosage Interval:** Once-a-day therapy is usually satisfactory. Some patients, particularly those receiving more than 10 mg daily, may have a more satisfactory response with twice-a-day dosage.

**Specific Patient Populations:** MICRONASE is not recommended for use in pregnancy or for use in children. In elderly patients, debilitated or malnourished patients, and patients with impaired renal or hepatic function, the initial and maintenance dosing should be conservative to avoid hypoglycemic reactions. (See Precautions Section).

For additional product information see your Upjohn representative.

**Upjohn**

THE UPJOHN COMPANY, Kalamazoo, MI 49001

B-5-S

May 1988

J-8274

## AUGUST AUTHOR INDEX (Volume 13, Number 8)

- Abbate, S.L., 904  
Alberti, K.G.M.M., 855  
Alderman, B.W., 848
- Baker, S.B., 908  
Barnard, M.J., 864  
Baron, A.E., 848  
Barth, R., 841  
Biswas, M., 872  
Blotta, R.M., 907  
Bouter, K.P., 876  
Boyko, E.J., 848  
Britton, M.E., 821  
Budding, L.M., 836  
Burden, A.C., 904
- Campbell, J.V., 908  
Campbell, L.V., 841  
Cefalu, W.T., 872  
Chanson, P., 898  
Charles, M.-A., 898  
Chester, D.L., 872  
Chisholm, D.J., 841  
Chonko, A.M., 864  
Clarke, W.L., 902  
Clement, S.C., 903  
Clouse, R.E., 893  
Conget, J.L., 901  
Costa, A.P., 907
- Dandona, P., 821  
Davidson, M.B., 888  
Delgado, I.C., 907  
De Pablo, J., 901  
Diepersloot, R.J.A., 876
- Eisenberg, K., 888  
Eschwege, E., 898  
Esmatjis, E., 901
- Ferreira, E., 907  
Ferrer, J., 901  
Fineberg, S.E., 886  
Folcroft, J., 864  
Fuchs, F.D., 907
- Gastaldo, G., 907  
Genco, R.J., 836  
Gibson, R., 886  
Godard, V., 898  
Goetz, B., 908  
Gomis, R., 901  
Gosper, J.K., 841  
Guillausseau, P.J., 898
- Haines, A.P., 821  
Hamill, M.B., 908  
Hendra, T.J., 821  
Henry, D.N., 903  
Hoekstra, J.B.L., 876  
Hoogewerf, B.J., 904  
Hopper, J.L., 830
- Jeremy, J.Y., 821  
Jones, I.R., 855  
Jupp, J.J., 841
- Keane, E.M., 848  
Klein, B.E.K., 895
- Klein, R., 895  
Klijnnik, J., 907  
Knowler, W.C., 836  
Kussman, M.J., 903  
Kyner, J.L., 864
- Laker, M.F., 855  
Lee, A., 830  
Lion, R.J., 830  
Lubetzki, J., 898  
Lustman, P.J., 893
- MacDougall, M.L., 864  
Maclaren, N.K., 883  
Marrero, D.G., 886  
Miller, M., 855  
Moore, P.S., 886  
Moore, W.V., 864  
Moss, S.E., 895  
Müssnich, D.G., 907
- Nelson, R.G., 836  
Netto, M.S., 907
- O'Dea, K., 830
- Paolaggi, F., 898  
Pernoll, M.L., 872  
Peters, A.L., 888  
Pettiitt, D.J., 836  
Peynet, J., 898  
Peyrot, M., 902  
Prather, K.L., 872
- Rae, C., 830  
Ranquetat, G.G., 907  
Riley, W.J., 883  
Roper, D.R., 821  
Roussellet, F., 898  
Rubin, R.R., 902
- Saad, M.F., 836  
Samanta, A.K., 904  
Saudek, C.D., 902  
Sheehan, J.P., 906  
Shlossman, M., 836  
Simons, L.A., 841  
Slemenda, C.W., 886  
Snyder, A.L., 902  
Spillar, R.P., 883  
Stephenson, J., 864  
Swai, A., 855
- Taylor, R., 855  
Teixeira, C.C., 907  
Timsit, J., 898  
Traianedes, K., 830
- Ulchaker, M.M., 906
- Vallbona, C., 908
- Wagaine-Twabwe, D., 821  
West, M.S., 908  
Wheeler, C.J., 872  
Wiegmann, T.B., 864
- Yudkin, J.S., 821

# DIABETES CARE

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

## EDITOR IN CHIEF

David C. Robbins, MD

## ASSOCIATE EDITORS

Richard C. Eastman, MD  
Maureen I. Harris, PhD  
Barbara V. Howard, PhD  
W. James Howard, MD  
Robert E. Silverman, MD, PhD

## EDITORIAL ASSISTANT

Nancy A. Wiley

## REVIEW EDITOR

Ralph A. DeFronzo, MD

## ASSOCIATE REVIEW EDITORS

K. George M.M. Alberti, MD  
Eleuterio Ferrannini, MD  
Ronald Kahn, MD  
Gerald Reaven, MD  
Robert Sherwin, MD  
Jay Skyler, MD

## EDITORIAL ASSISTANT

Rhonda A. Wolfe

## EDITORIAL BOARD

Naji N. Abumrad, MD  
Barbara J. Anderson, PhD  
Linda A. Anderson, PhD  
Ben Brouhard, MD  
John Cunningham, PhD  
Janice A. Drass, RN, BSN, CDE  
Stephen Duck, MD  
Jeffrey S. Flier, MD  
Carelyn P. Fylling, RN, MS  
Robert Gelfand, MD  
Richard F. Hamman, MD, PhD  
Barbara Howard, PhD  
Eli Ipp, MD  
Jonathan Jaspan, MD  
Barbara Klein, MD, MPH  
Ronald LaPorte, PhD  
Patrick Lustman, PhD  
David G. Marrero, PhD  
Robert S. Mecklenburg, MD  
Piero Micossi, MD  
David M. Nathan, MD  
Alyne T. Ricker, MD  
Neil Ruderman, MD  
Christopher P. Saudek, MD  
Robert S. Schwartz, MD  
Rena Wing, PhD  
Robert R. Wolfe, PhD

## PUBLISHER

Caroline Stevens

## DIRECTOR OF PROFESSIONAL PUBLICATIONS

Beverly Brittan Cook

## MANAGING EDITOR

Orit Lowy Chicherio

## ASSISTANT MANAGING EDITOR

Susan White Hale

## ASSISTANT EDITORS

Jeffry Scott Jones  
John C. Warren

## PUBLICATIONS ASSISTANT

Jennifer J. Jones

## ADVERTISING COORDINATOR

Peggy Donovan

## Mission Statements for *Diabetes Care* and *Diabetes*

*Diabetes Care* publishes original articles and reviews of human and clinical research intended to increase knowledge, stimulate research, and promote better management of people with diabetes mellitus. Emphasis is on human studies reporting on the pathophysiology and treatment of diabetes and its complications; genetics; epidemiology; psychosocial adaptation; education; and the development, validation, and application of accepted and new therapies. Topics covered are of interest to clinically oriented physicians, researchers, epidemiologists, psychologists, diabetes educators, and other professionals.

