

# Diabetes Care

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

November 2023 Volume 46, Number 11

## The Art of Diabetes Care

1879 About the Artist: Lisa Brehm Ellis

## In This Issue

1880 In This Issue of *Diabetes Care*  
M. Bingham

## Review

→ 1882 A Primer on Systematic Review and Meta-analysis in Diabetes Research  
D.K. Tobias, S. Papatheodorou, J.M. Yamamoto, and F.B. Hu

## Commentary

1894 Precision Prevention of Diabetes  
W.H. Herman and W. Ye

## Original Research

- 1897 Time Trends in the Incidence of Diabetic Ketoacidosis Leading to Hospital Admission Among Adults With Type 1 Diabetes: A Nationwide Danish Register Study  
E.B. Stougaard, H. Amadi, E. Søndergaard, B. Carstensen, M.E. Jørgensen, K. Nørgaard, P. Rossing, F. Persson, and D. Vistisen
- 1903 Effect of Conventional Lifestyle Interventions on Type 2 Diabetes Incidence by Glucose-Defined Prediabetes Phenotype: An Individual Participant Data Meta-analysis of Randomized Controlled Trials  
T. Sathish, K. Khunti, K.M.V. Narayan, V. Mohan, M.J. Davies, T. Yates, B. Oldenburg, K.R. Thankappan, R.J. Tapp, R. Bajpai, R.M. Anjana, M.B. Weber, M.K. Ali, and J.E. Shaw
- 1908 Gastrointestinal Infections Modulate the Risk for Insulin Autoantibodies as the First-Appearing Autoantibody in the TEDDY Study  
M. Lönnrot, K.F. Lynch, M. Rewers, Å. Lernmark, K. Vehik, B. Akolkar, W. Hagopian, J. Krischer, R.A. McIndoe, J. Toppari, A.-G. Ziegler, J.F. Petrosino, R. Lloyd, and H. Hyöty, on behalf of the TEDDY Study Group
- 1916 Fully Closed-Loop Glucose Control Compared With Insulin Pump Therapy With Continuous Glucose Monitoring in Adults With Type 1 Diabetes and Suboptimal Glycemic Control: A Single-Center, Randomized, Crossover Study  
C.K. Boughton, S. Hartnell, R. Lakshman, M. Nwokolo, M.E. Wilinska, J. Ware, J.M. Allen, M.L. Evans, and R. Hovorka
- 1923 Duration of Type 2 Diabetes and Incidence of Cancer: An Observational Study in England  
F. Zaccardi, S. Ling, K. Brown, M. Davies, and K. Khunti
- 1931 Randomization to a Provided Higher-Complex-Carbohydrate Versus Conventional Diet in Gestational Diabetes Mellitus Results in Similar Newborn Adiposity  
T.L. Hernandez, S.S. Farabi, B.K. Fosdick, N. Hirsch, E.Z. Dunn, K. Roloff, J.P. Corbett, E. Haugen, T. Marden, J. Higgins, J.E. Friedman, and L.A. Barbour
- 1941 The Relationship Between Time-Varying Achieved HbA<sub>1c</sub> and Risk of Coronary Events Depends on Haptoglobin Phenotype Among White and Black ACCORD Participants  
L.E. Cahill, R.A. Warren, A.S. Carew, A.P. Levy, H.N. Ginsberg, J. Sapp, O. Lache, and E.B. Rimm
- 1949 Prediction of Cardiometabolic Health Through Changes in Plasma Proteins With Intentional Weight Loss in the DIRECT and DIADEM-I Randomized Clinical Trials of Type 2 Diabetes Remission  
N. Sattar, S. Taheri, D.P. Astling, J. Chadwick, M.A. Hinterberg, M.V. Holmes, E.V. Troth, P. Welsh, H. Zaghoul, O. Chagoury, M. Lean, R. Taylor, and S. Williams
- 1958 Glucose Monitoring Metrics in Individuals With Type 1 Diabetes Using Different Treatment Modalities: A Real-World Observational Study  
K. Nørgaard, A.G. Ranjan, C. Laugesen, K.G. Tidemand, A. Green, C. Selmer, J. Svensson, H.U. Andersen, D. Vistisen, and B. Carstensen
