Diabetes Care

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

January 2014 Volume 37, Number 1

In This Issue

1 In This Issue of Diabetes Care

Commentary

3 Self-Mixed/Split Insulin Regimen: A Serious Omission in the ADA/EASD Position Statement M.B. Davidson

DCCT/EDIC 30th Anniversary Summary Findings

- The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study at 30 Years: The "Gift" That Keeps on Giving!

 W.T. Cefalu and R.E. Ratner
- The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study: 30th Anniversary Presentations
 B. Zinman, S. Genuth, and D.M. Nathan
- 9 The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study at 30 Years: Overview

 D.M. Nathan, for the DCCT/EDIC Research Group
- Diabetic Retinopathy and Other Ocular Findings in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study L.P. Aiello, for the DCCT/EDIC Research Group
- 24 Kidney Disease and Related Findings in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study

 1.H. de Boer, for the DCCT/EDIC Research Group
- 31 Neuropathy and Related Findings in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study

 C.L. Martin, J.W. Albers, and R. Pop-Busui, for the DCCT/EDIC Research Group
- 39 Update on Cardiovascular Outcomes at 30 Years of the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study J.M. Lachin, T.J. Orchard, and D.M. Nathan, for the DCCT/EDIC Research Group
- The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study at 30 Years: Summary and Future Directions

 R.A. Gubitosi-Kluq, for the DCCT/EDIC Research Group

Clinical Care/Education/Nutrition/Psychosocial Research

- Potential Efficiency Benefits of Nonmydriatic Ultrawide Field Retinal Imaging in an Ocular Telehealth Diabetic Retinopathy Program
 P.S. Silva, J.D. Cavallerano, D. Tolls, A. Omar, K. Thakore, B. Patel,
- Dairy Consumption, Type 2 Diabetes, and Changes in Cardiometabolic Traits: A Prospective Cohort Study of Middle-Aged and Older Chinese in Beijing and Shanghai G. Zong, Q. Sun, D. Yu, J. Zhu, L. Sun, X. Ye, H. Li, Q. Jin, H. Zheng, F.B. Hu, and X. Lin

M. Sehizadeh, A.M. Tolson, J.K. Sun, L.M. Aiello, and L.P. Aiello

- 64 Correlates of Treatment Patterns Among Youth With Type 2 Diabetes
 - A. Badaru, G.J. Klingensmith, D. Dabelea, E.J. Mayer-Davis, L. Dolan, J.M. Lawrence, S. Marcovina, D. Beavers, B.L. Rodriguez, G. Imperatore, and C. Pihoker

- 73 Chronic Fatigue in Type 1 Diabetes: Highly Prevalent but Not Explained by Hyperglycemia or Glucose Variability M.M. Goedendorp, C.J. Tack, E. Steggink, L. Bloot, E. Bazelmans, and H. Knoop
- 81 Real-Time Support of Pediatric Diabetes Self-Care by a Transport Team B.E. Franklin, S.C. Crisler Jr., R. Shappley, M.M. Armour, D.T. McCommon, and R.J. Ferry Jr.
- 88 Consumption of a Diet Low in Advanced Glycation End Products for 4 Weeks Improves Insulin Sensitivity in Overweight Women

 A.B. Mark, M.W. Poulsen, S. Andersen, J.M. Andersen, M.J. Bak, C. Ritz, J.J. Holst, J. Nielsen, B. de Courten, L.O. Dragsted, and S.G. Bügel
- 96 Higher Relative Risk for Multiple Sclerosis in a Pediatric and Adolescent Diabetic Population: Analysis From DPV Database S. Bechtold, A. Blaschek, K. Raile, A. Dost, C. Freiberg, M. Askenas, E. Fröhlich-Reiterer, E. Molz, and R.W. Holl
- 102 Toward Defining a Cutoff Score for Elevated Fear of Hypoglycemia on the Hypoglycemia Fear Survey Worry Subscale in Patients With Type 2 Diabetes

 T.R.S. Hajós, W.H. Polonsky, F. Pouwer, L. Gonder-Frederick, and F. I. Spaek
- 109 Experiences, Views, and Support Needs of Family Members of People With Hypoglycemia Unawareness: Interview Study J. Lawton, D. Rankin, J. Elliott, S.R. Heller, H.A. Rogers, N. De Zoysa, and S. Amiel, for the U.K. NIHR DAFNE Study Group