*Diabetes* publishes original research about the physiology and pathophysiology of diabetes mellitus. Submitted manuscripts can report any aspect of laboratory, animal, or human research. Emphasis is on investigative reports focusing on areas such as the pathogenesis of diabetes and its complications, normal and pathologic pancreatic islet function and intermediary metabolism, pharmacological mechanisms of drug and hormone action, and biochemical and molecular aspects of normal and abnormal biological processes. Studies in the areas of diabetes education or the application of accepted therapeutic and diagnostic approaches to patients with diabetes mellitus are not published.

All manuscripts and other editorial correspondence should be sent by first class mail to David C. Robbins, MD, Editor, *Diabetes Care*, Medical Research Foundation, George Hyman Memorial Research Building, 108 Irving Street, NW, Washington, DC 20010. Manuscripts and correspondence regarding review articles should be sent to Ralph A. DeFronzo, MD, Review Editor, *Diabetes Care*, Department of Medicine, Division of Diabetes, UT-HSCSA, 7703 Floyd Curl Drive, San Antonio, TX 78284.

*Diabetes Care* publishes only original material. When submitting a manuscript, authors must state in their transmittal letter that the material has not been previously published or is not currently being submitted to another journal.

Manuscripts should be prepared in accord with the requirements specified in the document "Uniform Requirements for Manuscripts Submitted to Biomedical Journals," *Annals of Internal Medicine* 96:766-71, 1982. An "Instructions for Authors" page containing specifications for manuscript preparation appears in the January and July issues of each volume.

All material published in *Diabetes Care* is copyrighted by the American Diabetes Association, Inc. All manuscripts submitted to *Diabetes Care* must include a transmittal letter stating the following before they will be considered for publication. "In consideration of ADA reviewing my (our) submission, the undersigned author(s) transfers, assigns, or otherwise conveys all copyright ownership to ADA in the event the work is published." Permission to reproduce copyrighted material from *Diabetes Care* will be granted for limited, noncommercial purposes. Permission requests should be addressed to the Permissions Editor, ADA, 1660 Duke St., Alexandria, VA 22314 and should be accompanied by a letter of permission from the senior author of the article.

*Diabetes Care* (ISSN 0149-5992) is published 10 times per year (Jan, Feb, Mar, Apr, May, Jun, Jul/Aug, Sept, Oct, Nov/Dec) by the American Diabetes Association, Inc., 1660 Duke Street, Alexandria, VA 22314. The annual subscription rate is \$65 for individuals in the U.S. and Canada. Professional Membership dues include \$35 designated for *Diabetes Care*. The annual rate for all foreign subscriptions, excluding Canada, is \$95. The fee for individual copies is \$8 in the U.S. and Canada and \$10 in all other countries. Second class postage paid at Alexandria, Virginia 22314, and at additional mailing offices. POSTMASTER: Send change of address to *Diabetes Care*, American Diabetes Association, Inc., P.O. Box 2055, Harlan, IA 51593-0238.

*Diabetes Care* is listed in *Science Citation Index*, *Current Contents/Life Sciences*, *Current Contents/Clinical Medicine*, *SCISEARCH*, *ISI/BIOMED* databases, and *Automatic Subject Citation Alert*. *Diabetes Care* is available online on *BRS Colleague*. For more information call 800-468-0908. It is also available in machine-readable format from University Microfilms International. *Diabetes Care* is printed on acid-free paper starting with Vol. 11(1), 1988.

© 1990 by the American Diabetes Association, Inc.

## American Diabetes Association Officers 1990-1991

### CHAIRMAN OF THE BOARD

Arnold Bereson

### PRESIDENT

Edward S. Horton, MD

### CHAIRMAN OF THE BOARD-ELECT

Todd E. Leigh

### PRESIDENT-ELECT

Jay S. Skyler, MD

### SENIOR VICE-PRESIDENT

Charlene Freeman, RN

### VICE-CHAIRMAN OF THE BOARD

Ross V. Hickey, Jr.