- 1965 Age at Type 2 Diabetes Diagnosis and Cause-Specific Mortality: Observational Study of Primary Care Patients in England  
M.M. Barker, M.J. Davies, J.A. Sargeant, J.C.N. Chan, E.W. Gregg, S. Shabnam, K. Khunti, and F. Zaccardi
- 1973 Point-of-Care Capillary Blood Ketone Measurements and the Prediction of Future Ketoacidosis Risk in Type 1 Diabetes  
C. Song, S. Dhaliwal, P. Bapat, D. Scarr, A. Bakhsh, D. Budhram, N.J. Verhoeff, A. Weisman, M. Fralick, N.M. Ivers, D.Z.I. Cherney, G. Tomlinson, L.E. Lovblom, D. Mumford, and B.A. Perkins
- 1978 Clonal Hematopoiesis of Indeterminate Potential (CHIP) and Incident Type 2 Diabetes Risk  
D.K. Tobias, A.K. Manning, J. Wessel, S. Raghavan, K.E. Westerman, A.G. Bick, D. Dicorpo, E.A. Whitsel, J. Collins, A. Correa, L.A. Cupples, J. Dupuis, M.O. Goodarzi, X. Guo, B. Howard, L.A. Lange, S. Liu, L.M. Raffield, A.P. Reiner, S.S. Rich, K.D. Taylor, L. Tinker, J.G. Wilson, P. Wu, A.P. Carson, R.S. Vasan, M. Fornage, B.M. Psaty, C. Kooperberg, J.I. Rotter, J. Meigs, and J.E. Manson, on behalf of the TOPMed Diabetes Working Group and National Heart, Lung, and Blood Institute TOPMed Consortium
- 1986 Achieving Normoglycemia With Tirzepatide: Analysis of SURPASS 1–4 Trials  
J. Rosenstock, L. Vázquez, S. Del Prato, D.R. Franco, G. Weerakkody, B. Dai, L. Fernández Landó, B.K. Bergman, and A. Rodríguez
- 1993 Sex Differences in Age of Diagnosis, HLA Genotype, and Autoantibody Profile in Children With Type 1 Diabetes  
J. Tojjar, M. Cervin, E. Hedlund, Q. Brahmil, G. Forsander, H. Elding Larsson, J. Ludvigsson, U. Samuelsson, C. Marcus, M. Persson, and A. Carlsson
- 1997 Declining Incidence Rates of Distal Symmetric Polyneuropathy in People With Type 1 and Type 2 Diabetes in Denmark, With Indications of Distinct Patterns in Type 1 Diabetes  
H.I. Mizrak, T.W. Hansen, P. Rossing, V. Rotbain Curovic, D. Vistisen, H. Amadi, and C.S. Hansen
- 2004 Comparative Cardiovascular Effectiveness and Safety of SGLT-2 Inhibitors, GLP-1 Receptor Agonists, and DPP-4 Inhibitors According to Frailty in Type 2 Diabetes  
A. Kutz, D.H. Kim, D.J. Wexler, J. Liu, S. Schneeweiss, R.J. Glynn, and E. Patorno
- 2015 Computed Tomography Versus Invasive Coronary Angiography in Patients With Diabetes and Suspected Coronary Artery Disease  
T. Benedek, V. Wieske, B. Szilveszter, K.F. Kofoed, P. Donnelly, J. Rodriguez-Palomares, A. Erglis, J. Veselka, G. Šakalytė, N.Č. Adić, M. Gutberlet, I. Diez, G. Davis, E. Zimmermann, C. Kępka, R. Vidakovic, M. Francone, M. Ilnicka-Suckiel, F. Plank, J. Knuuti, R. Faria, S. Schröder, C. Berry, L. Saba, B. Ruzsics, N. Rieckmann, C. Kubiak, K. Schultz Hansen, J. Müller-Nordhorn, B. Merkely, P.E. Sigvardsen, I. Benedek, C. Orr, F.X. Valente, L. Zvaigzne, M. Horváth, A. Jankauskas, F. Adić, M. Woinke, N. Mulvihill, I. Lecumberri, E. Thwaite, M. Laule, M. Kruk, M. Stefanovic, M. Mancone, D. Kuśmierz, G. Feuchtner, M. Pietilä, V.G. Ribeiro, T. Drosch, C. Delles, M. Melis, M. Fisher, M. Boussoussou, C. Kragelund, R. Aurelian, S. Kelly, B.G. del Blanco, A. Rubio, M. Károlyi, J.D. Hove, I. Rodean, S. Regan, H.C. Calabria, L. Gellér, L. Larsen, R. Hodas, A.E. Napp, R. Haase, S. Feger, M. Mohamed, L.M. Serna-Higueta, K. Neumann, H. Dreger, M. Rief, J. Danesh, M. Estrella, M. Bosserd, P. Martus, J.D. Dodd, and M. Dewey

