

# Diabetes Care®

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

January 2017 Volume 40, Number 1

## In This Issue

- 1 In This Issue of *Diabetes Care*

## Editor's Commentary

- 3 *Diabetes Care*: "Taking It to the Limit One More Time"  
W.T. Cefalu, A.J.M. Boulton, W.V. Tamborlane,  
R.G. Moses, D. LeRoith, E.L. Greene, F.B. Hu, G. Bakris,  
J. Wylie-Rosett, J. Rosenstock, S.E. Kahn, K. Weinger,  
L. Blonde, M. de Groot, S. Rich, D. D'Alessio, L. Reynolds,  
and M.C. Riddle

## Clinical Care/Education/Nutrition/Psychosocial Research

- 7 Glucose Metabolism After Gastric Banding and Gastric Bypass in Individuals With Type 2 Diabetes: Weight Loss Effect  
M.M. Holter, R. Dutia, S.M. Stano, R.L. Prigeon, P. Homel,  
J.J. McGinty Jr., S.J. Belsley, C.J. Ren, D. Rosen, and B. Laferrière  
→ 16 HbA<sub>1c</sub> and the Prediction of Type 2 Diabetes in Children and Adults  
P. Vijayakumar, R.G. Nelson, R.L. Hanson, W.C. Knowler,  
and M. Sinha

## Epidemiology/Health Services Research

- 22 High Fasting Plasma Glucose, Diabetes, and Its Risk Factors in the Eastern Mediterranean Region, 1990–2013: Findings From the Global Burden of Disease Study 2013  
M. Moradi-Lakeh, M.H. Forouzanfar, C. El Bcheraoui, F. Daoud,  
A. Afshin, S.W. Hanson, T. Vas, M. Naghavi, C.J.L. Murray,  
and A.H. Mokdad, on behalf of the Global Burden of Disease Collaborators on Eastern Mediterranean Region and Diabetes  
30 Influence of HbA<sub>1c</sub> and BMI on Lipid Trajectories in Youths and Young Adults With Type 1 Diabetes  
M.L. Katz, C.R. Kollman, C.E. Dougher, M. Mubasher, and  
L.M.B. Laffel  
→ 38 Long-term Mortality and End-Stage Renal Disease in a Type 1 Diabetes Population Diagnosed at Age 15–29 Years in Norway  
V. Gagnum, L.C. Stene, T. Leivestad, G. Joner, and T. Skrivarhaug  
46 The Association of Arsenic Exposure and Metabolism With Type 1 and Type 2 Diabetes in Youth: The SEARCH Case-Control Study  
M. Grau-Pérez, C.-C. Kuo, M. Spratlen, K.A. Thayer, M.A. Mendez,  
R.F. Hamman, D. Dabelea, J.L. Adgate, W.C. Knowler, R.A. Bell,  
F.W. Miller, A.D. Liese, C. Zhang, C. Douillet, Z. Drobna,  
E.J. Mayer-Davis, M. Styblo, and A. Navas-Acien

## Emerging Technologies and Therapeutics

- 54 Metformin Is Associated With Higher Relative Abundance of Mucin-Degrading *Akkermansia muciniphila* and Several Short-Chain Fatty Acid-Producing Microbiota in the Gut  
J. de la Cuesta-Zuluaga, N.T. Mueller, V. Corrales-Agudelo,  
E.P. Velásquez-Mejía, J.A. Carmona, J.M. Abad, and  
J.S. Escobar  
→ 63 Accuracy and Longevity of an Implantable Continuous Glucose Sensor in the PRECISE Study: A 180-Day, Prospective, Multicenter, Pivotal Trial  
J. Kropff, P. Choudhary, S. Neupane, K. Barnard,  
S.C. Bain, C. Kapitza, T. Forst, M. Link, A. Dehennis,  
and J.H. DeVries

## Pathophysiology/Complications

- 69 Effect of Saxagliptin on Renal Outcomes in the SAVOR-TIMI 53 Trial  
O. Mosenzon, G. Leibowitz, D.L. Bhatt, A. Cahn, B. Hirshberg, C. Wei,  
K. Im, A. Rozenberg, I. Yanuv, C. Stahre, K.K. Ray, N. Iqbal,  
E. Braunwald, B.M. Scirica, and I. Raz  
77 Long-term Protective Changes in Adipose Tissue After Gastric Bypass  
J. Hoffstedt, D.P. Andersson, D. Eriksson Hogling,  
J. Theorell, E. Näslund, A. Thorell, A. Ehrlund, M. Rydén,  
and P. Arner  
85 Adiponectin, Insulin Sensitivity, β-Cell Function, and Racial/Ethnic Disparity in Treatment Failure Rates in TODAY  
S. Arslanian, L. El Ghormli, F. Bacha, S. Caprio, R. Goland,  
M.W. Haymond, L. Levitsky, K.J. Nadeau, N.H. White, and  
S.M. Willi, for the TODAY Study Group  
94 Cardiovascular Autonomic Neuropathy and Cardiovascular Outcomes in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications (DCCT/EDIC) Study  
R. Pop-Busui, B.H. Briffett, B. Zinman, C. Martin, N.H. White,  
W.H. Herman, S. Genuth, R. Gubitosi-Klug, and the DCCT/EDIC Research Group  
101 Role of Type 2 Diabetes in Determining Retinal, Renal, and Cardiovascular Outcomes in Women With Previous Gestational Diabetes Mellitus  
R. Retnakaran and B.R. Shah  
109 Nonalcoholic Fatty Liver Disease Is Prevalent in Women With Prior Gestational Diabetes Mellitus and Independently Associated With Insulin Resistance and Waist Circumference  
S. Foghsgaard, C. Andreasen, L. Vedtofte, E.S. Andersen, E. Bahne,  
C. Strandberg, T. Buhl, J.J. Holst, J.A. Svare, T.D. Clausen,  
E.R. Mathiesen, P. Damm, L.L. Gluud, F.K. Knop, and T. Vilsbøll