### VICE-PRESIDENTS

F. Xavier Pi-Sunyer, MD

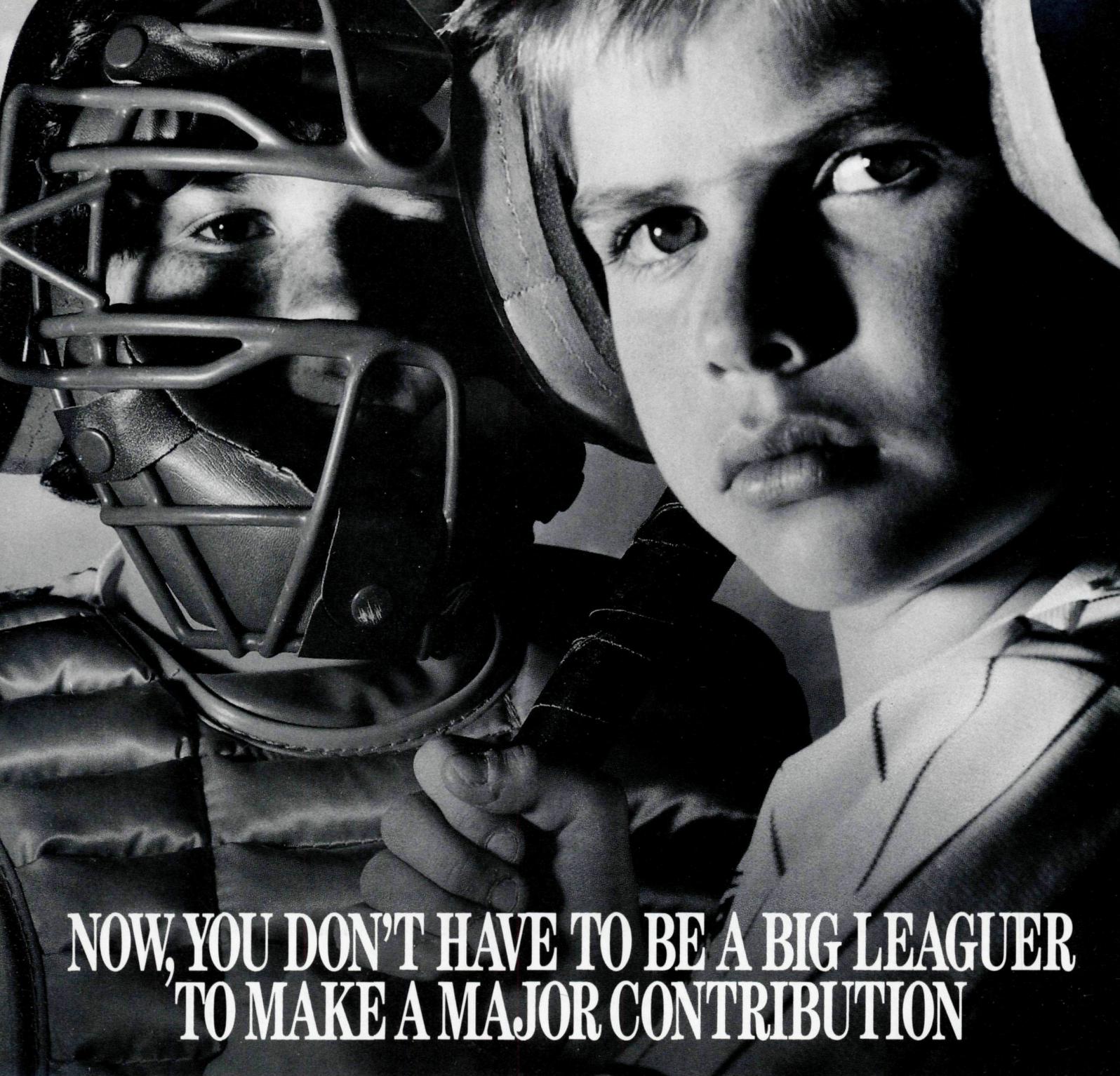
Madelyn L. Wheeler, RD, MS

### SECRETARY

Marilyn Moore

### TREASURER

Douglas E. Lund



# NOW, YOU DON'T HAVE TO BE A BIG LEAGUER TO MAKE A MAJOR CONTRIBUTION



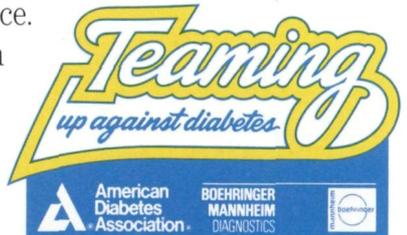
Boehringer Mannheim and the American Diabetes Association have taken the field against a tough opponent...diabetes. And we need your help to have a chance at victory.

Each time one of your patients purchase a self blood glucose monitoring product from the Boehringer

## Help us connect with a cure.

Mannheim lineup, we'll make a contribution to the ADA for diabetes research. So, please help. Even the littlest efforts can make a major difference.

To learn how the ADA can further help you, call 1-800-232-3472.



# IN THIS ISSUE

## By the Skin of Our Teeth

Periodontal disease is one of the major causes of tooth loss in adults. It is considered more common in diabetic than in nondiabetic subjects and can make glycemic control more difficult to achieve. There are few longitudinal studies of periodontal disease in people with diabetes and most studies have included only insulin-dependent diabetes mellitus subjects. In this issue, Nelson et al. (p. 836) evaluated the development of advanced periodontal disease in 2273 Pima Indians followed between 1983 and 1989. When first evaluated, ~66% of the subjects with non-insulin-dependent diabetes mellitus had periodontal disease compared with ~33% of those without diabetes. As expected, incidence increased with age, but the rate of progression or development of new disease was 2.6 times greater in diabetic Pima Indians than in those without diabetes. Although gingival disease is extremely common in older people, with or without diabetes, this study shows that the risk is significantly higher in diabetic subjects. They advocate routine dental examinations and good oral hygiene as part of the standard care for diabetic subjects.

## Wellness or Illness: The Dietary Dynamics

Anyone who has struggled with weight control knows the difficulty of changing old eating habits. For people with non-insulin-dependent diabetes mellitus (NIDDM), dietary change can mark the difference between good health and illness. Although diet is a cornerstone in the management of NIDDM, current educational approaches are often ineffective and achieve only temporary change. Campbell et al. (p. 841) designed an intensive educational program to improve dietary patterns and achieve optimal glycemic control. The 11-wk program provided simplified information, repetition, and a cognitive motivational approach to dietary change. They then compared it with a conventional educational program. They found that the intensive program met with greater success than the conventional program in improving dietary compliance, dietary intake, and total cholesterol level in NIDDM patients but it did not necessarily improve glycemic control. Further study of this important area is indicated for the future.

## Keeping Score Does Not Add Up

For several decades, the effect of the number of pregnancies on subsequent development of non-insulin-dependent diabetes mellitus (NIDDM) has been a matter of research. A correlation between the number of pregnancies and incidence of NIDDM has been widely accepted. This association is challenged by Boyko et al. (p. 848). They used an extensive survey to examine the effects of childbearing on glucose intolerance and NIDDM prevalence. They found no evidence to suggest that childbearing independently causes an increase in NIDDM prevalence. Instead, they used statistical analysis to conclude that age and body weight are more important determinants of NIDDM than childbearing.

## Albumin Excretion Rate: A Matter of Time

What is the best way to measure microalbuminuria? Various studies have used different methods of specimen collection to measure albumin excretion rate (AER). This study, by Wiegmann et al. (p. 864), was undertaken to assess the usefulness of different techniques for determination of AER. They studied 90 patients with type I (insulin-dependent) diabetes and 45 with type II (non-insulin-dependent) diabetes at an outpatient clinic. All were free of overt kidney disease. They compared timed day, night, and 24-h specimens and timed spot specimens during water-induced diuresis. Significant differences in AER were observed depending on the collection technique. They conclude that day or 24-h specimen collection is most useful in determining the presence of abnormal AER, and recommend that it should be used for long-term follow-up of the diabetic patient.

Now,  
Monoject<sup>®</sup> makes it  
a point to be gentle.

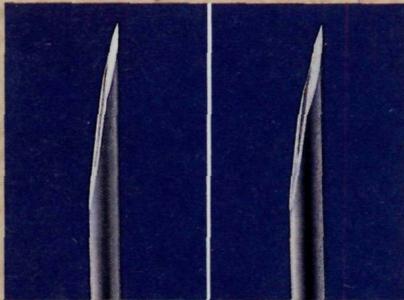
*Introducing the new Monoject<sup>®</sup>  
Ultra Comfort<sup>™</sup> 28g insulin syringe—  
with a gentle touch.*



## A new level of comfort.

New thinner, sharper Monoject® Ultra Comfort™ 28g needle is specially designed for virtually painless injections.