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Video



Podcast



Supplementary Data



Companion Article

- 2024** Ethnic Differences in the Association Between Age at Natural Menopause and Risk of Type 2 Diabetes Among Postmenopausal Women: A Pooled Analysis of Individual Data From 13 Cohort Studies  
*H.-F. Chung, A.J. Dobson, K. Hayashi, R. Hardy, D. Kuh, D.J. Anderson, Y.T. van der Schouw, D.C. Greenwood, J.E. Cade, P. Demakos, E.J. Brunner, S.V. Eastwood, S. Sandin, E. Weiderpass, and G.D. Mishra*
- ➡ **2035** Hydroxychloroquine in Stage 1 Type 1 Diabetes  
*I. Libman, P.J. Bingley, D. Becker, J.H. Buckner, L.A. DiMeglio, S.E. Gitelman, C. Greenbaum, M.J. Haller, H.M. Ismail, J. Krischer, W.V. Moore, A. Moran, A.B. Muir, V. Raman, A.K. Steck, F.G.S. Toledo, J. Wentworth, D. Wherrett, P. White, L. You, and K.C. Herold, for the Type 1 Diabetes TrialNet Study Group*
- 2044** Association of Unmet Social Needs With Metformin Use Among Patients With Type 2 Diabetes  
*C. Drake, J.M. Alfaro, D.V. Blalock, K. Ito, B.C. Batch, H.B. Bosworth, S.A. Berkowitz, and L.L. Zullig*
- 2050** Cardiac Insulin Resistance in Subjects With Metabolic Syndrome Traits and Early Subclinical Atherosclerosis  
*A. Devesa, V. Fuster, R. Vazirani, I. García-Lunar, B. Oliva, S. España, A. Moreno-Arciniegas, J. Sanz, C. Perez-Herreras, H. Bueno, E. Lara-Pezzi, A. García-Alvarez, V. Martínez de Vega, L. Fernández-Friera, M.G. Trivieri, A. Fernández-Ortiz, X. Rossello, J. Sanchez-Gonzalez, and B. Ibanez*
- 2058** Family Typology for Adults With Type 2 Diabetes: Longitudinal Stability and Validity for Diabetes Management and Well-being  
*L.S. Mayberry, S. Zhao, M.K. Roddy, A.J. Spieker, C.A. Berg, L.A. Nelson, and R.A. Greevy*
- ➡ **2067** Epigenome-Wide Meta-analysis Reveals Associations Between Dietary Glycemic Index and Glycemic Load and DNA Methylation in Children and Adolescents of Different Body Sizes  
*R. Ott, R. Stein, H.H. Hauta-alus, J. Ronkainen, S. Fernández-Barrés, U. Spielau, H. Kirsten, T. Poulain, P.E. Melton, L.K. Küpers, H. Azaryah, M. Colombo, K. Landgraf, E.W. Tobí, T. O'Sullivan, R.-C. Huang, C. Campoy, C. Winkler, J. Vioque, M. Vrijheid, W. Kiess, A. Körner, S. Sebert, M.-R. Jarvelin, A.-G. Ziegler, and S. Hummel*

## Meta-analysis

- 2076** The Relationship Between Alcohol Consumption, BMI, and Type 2 Diabetes: A Systematic Review and Dose-Response Meta-analysis  
*L. Llamasas-Falcón, J. Rehm, S. Bright, C. Buckley, T. Carr, C. Kilian, A.M. Lasserre, J.M. Lemp, Y. Zhu, and C. Probst*

## e-Letters – Comments and Responses

- e209** Comment on Russell et al. Abatacept for Delay of Type 1 Diabetes Progression in Stage 1 Relatives at Risk: A Randomized, Double-Masked, Controlled Trial. *Diabetes Care* 2023;46:1005–1013  
*M.M. Pinheiro and F.M.M. Pinheiro*
- e210** Response to Comment on Russell et al. Abatacept for Delay of Type 1 Diabetes Progression in Stage 1 Relatives at Risk: A Randomized, Double-Masked, Controlled Trial. *Diabetes Care* 2023;46:1005–1013  
*W.E. Russell, D.J. Moore, and K.C. Herold*
- e212** Comment on Elsayed et al. 5. Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes: *Standards of Care in Diabetes—2023*. *Diabetes Care* 2023;46(Suppl. 1):S68–S96  
*D. Campagna, on behalf of the DiaSmokeFree Working Group*
- e214** Response to Comment on Elsayed et al. 5. Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes: *Standards of Care in Diabetes—2023*. *Diabetes Care* 2023;46(Suppl. 1):S68–S96  
*A. Darville, M. Hilliard, N.A. ElSayed, and R.R. Bannuru*

## Erratum

- 2084** Erratum. The Incidence of Adult-Onset Type 1 Diabetes: A Systematic Review From 32 Countries and Regions. *Diabetes Care* 2022;45:994–1006  
*J.L. Harding, P.L. Wander, X. Zhang, X. Li, S. Karuranga, H. Chen, H. Sun, Y. Xie, R.A. Oram, D.J. Magliano, Z. Zhou, A.J. Jenkins, and R.C.W. Ma*

## Issues and Events

- 2085** Issues and Events