Epidemiology/Health Services Research

- Dietary Energy Intake Is Associated With Type 2 Diabetes
 Risk Markers in Children
 A.S. Donin, C.M. Nightingale, C.G. Owen, A.R. Rudnicka, S.A. Jebb,
 G.L. Ambrosini, A.M. Stephen, D.G. Cook, and P.H. Whincup
- Differential Associations of Oral Glucose Tolerance Test—Derived Measures of Insulin Sensitivity and Pancreatic β-Cell Function With Coronary Artery Calcification and Microalbuminuria in Type 2 Diabetes C.K. Mulvey, A.M. McNeill, C.J. Girman, T.W. Churchill, K. Terembula, J.F. Ferguson, R. Shah, N.N. Mehta, A.N. Qasim, M.R. Rickels, and M.P. Reilly
- 134 Risk of Breast Cancer by Individual Insulin Use: An International Multicenter Study
 L. Grimaldi-Bensouda, D. Cameron, M. Marty, A.H. Barnett,
 F. Penault-Llorca, M. Pollak, B. Charbonnel, M. Riddle, L. Mignot,
 J.-F. Boivin, A. Khachatryan, M. Rossignol, J. Bénichou, A. Alpérovitch,
 and L. Abenhaim, for the ISICA Group
- 144 Impact of Sex and Age at Onset of Diabetes on Mortality
 From Ischemic Heart Disease in Patients With Type 1
 Diabetes
 V. Harjutsalo, C. Maric-Bilkan, C. Forsblom, and P.-H. Groop
- 149 Prospective Study on the Incidences of Cardiovascular-Renal Complications in Chinese Patients With Young-Onset Type 1 and Type 2 Diabetes

 A.O.Y. Luk, E.S.H. Lau, W.-Y. So, R.C.W. Ma, A.P.S. Kong, R. Ozaki, F.C.C. Chow, and J.C.N. Chan
- 158 Metabolomics Reveals Broad-Scale Metabolic Perturbations in Hyperglycemic Mothers During Pregnancy

 D.M. Scholtens, M.J. Muehlbauer, N.R. Daya, R.D. Stevens, A.R. Dyer,
 L.P. Lowe, B.E. Metzger, C.B. Newgard, J.R. Bain, and W.L. Lowe Jr.,
 for the HAPO Study Cooperative Research Group

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 ADA Statements are available free of charge. Each cover article is accompanied by a free online slide set that includes a summary of the article's key points and conclusions as well as associated tables and figures. Other articles are available free to print subscribers or can be purchased as e-prints or reprints.

Icons shown below indicate more information is available online.







Podcast





- 167 The Association Between Different A1C-Based Measures of Glycemia and Risk of Cardiovascular Disease Hospitalization
 - G.A. Nichols, A.G. Rosales, N.A. Perrin, and S.P. Fortmann
- Association of Glomerular Filtration Rate With Outcomes of 173 Acute Stroke in Type 2 Diabetic Patients: Results From the China National Stroke Registry Y. Luo, X. Wang, Y. Wang, C. Wang, H. Wang, D. Wang, L. Liu, Q. Jia, G. Liu, X. Zhao, and Y. Wang, on behalf of the CNSR Investigators
- Barriers to Eye Care Among People Aged 40 Years and Older 180 With Diagnosed Diabetes, 2006–2010 C.-F. Chou, C.E. Sherrod, X. Zhang, L.E. Barker, K.M. Bullard, J.E. Crews, and J.B. Saaddine
- 189 Serum Omega-3 Polyunsaturated Fatty Acids and Risk of Incident Type 2 Diabetes in Men: The Kuopio Ischemic Heart Disease Risk Factor Study J.K. Virtanen, J. Mursu, S. Voutilainen, M. Uusitupa, and T.-P. Tuomainen
- 197 Is Neighborhood Green Space Associated With a Lower Risk of Type 2 Diabetes? Evidence From 267,072 Australians T. Astell-Burt, X. Feng, and G.S. Kolt
- Cost-Effectiveness of MODY Genetic Testing: Translating 202 Genomic Advances Into Practical Health Applications R.N. Naylor, P.M. John, A.N. Winn, D. Carmody, S.A.W. Greeley, L.H. Philipson, G.I. Bell, and E.S. Huang

Emerging Technologies and Therapeutics

Acute Metabolic Effects of Exenatide in Patients With Type 1 210 Diabetes With and Without Residual Insulin to Oral and Intravenous Glucose Challenges T. Ghazi, L. Rink, J.L. Sherr, and K.C. Herold