- Electro-polished and polymer lubricated for greater comfort, even for frequent injectors.



New Monoject®  
Ultra Comfort™  
28g syringe

Monoject® 27g  
syringe

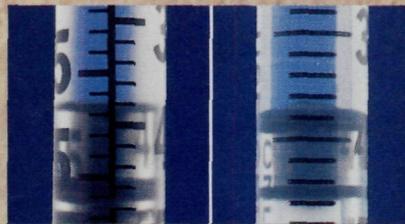
In comparative studies, patients rated injections with the new Monoject® Ultra Comfort™ 28g insulin syringe *more comfortable* than injections with their current brand of syringe.<sup>1</sup>

1. Data on file, Kendall-Futuro Company.

## Easier to read, for a new level of accuracy.

Flat-tipped plunger aligns *exactly* with crisp, easy-to-read single-unit markings on both ½cc and 1cc syringes for more precise filling.

- The new Monoject® Ultra Comfort™ 28g syringe is the *only* 1cc syringe with the convenience of single unit markings.



New Monoject®  
Ultra Comfort™  
28g syringe

Competitive  
Brand

## Kendall-Futuro is your new source for Monoject® products...

and your guarantee of consistent quality. Kendall-Futuro, one of the most respected health care companies in America, now offers the complete Monoject® line of high-performance diabetes care products.

To order free Monoject® Ultra Comfort™ 28g syringe patient sample kits and obtain more information, contact Kendall-Futuro, Dept. FCB, One Riverfront Place, Suite 900, Newport, KY 41071.

Quality... with a gentle touch

**Monoject®**  
Ultra Comfort™ 28g Insulin Syringe



# The facts behind the Glucometer<sup>®</sup> 3 Diabetes Care System with Glucofilm<sup>®</sup> Test Strips

To make the right recommendation about a blood glucose monitoring system demands all the facts on reliability and ease of use. All the facts about the GLUCOMETER<sup>®</sup> 3 Diabetes Care System and GLUCOFILM<sup>®</sup> Test Strips clearly make it the right system for more patients.

**Fact: Provides accuracy for professionals, adds simplicity for patients.**

A measuring range of 20-500 mg/dL assures you of clinically useful blood glucose results for good diabetes management. One-button operation, easy-to-see display and film-strip accuracy assure patients of simple, yet confident testing. In charts A and B, our data from experienced evaluators and patients with diabetes who tested themselves support high-level accuracy for both groups. The close correlation of GLUCOMETER 3 System values with the Yellow Springs Instrument (YSI) reference method shows this system is right for all.

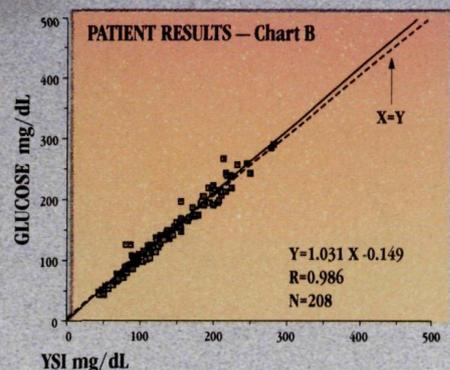
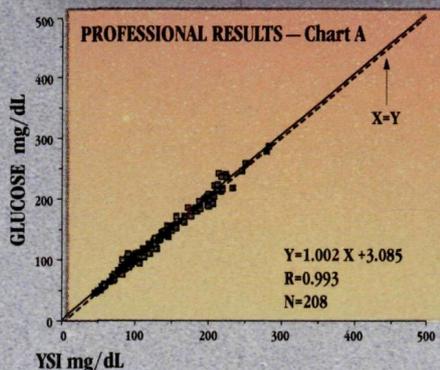


**Fact: GLUCOFILM Test Strips provide the widest hematocrit range available for blood glucose levels from 20-500 mg/dL.**

Hematocrit levels from 20% to 60% have shown no significant effect on blood glucose results.

**Fact: GLUCOMETER 3 Diabetes Care System is affordable.**

Be your own judge of the facts behind this reliable, easy-to-use and affordable blood glucose monitoring system. Contact your Miles Inc., Diagnostics Division representative or write us.



# When post-meal blood sugar demands control, demand Glucotrol

After meals, when NIDDM patients need insulin most, Glucotrol stimulates insulin release within minutes to control blood sugar<sup>1</sup>

- When fasting, insulin levels return to basal levels<sup>2</sup>
- No deleterious effect on lipids<sup>3</sup>
- Low incidence of prolonged and severe hypoglycemia<sup>4</sup>

**Glucotrol**<sup>®</sup>  
(glipizide) 5-mg and 10-mg  
Scored Tablets



Please see brief summary of GLUCOTROL<sup>®</sup> (glipizide) prescribing information on next page.

When diet alone fails in non-insulin-dependent diabetes mellitus (NIDDM)

As with all sulfonylureas, hypoglycemia can occur.

As fast as  
blood sugar spills,  
Glucotrol  
spells...

Glucotrol



**Glucotrol**<sup>®</sup>  
(glipizide) 5-mg and 10-mg  
Scored Tablets 

**References:** 1. Peterson CM, Sims RV, Jones RL, et al. Bioavailability of glipizide and its effect on blood glucose and insulin levels in patients with non-insulin-dependent diabetes. *Diabetes Care* 1982;5:497-500. 2. Goebel R, Leb G. Effects of glyburide and glipizide on levels of immunoreactive insulin and blood sugar, in *Glipizide: A Worldwide Review*. Princeton, NJ, Excerpta Medica, 1984, pp 9-15. 3. Reaven GM. Effect of glipizide treatment on various aspects of glucose, insulin, and lipid metabolism in patients with noninsulin-dependent diabetes mellitus. *Am J Med* 1983;75(November 30):8-14. 4. Berger W, Caduff F, Pasquel M, et al. The relative frequency of severe sulfonylurea hypoglycemia in the last 25 years in Switzerland. *Schweiz Med Wochenschr* 1986;116:145-151.

**Brief Summary of Prescribing Information**

**INDICATIONS AND USAGE:** GLUCOTROL is indicated as an adjunct to diet for the control of hyperglycemia in patients with non-insulin-dependent diabetes mellitus (NIDDM, type II) after an adequate trial of dietary therapy has proved unsatisfactory.

**CONTRAINDICATIONS:** GLUCOTROL is contraindicated in patients with known hypersensitivity to the drug or with diabetic ketoacidosis, with or without coma, which should be treated with insulin.