## Cardiovascular and Metabolic Risk

- 117 Effects of Liraglutide on Heart Rate and Heart Rate Variability: A Randomized, Double-Blind, Placebo-Controlled Crossover Study  
P. Kumarathurai, C. Anholm, B.S. Larsen, R.H. Olsen,  
S. Madsbad, O. Kristiansen, O.W. Nielsen, S.B. Haugaard,  
and A. Sajadieh  
125 Long-term Prediction of Cardiovascular Outcomes by Circulating CD34<sup>+</sup> and CD34<sup>+</sup>CD133<sup>+</sup> Stem Cells in Patients With Type 2 Diabetes  
G.P. Fadini, M. Rigato, R. Cappellari, B.M. Bonora,  
and A. Avogaro

## Novel Communications in Diabetes

- 132 Low-Carbohydrate Diet Impairs the Effect of Glucagon in the Treatment of Insulin-Induced Mild Hypoglycemia: A Randomized Crossover Study  
A. Ranjan, S. Schmidt, C. Damm-Frydenberg, I. Steineck,  
T.R. Clausen, J.J. Holst, S. Madsbad, and K. Nørgaard

## Position Statements

- 136 Diabetic Neuropathy: A Position Statement by the American Diabetes Association  
R. Pop-Busui, A.J.M. Boulton, E.L. Feldman, V. Bril, R. Freeman,  
R.A. Malik, J.M. Sosenko, and D. Ziegler

Keep up with the latest information for *Diabetes Care* and other ADA titles via Facebook (/ADAJournals) and Twitter (@ADA\_Journals).

All articles in *Diabetes Care* are available online at diabetes.org/diabetescare. Cover articles (➡) and select content are available free of charge. Other articles are available free to print subscribers or can be purchased as e-prints or reprints.

ADA's *Diabetes Care Update* podcasts are available at diabetesjournals.org and through iTunes.

Icons shown below appear on the first page of an article if more information is available online.



Free Article



Video



Podcast



Supplementary Data



Companion Article

- 155** Glucose Concentrations of Less Than 3.0 mmol/L (54 mg/dL) Should Be Reported in Clinical Trials: A Joint Position Statement of the American Diabetes Association and the European Association for the Study of Diabetes  
*International Hypoglycaemia Study Group*

#### Issues and Events

- 158** Issues and Events

#### e-Letters – Observations

- e1** Home Monitoring of Fasting and Postprandial Triglycerides in Late Pregnancy: A Pilot Study  
*H.L. Barrett, H.D. McIntyre, M. D'Emden, M. Dekker Nitert, and L.K. Callaway*

#### e-Letters – Comments and Responses

- e3** Comment on Pinsker et al. Randomized Crossover Comparison of Personalized MPC and PID Control Algorithms for the Artificial Pancreas. *Diabetes Care* 2016;39:1135–1142  
*G.M. Steil*
- e4** Response to Comment on Pinsker et al. Randomized Crossover Comparison of Personalized MPC and PID Control Algorithms for the Artificial Pancreas. *Diabetes Care* 2016;39:1135–1142  
*J.E. Pinsker, J.B. Lee, E. Dassau, D.E. Seborg, P.K. Bradley, R. Gondhalekar, W.C. Bevier, L. Huyett, H.C. Zisser, and F.J. Doyle III*



The American Diabetes Association (ADA) is the nation's leading voluntary health organization supporting diabetes research, information, and advocacy. Its mission is to prevent and cure diabetes and to improve the lives of all people affected by diabetes. ADA is the leading publisher of comprehensive diabetes information. Its huge library of books and periodicals covers every aspect of diabetes and diabetes care.

**To join ADA:** Call 1-800-806-7801 or visit [professional.diabetes.org/membership](http://professional.diabetes.org/membership)

**To subscribe to ADA journals:** Call 1-800-DIABETES or go to [diabetesjournals.org](http://diabetesjournals.org)

**To order ADA books:** Call 1-800-232-6733 or visit [shopdiabetes.org](http://shopdiabetes.org)

**To access ADA's library of professional resources:** Go to [professional.diabetes.org](http://professional.diabetes.org)

**For more information about diabetes or ADA programs and services:** Call 1-800-DIABETES. E-mail: [AskADA@diabetes.org](mailto:AskADA@diabetes.org) or visit [diabetes.org](http://diabetes.org)

**To locate an ADA/NCQA Recognized Provider of quality diabetes care in your area:** Visit [recognition.ncqa.org](http://recognition.ncqa.org)

**To join the fight to increase funding for diabetes research, end discrimination, and improve insurance coverage:** Call 1-800-DIABETES or visit [diabetes.org/advocacy](http://diabetes.org/advocacy)

**To find out how you can get involved with the programs in your community:** Call 1-800-DIABETES or visit [diabetes.org/in-my-community](http://diabetes.org/in-my-community)

**To find out about important research regarding diabetes:** Go to [diabetes.org/research-and-practice](http://diabetes.org/research-and-practice)

**To make a donation or memorial contribution:** Call 1-800-DIABETES or visit [diabetes.org/donate](http://diabetes.org/donate)