Pathophysiology/Complications

- Vital Signs, QT Prolongation, and Newly Diagnosed 217 Cardiovascular Disease During Severe Hypoglycemia in Type 1 and Type 2 Diabetic Patients
 - T. Tsujimoto, R. Yamamoto-Honda, H. Kajio, M. Kishimoto, H. Noto, R. Hachiya, A. Kimura, M. Kakei, and M. Noda
- 226 Early Progressive Renal Decline Precedes the Onset of Microalbuminuria and Its Progression to Macroalbuminuria A.S. Krolewski, M.A. Niewczas, J. Skupien, T. Gohda, A. Smiles, J.H. Eckfeldt, A. Doria, and J.H. Warram
- 235 Cardiovascular Autonomic Dysfunction Predicts Severe Hypoglycemia in Patients With Type 2 Diabetes: A 10-Year Follow-up Study J.-S. Yun, J.-H. Kim, K.-H. Song, Y.-B. Ahn, K.-H. Yoon, K.-D. Yoo, Y.-M. Park, and S.-H. Ko
- GLP-1 Responses Are Heritable and Blunted in Acquired 242 Obesity With High Liver Fat and Insulin Resistance N. Matikainen, L.H. Bogl, A. Hakkarainen, J. Lundbom, N. Lundbom, J. Kaprio, A. Rissanen, J.J. Holst, and K.H. Pietiläinen
- 252 Correlations Between Serum Bilirubin Levels and Diabetic Nephropathy Progression Among Japanese Type 2 Diabetic Patients: A Prospective Cohort Study (Diabetes Distress and Care Registry at Tenri [DDCRT 5]) T. Mashitani, Y. Hayashino, S. Okamura, S. Tsujii, and H. Ishii

- 259 Diabetes in First-Degree Family Members: A Predictor of Type 2 Diabetes in 159 Nonscreening Alabama Hemochromatosis Probands With HFE C282Y Homozygosity J.C. Barton, J.C. Barton, and R.T. Acton
- 267 Islet Transplantation Stabilizes Hemostatic Abnormalities and Cerebral Metabolism in Individuals With Type 1 Diabetes F. D'Addio, P. Maffi, P. Vezzulli, A. Vergani, A. Mello, R. Bassi, R. Nano, M. Falautano, E. Coppi, G. Finzi, A. D'Angelo, I. Fermo, F. Pellegatta, S. La Rosa, G. Magnani, L. Piemonti, A. Falini, F. Folli, A. Secchi, and P. Fiorina

Cardiovascular and Metabolic Risk

- Diabetes and End-Stage Renal Disease Synergistically Contribute to Increased Incidence of Cardiovascular Events: A Nationwide Follow-up Study During 1998–2009 Y.-T. Chang, J.-L. Wu, C.-C. Hsu, J.-D. Wang, and J.-M. Sung
- Determinants and Prognostic Value of Cardiovascular 286 Autonomic Function in Coronary Artery Disease Patients With and Without Type 2 Diabetes J.J. Karjalainen, A.M. Kiviniemi, A.J. Hautala, O.-P. Piira, E.S. Lepojärvi, M.A. Peltola, O.H. Ukkola, P.S.M. Hedberg, H.V. Huikuri, and M.P. Tulppo
- 295 The Relative and Combined Ability of High-Sensitivity Cardiac Troponin T and N-Terminal Pro-B-Type Natriuretic Peptide to Predict Cardiovascular Events and Death in Patients With Type 2 Diabetes G.S. Hillis, P. Welsh, J. Chalmers, V. Perkovic, C.K. Chow, Q. Li, M. Jun, B. Neal, S. Zoungas, N. Poulter, G. Mancia, B. Williams, N. Sattar, and M. Woodward
- 304 Cardiovascular Events and Geriatric Scale Scores in Elderly (70 Years Old and Above) Type 2 Diabetic Patients at Inclusion in the GERODIAB Cohort B. Bauduceau, J. Doucet, J.-P. Le Floch, and C. Verny, for the SFD/ SFGG Intergroup and the GERODIAB Group

Errata

- Barriers and Potential Solutions to Providing Optimal 312 Guideline-Driven Care to Patients With Diabetes in the U.S. Diabetes Care 2013;36:3843-3849 R.A. Vigersky, K. Fitzner, and J. Levinson, for the Diabetes Working Group
- 312 Dipeptidyl Peptidase-4 Inhibitors and Bone Fractures: A Meta-analysis of Randomized Clinical Trials. Diabetes Care 2011;34:2474-2476 M. Monami, I. Dicembrini, A. Antenore, and E. Mannucci
- 312 Randomized Trial of Continuous Subcutaneous Delivery of Exenatide by ITCA 650 Versus Twice-Daily Exenatide Injections in Metformin-Treated Type 2 Diabetes. Diabetes Care 2013;36:2559-2565 R.R. Henry, J. Rosenstock, D.K. Logan, T.R. Alessi, K. Luskey, and M.A. Baron