**SPECIAL WARNING ON INCREASED RISK OF CARDIOVASCULAR MORTALITY:** The administration of oral hypoglycemic drugs has been reported to be associated with increased cardiovascular mortality as compared to treatment with diet alone or diet plus insulin. This warning is based on the study conducted by the University Group Diabetes Program (UGDP), a long-term prospective clinical trial designed to evaluate the effectiveness of glucose-lowering drugs in preventing or delaying vascular complications in patients with non-insulin-dependent diabetes. The study involved 823 patients who were randomly assigned to one of four treatment groups (*Diabetes*, 19, supp. 2:747-830, 1970). UGDP reported that patients treated for 5 to 8 years with diet plus a fixed dose of tolbutamide (1.5 grams per day) had a rate of cardiovascular mortality approximately 2-1/2 times that of patients treated with diet alone. A significant increase in total mortality was not observed, but the use of tolbutamide was discontinued based on the increase in cardiovascular mortality, thus limiting the opportunity for the study to show an increase in overall mortality. Despite controversy regarding the interpretation of these results, the findings of the UGDP study provide an adequate basis for this warning. The patient should be informed of the potential risks and advantages of GLUCOTROL and of alternative modes of therapy.

Although only one drug in the sulfonylurea class (tolbutamide) was included in this study, it is prudent from a safety standpoint to consider that this warning may also apply to other oral hypoglycemic drugs in this class, in view of their close similarities in mode of action and chemical structure.

**PRECAUTIONS: Renal and Hepatic Disease:** The metabolism and excretion of GLUCOTROL may be slowed in patients with impaired renal and/or hepatic function. Hypoglycemia may be prolonged in such patients should it occur.

**Hypoglycemia:** All sulfonylureas are capable of producing severe hypoglycemia. Proper patient selection, dosage, and instructions are important to avoid hypoglycemia. Renal or hepatic insufficiency may increase the risk of hypoglycemic reactions. Elderly, debilitated or malnourished patients and those with adrenal or pituitary insufficiency are particularly susceptible to the hypoglycemic action of glucose-lowering drugs. Hypoglycemia may be difficult to recognize in the elderly or people taking beta-adrenergic blocking drugs. Hypoglycemia is more likely to occur when caloric intake is deficient, after severe or prolonged exercise, when alcohol is ingested, or when more than one glucose-lowering drug is used.

**Loss of Control of Blood Glucose:** A loss of control may occur in diabetic patients exposed to stress such as fever, trauma, infection or surgery. It may then be necessary to discontinue GLUCOTROL and administer insulin.

**Laboratory Tests:** Blood and urine glucose should be monitored periodically. Measurement of glycosylated hemoglobin may be useful.

**Information for Patients:** Patients should be informed of the potential risks and advantages of GLUCOTROL, of alternative modes of therapy, as well as the importance of adhering to dietary instructions, of a regular exercise program, and of regular testing of urine and/or blood glucose. The risks of hypoglycemia, its symptoms and treatment, and conditions that predispose to its development should be explained to patients and responsible family members. Primary and secondary failure should also be explained.

**Drug Interactions:** The hypoglycemic action of sulfonylureas may be potentiated by certain drugs including nonsteroidal anti-inflammatory agents and other drugs that are highly protein bound, salicylates, sulfonamides, chloramphenicol, probenecid, coumarins, monoamine oxidase inhibitors, and beta-adrenergic blocking agents. *In vitro* studies indicate that GLUCOTROL binds differently than tolbutamide and does not interact with salicylate or dicumarol. However, caution must be exercised in extrapolating these findings to a clinical situation. Certain drugs tend to produce hypoglycemia and may lead to loss of control, including the thiazides and other diuretics, corticosteroids, phenothiazines, thyroid products, estrogens, oral contraceptives, phenytoin, nicotinic acid, sympathomimetics, calcium channel blocking drugs, and isoniazid. A potential interaction between oral miconazole and oral hypoglycemic agents leading to severe hypoglycemia has been reported. Whether this interaction also occurs with the intravenous, topical, or vaginal preparations of miconazole is not known.

**Carcinogenesis, Mutagenesis, Impairment of Fertility:** A 20-month study in rats and an 18-month study in mice at doses up to 75 times the maximum human dose revealed no evidence of drug-related carcinogenicity. Bacterial and *in vivo* mutagenicity tests were uniformly negative. Studies in rats of both sexes at doses up to 75 times the human dose showed no effects on fertility.

**Pregnancy:** Pregnancy Category C. GLUCOTROL (glipizide) was found to be mildly fetotoxic in rat reproductive studies at all dose levels (5-50 mg/kg). This fetotoxicity has been similarly noted with other sulfonylureas, such as tolbutamide and tolazamide. The effect is perinatal and believed to be directly related to the pharmacologic (hypoglycemic) action of GLUCOTROL. In studies in rats and rabbits no teratogenic effects were found. There are no adequate and well-controlled studies in pregnant women. GLUCOTROL should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Because recent information suggests that abnormal blood glucose levels during pregnancy are associated with a higher incidence of congenital abnormalities, many experts recommend that insulin be used during pregnancy to maintain blood glucose levels as close to normal as possible.

**Nonteratogenic Effects:** Prolonged severe hypoglycemia has been reported in neonates born to mothers who were taking a sulfonylurea drug at the time of delivery. This has been reported more frequently with the use of agents with prolonged half-lives. GLUCOTROL should be discontinued at least one month before the expected delivery date.

**Nursing Mothers:** Since some sulfonylurea drugs are known to be excreted in human milk, insulin therapy should be considered if nursing is to be continued.

**Pediatric Use:** Safety and effectiveness in children have not been established.

**ADVERSE REACTIONS:** In controlled studies, the frequency of serious adverse reactions reported was very low. Of 702 patients, 11.8% reported adverse reactions and in only 1.5% was GLUCOTROL discontinued.

**Hypoglycemia:** See PRECAUTIONS and OVERDOSAGE sections.

**Gastrointestinal:** Gastrointestinal disturbances, the most common, were reported with the following approximate incidence: nausea and diarrhea, one in 70; constipation and gastralgia, one in 100. They appear to be dose-related and may disappear on division or reduction of dosage. Cholestatic jaundice may occur rarely with sulfonylureas. GLUCOTROL should be discontinued if this occurs.

**Dermatologic:** Allergic skin reactions including erythema, morbilliform or maculopapular eruptions, urticaria, pruritus, and eczema have been reported in about one in 70 patients. These may be transient and may disappear despite continued use of GLUCOTROL; if skin reactions persist, the drug should be discontinued. Porphyria cutanea tarda and photosensitivity reactions have been reported with sulfonylureas.

**Hematologic:** Leukopenia, agranulocytosis, thrombocytopenia, hemolytic anemia, aplastic anemia, and pancytopenia have been reported with sulfonylureas.

**Metabolic:** Hepatic porphyria and disulfiram-like alcohol reactions have been reported with sulfonylureas. Clinical experience to date has shown that GLUCOTROL has an extremely low incidence of disulfiram-like reactions.

**Endocrine Reactions:** Cases of hyponatremia and the syndrome of inappropriate antidiuretic hormone (SIADH) secretion have been reported with this and other sulfonylureas.

**Miscellaneous:** Dizziness, drowsiness, and headache have each been reported in about one in fifty patients treated with GLUCOTROL. They are usually transient and seldom require discontinuance of therapy.

**OVERDOSAGE:** Overdosage of sulfonylureas including GLUCOTROL can produce hypoglycemia. If hypoglycemic coma is diagnosed or suspected, the patient should be given a rapid intravenous injection of concentrated (50%) glucose solution. This should be followed by a continuous infusion of a more dilute (10%) glucose solution at a rate that will maintain the blood glucose at a level above 100 mg/dL. Patients should be closely monitored for a minimum of 24 to 48 hours since hypoglycemia may recur after apparent clinical recovery. Clearance of GLUCOTROL from plasma would be prolonged in persons with liver disease. Because of the extensive protein binding of GLUCOTROL, dialysis is unlikely to be of benefit.

**DOSEAGE AND ADMINISTRATION:** There is no fixed dosage regimen for the management of diabetes mellitus with GLUCOTROL; in general, it should be given approximately 30 minutes before a meal to achieve the greatest reduction in postprandial hyperglycemia.

**Initial Dose:** The recommended starting dose is 5 mg before breakfast. Geriatric patients or those with liver disease may be started on 2.5 mg. Dosage adjustments should ordinarily be in increments of 2.5-5 mg, as determined by blood glucose response. At least several days should elapse between titration steps.

**Maximum Dose:** The maximum recommended total daily dose is 40 mg.

**Maintenance:** Some patients may be effectively controlled on a once-a-day regimen, while others show better response with divided dosing. Total daily doses above 15 mg should ordinarily be divided.

**HOW SUPPLIED:** GLUCOTROL is available as white, dye-free, scored, diamond-shaped tablets imprinted as follows: 5 mg tablet—Pfizer 411 (NDC 5 mg 0049-4110-66) Bottles of 100; 10 mg tablet—Pfizer 412 (NDC 10 mg 0049-4120-66) Bottles of 100.

**CAUTION:** Federal law prohibits dispensing without prescription.

**More detailed professional information available on request.**



Roerig

# diabetes

AUGUST 1990 VOLUME 39 NUMBER 8

A JOURNAL OF  
THE AMERICAN  
DIABETES  
ASSOCIATION.

## PERSPECTIVES IN DIABETES

Transgenic mouse models of type I diabetes M.A. LIPES AND G.S. EISENBARTH 879

## ORIGINAL ARTICLES

Serum type IV collagen concentrations in diabetic patients with microangiopathy as determined by enzyme immunoassay with monoclonal antibodies E. MATSUMOTO, G. MATSUMOTO, A. OOSHIMA, H. KIKUOKA, H. BESSHO, K. MIYAMURA, AND K. NANJO 885

Adaptation of cholinergic enteric neuromuscular transmission in diabetic rat small intestine T.V. NOWAK, B. HARRINGTON, AND J. KALBFLEISCH 891

Association of painful and painless diabetic polyneuropathy with different patterns of nerve fiber degeneration and regeneration S.T. BRITLAND, R.J. YOUNG, A.K. SHARMA, AND B.F. CLARKE 898

Relationship of endoneurial capillary abnormalities to type and severity of diabetic polyneuropathy S.T. BRITLAND, R.J. YOUNG, A.K. SHARMA, AND B.F. CLARKE 909

Alterations in transfer and lipid distribution of arachidonic acid in placentas of diabetic pregnancies D.C. KUHN, M.A. CRAWFORD, M.J. STUART, J.J. BOTTI, AND L.M. DEMERS 914

Early onset of increased transcapillary albumin escape in awake diabetic rats B.J. TUCKER 919

Cell surface alteration in Epstein-Barr virus-transformed cells from patients with extreme insulin resistance D.L. GORDEN, A. ROBERT, V.Y. MONCADA, S.I. TAYLOR, J. MÜHLHAUSER, AND J.-L. CARPENTIER 924

Adoptive transfer of diabetes in BB rats induced by CD4 T lymphocytes M.-D. MÉTROZ-DAYER, A. MOULAND, C. BRIDEAU, D. DUHAMEL, AND P. POUSSIER 928

Insulinitis and diabetes in NOD mice reduced by prophylactic insulin therapy M.A. ATKINSON, N.K. MACLAREN, AND R. LUCHETTA 933

Effect of medial arterial calcification on O<sub>2</sub> supply to exercising diabetic feet E. CHANTELAU, X.Y. MA, S. HERRNBERGER, C. DOHMEN, P. TRAPPE, AND T. BABA 938

Effect of continuous versus delayed insulin replacement on sex behavior and neuroendocrine function in diabetic male rats R.W. STEGER AND S.G. KIENAST 942

Elicitation of sorbitol accumulation in cultured human proximal tubule cells by elevated glucose concentrations J.E. BYLANDER AND D.A. SENS 949

Kinetics of insulin-mediated and non-insulin-mediated glucose uptake in humans S.V. EDELMAN, M. LAAKSO, P. WALLACE, G. BRECHTEL, J.M. OLEFSKY, AND A.D. BARON 955

Kinetics of in vivo muscle insulin-mediated glucose uptake in human obesity M. LAAKSO, S.V. EDELMAN, J.M. OLEFSKY, G. BRECHTEL, P. WALLACE, AND A.D. BARON 965

Immunogenetic analysis of  $\beta$ -cell autoimmunity in NOD mice: relationship of insulinitis to T-lymphocyte-receptor  $\beta^{nod}$  and  $A\beta^{nod}$  genes W.E. WINTER, K. SHIMPO, M. OBATA, K. YAMADA, AND R. LUCHETTA 975

Elevation of plasma thrombomodulin level in diabetic patients with early diabetic nephropathy Y. IWASHIMA, T. SATO, K. WATANABE, E. OOSHIMA, S. HIRAIISHI, H. ISHII, M. KAZAMA, AND I. MAKINO 983

Reversal of glomerular hyperfiltration and renal hypertrophy by blood glucose normalization in diabetic rats S. STACKHOUSE, P.L. MILLER, S.K. PARK, AND T.W. MEYER 989

Inhibition of insulin and somatostatin secretion and stimulation of glucagon release by homologous galanin in perfused rat pancreas P. MIRALLES, E. PEIRÓ, P. DÉGANO, R.A. SILVESTRE, AND J. MARCO 996

## RAPID PUBLICATION

Selective elimination of fibroblasts from pancreatic islet monolayers by basic fibroblast growth factor-saporin mitotoxin G.M. BEATTIE, D.A. LAPPI, A. BAIRD, AND A. HAYEK 1002

**BOOK REVIEW** 1006

## ORGANIZATION SECTION

## SYSTÈME INTERNATIONAL (SI) UNITS TABLE



DIAEAZ 39(8) 879-1007 (1990)  
ISSN 0012-1797



# "I USE THE ONE TOUCH<sup>®</sup> METER WITH CONFIDENCE"

— Pediatrician Peter Bove, M.D., San Bruno, California.