Issues and Events

313 Issues and Events

eLetters - Observations

Very-Low-Calorie Diet Increases Myocardial Triglyceride Content and Decreases Diastolic Left Ventricular Function in Type 2 Diabetes With Cardiac Complications J.T. Jonker, R. Djaberi, L.D. van Schinkel, S. Hammer, M.T.J. Bus, G. Kerpershoek, A.V. Kharagjitsingh, J.A. Romijn, J.J. Bax, J.W. Jukema, A. de Roos, J.W.A. Smit, and H.J. Lamb

- e3 Glycated Hemoglobin in 14,850 Adolescent Blood Donors: A Pilot Screening Program M.O. Gore, S.J. Eason, C.R. Ayers, A. Turer, A. Khera, J.A. de Lemos, D.K. McGuire, and M. Sayers
- e5 The Association Between Conventional Risk Factors and Diabetes Is Weak Among Urban Tanzanians
 D. Faurholt-Jepsen, N. Range, G. PrayGod, K. Jeremiah, M. Faurholt-Jepsen, M.G. Aabye, J. Changalucha, C. Ritz, D.L. Christensen, M.E. Jørgensen, Å.B. Andersen, and H. Friis
- e7 The Ratio of Serum Eicosapentaenoic Acid to Arachidonic Acid Is Associated With Renal Impairment and Diabetic Macroangiopathies in Elderly Patients With Type 2 Diabetes H. Ito, H. Ohira, T. Chinen, T. Omoto, M. Shinozaki, S. Nishio, M. Abe, S. Antoku, M. Mifune, and M. Toagane
- e9 Nationwide Survey of Prevalence and Risk Factors for Diabetes and Prediabetes in Bangladeshi Adults S. Akter, M.M. Rahman, S.K. Abe, and P. Sultana
- e11 C-Peptide Levels in Latent Autoimmune Diabetes in Adults Treated With Linagliptin Versus Glimepiride: Exploratory Results From a 2-Year Double-Blind, Randomized, Controlled Study O.E. Johansen, B.O. Boehm, V. Grill, P.A. Torjesen, S. Bhattacharya, S. Patel, K. Wetzel, and H.-J. Woerle

- e13 Personal Health Record Design: Qualitative Exploration of Issues Inhibiting Optimal Use
 K.T. Fuji, A.A. Abbott, and K.A. Galt
- e15 Raised Circulating Fetuin-A After 28-Day Overfeeding in Healthy Humans

 D. Samocha-Bonet, C.S. Tam, L.V. Campbell, and L.K. Heilbronn
- e17 Prevalence of Muscle Cramps in Patients With Diabetes
 H. Katzberg, S. Kokokyi, E. Halpern, E. Lovblom, C. Barnett, D. Hume,
 V. Bril, and B. Perkins

eLetters - Comments and Responses

- Comment on Hong et al. Effects of Metformin Versus Glipizide on Cardiovascular Outcomes in Patients With Type 2 Diabetes and Coronary Artery Disease. Diabetes Care 2013;36:1304–1311

 S.S. Lund and Y. Gong
- e21 Response to Comment on Hong et al. Effects of Metformin Versus Glipizide on Cardiovascular Outcomes in Patients With Type 2 Diabetes and Coronary Artery Disease. Diabetes Care 2013;36:1304–1311 J. Hong, Y. Zhang, S. Lai, and G. Ning



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 www.diabetes.org/membership

To subscribe to ADA journals: Call 1-800-DIABETES or go to www. diabetesjournals.org

To order ADA books: Call 1-800-232-6733 or visit http://store.diabetes.org

To access ADA's library of professional resources: Go to professional. diabetes.org

For more information about diabetes or ADA programs and services: Call 1-800-DIABETES. E-mail: AskADA@diabetes.org or visit www.diabetes.org

To locate an ADA/NCQA Recognized Provider of quality diabetes care in your area: Visit http://web.ncqa.org

To join the fight to increase funding for diabetes research, end discrimination, and improve insurance coverage: Call 1-800-DIABETES or visit www.diabetes.org/advocate

To find out how you can get involved with the programs in your community: Call 1-800-DIABETES or visit www.diabetes.org/in-my-community

To find out about important research regarding diabetes: Go to www. diabetes.org/news-research

To make a donation or memorial contribution: Call 1-800-DIABETES or visit www.diabetes.org/donate