IT  
PAYS TO BE  
ACCURATE  
UP TO \$100<sup>00</sup>  
CASH BACK

Offer good from 1/1/90  
through 5/31/90 see  
Rebate Certificate  
for details

## **"One Touch makes accurate results easy to achieve."**

"I can't afford to worry about the accuracy of my blood glucose test results. That's why I use the One Touch<sup>®</sup> Blood Glucose System from LifeScan."

"In testing my own blood glucose I have found it more difficult to make a mistake with One Touch, it's so simple."

"I use One Touch with confidence in testing my own blood glucose. And I recommend One Touch with confidence for my patients."

The One Touch System dramatically simplifies blood glucose testing. Results are obtained with only three easy steps.



Accurate results are easy to achieve with testing this simple. The One Touch System reduces the chance of user error because it eliminates three major demands on the user: Starting the Test, Timing the Test, and Removing the Blood. And that means greater accuracy where it matters most: in the hands of the people who use it<sup>1</sup>.

To find out more about the One Touch Blood Glucose Monitoring System call:

Toll Free

United States

1 800 227-8862

Canada

1 800 663-5521

1. Jovanovic-Peterson L., Peterson C., Dudley J., Kilo C., Ellis B.: Identifying sources of error in self-monitoring of blood glucose. Diabetes Care 1988; 11 (10) 791-794.

**LIFESCAN** INC.

a *Johnson & Johnson* company  
Milpitas, California 95035

# Get ADA's nutrition publications for your patients at a great savings!

*Save \$5 to more than \$700 when you buy bulk copies of these essential patient publications!*



## Exchange Lists For Meal Planning

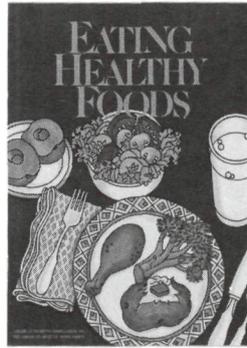
Here's the preferred system for diabetes meal planning. Colorful charts, helpful tips on good nutrition, and the six easy-to-use food exchange lists show your patients



how to balance their diets to help control their diabetes. *Regular or Large-Print Versions.*

## Eating Healthy Foods

Developed for people with limited reading skills, this colorfully illustrated booklet provides daily meal choices using the Exchange Lists. It's also perfect for patients needing a simplified guide to meal planning.



## Nutrition Pamphlets

This series of pamphlets for your patients answers the most commonly asked questions about healthy eating. Each pamphlet contains dietary goals and tips.

- A Word About Obesity #220B
- A Word About Nutrition #228B
- Nutrition and Insulin-Dependent Diabetes #229B
- Nutrition and Non-Insulin-Dependent Diabetes #230B
- Nutrition For Children With Diabetes #231B

*Each title: \$6.95 for 25 copies.*

## Healthy Food Choices

This pamphlet contains the basics of good nutrition and meal planning. Designed as an introduction to the Exchange Lists or a stand-alone product, this mini-poster is a "beginner's level" meal planning tool. *English or Spanish Versions.*

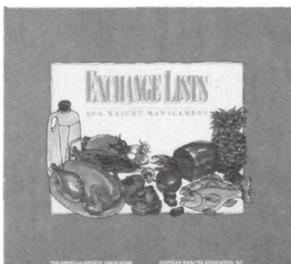


## Bulk Prices

Exchange Lists For	25	50	100	250	500
<b>Meal Planning</b>					
Regular	\$31.10	\$ 62.15	\$119.00	\$269.00	\$547.00
Large Print	\$59.75	\$118.15	\$219.00	\$519.00	\$922.00
<b>Eating Healthy Foods</b>	\$36.25	\$ 76.40	\$160.25	\$340.25	\$626.10
<b>Healthy Food Choices</b>					
English	\$ 7.05	\$ 13.40	\$ 23.70	\$ 53.70	\$ 96.75
Spanish	\$ 7.55	\$ 14.40	\$ 25.70	\$ 58.70	\$106.75
<b>Exchange Lists For Weight Management</b>	\$31.10	\$ 62.15	\$119.00	\$269.00	\$547.00

## Exchange Lists For Weight Management

It's the perfect book for any of your patients who want to get their weight under control. Help your patients learn the basics of good nutrition and set goals for a good weight management program.



## YES! Please send me the following publications:

Quantity    Item Name or Number    Total


Subtotal \$ \_\_\_\_\_  
 Orders outside the U.S., please add 10% for shipping \$ \_\_\_\_\_  
 VA residents add 4.5% state sales tax \$ \_\_\_\_\_  
**TOTAL \$ \_\_\_\_\_**

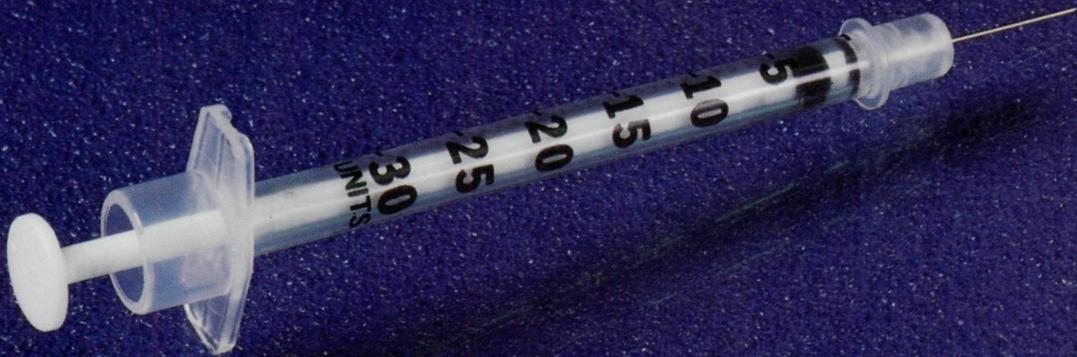
Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_  
 State \_\_\_\_\_ Zip \_\_\_\_\_

CC89001

To Order send your check or money order payable to the American Diabetes Association, 1970 Chain Bridge Rd., McLean VA 22109-0592. VA residents add 4.5% for sales tax and foreign orders add 10% for surface shipping. Please allow 4-6 weeks for domestic delivery. Prices are subject to change without notice.

**Call 1-800-ADA-DISC ext. 355 for bulk prices on ADA's other patient publications!**

# For your patients who inject less than 30 units... the innovative, exclusive **B-D** 3/10cc Insulin Syringe.



Easier to handle

**GUARANTEED**

Easier to read

**GUARANTEED**

Greater accuracy

**GUARANTEED**

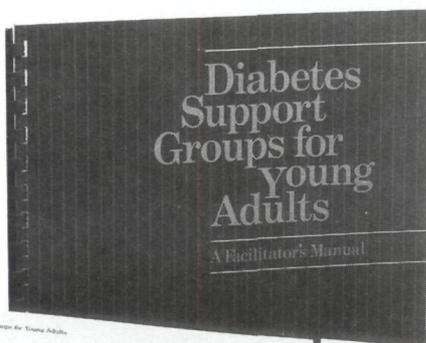
The ultimate in  
injection comfort

**GUARANTEED**



If your patients don't agree on all four points, **B-D** agrees to refund the full purchase price.

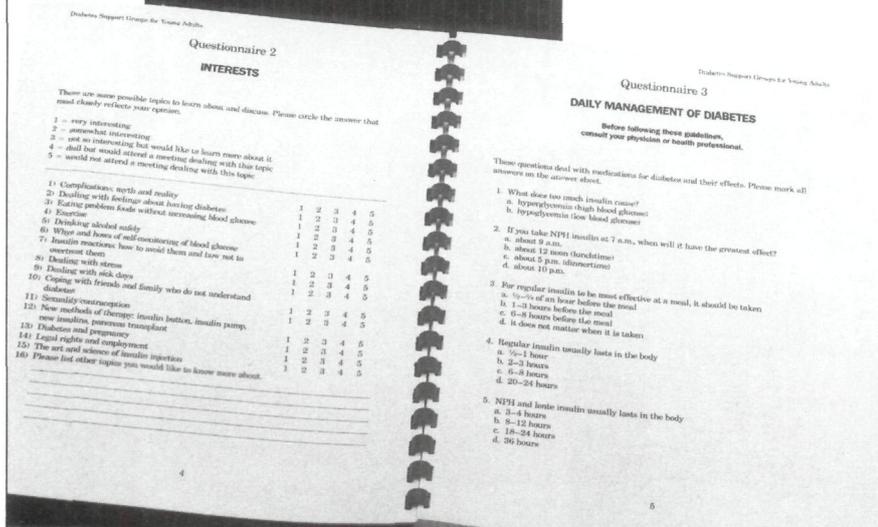
# Lead a diabetes support group with the newest resource from the American Diabetes Association.



This complete guide for health-care professionals presents a step-by-step approach to planning and conducting support groups for young adults with type I diabetes. Session plans cover everything from recruitment and screening of participants to the final wrap-up and group evaluation. This manual also provides questionnaires, exercises, and fact sheets for use as handouts to participants.

The following topics are covered:

- Managing Sick Days
- Insulin and Insulin Injection Techniques
- Sexuality and Pregnancy
- Aerobic Exercise
- Managing Stress
- Insulin Reactions
- Psychological Issues
- Complications
- New Developments
- Alcohol and Diabetes
- Employment Discrimination and Other Legal Issues



## Diabetes Support Groups for Young Adults: A Facilitator's Manual

I would like to order the newest resource from the American Diabetes Association. Please send me:

\_\_\_\_\_ copies of *Diabetes Support Groups for Young Adults:*

*A Facilitator's Manual.* #PEDSGYA

ADA Members: \$14.80, Nonmembers: \$16.45

SUBTOTAL (VA residents add 4.5% state sales tax)

Add Shipping & Handling (see chart)

\$ \_\_\_\_\_  
 \$ \_\_\_\_\_  
 \$ \_\_\_\_\_  
 TOTAL \$ \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

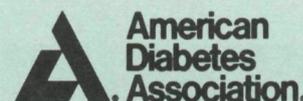
Make your check or money order payable to: American Diabetes Association. Mail to: American Diabetes Association, 1970 Chain Bridge Road, McLean, VA 22109-0592.

### Shipping & Handling Chart

(calculate using the total cost of publications)

up to \$5.00	\$1.75
\$5.01-\$10.00	\$3.00
\$10.01-\$25.00	\$4.50
\$25.01-\$50.00	\$5.50
over \$50.00	10% of order

Allow 6-8 weeks for domestic delivery. Add \$3.00 to shipping & handling for each additional "ship to" address. Add \$15.00 to shipping & handling for air shipped orders outside the U.S. Prices subject to change without notice.



## HURRY! Order your copy today.

# *Our accuracy makes every drop count*



Patients with diabetes make enough sacrifices—from diet to insulin injections to blood glucose monitoring. Why ask them to give up even a single drop of blood for a reading that could be less than accurate?

Recommend the blood glucose monitor that puts accuracy first—the same level of accuracy more hospitals choose.<sup>1</sup> The Accu-Chek® IIm System. Make every drop count.

Reference: 1. Data on file, Boehringer Mannheim Corporation.



**Accu-Chek® IIm Blood Glucose Monitor  
& Chemstrip bG® Test Strips**

*The hospital's choice...because accuracy counts*

**BOEHRINGER  
MANNHEIM  
CORPORATION**



# From the worldwide leader in diabetes care.



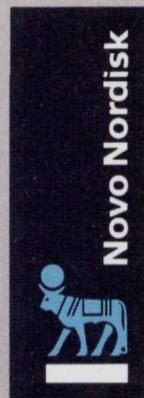
**NovolinPen™.** The world's first dial-a-dose insulin delivery system is accurate, economical and easy to use.

**PenFill® cartridges available in:**

- **Novolin® R** Regular human insulin injection (semi-synthetic)
- **Novolin® N** NPH human insulin isophane suspension (semi-synthetic)
- **Novolin® 70/30** 70% NPH human insulin isophane suspension & 30% regular human insulin injection (semi-synthetic)

Patient-preferred over syringe and vial by users surveyed<sup>1</sup>

**Transfer your patients to an easier way of life**



**Novo Nordisk Pharmaceuticals Inc.**

The worldwide leader in diabetes care

<sup>1</sup> Data on file, Novo Nordisk Pharmaceuticals Inc. ©Novo Nordisk Pharmaceuticals Inc. 1990