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Diabetes Care

# In This Issue of *Diabetes Care*

Edited by Helaine E. Resnick, PhD, MPH

## New Care Model Integrates Allied Health Personnel

Intriguing results in this issue of *Diabetes Care* provide a glimpse of how allied health professionals can be integrated into diabetes care systems in a manner that increases access and reduces both disparities and avoidable admissions and referrals, all with little or no added cost. A new report by Franklin et al. (p. 81) summarizes findings of a novel service model in which Pedi-Flite, a pediatric critical care transport team staffed by emergency medical personnel, was trained by a certified diabetes educator to use its call center to provide 24/7 support for pediatric patients on common diabetes management issues. The protocols included those aimed at handling sick patients, insulin pump management, wrong insulin dosing, blood glucose level correction, and prescription refills. The call center used a software system that allowed the needs of the caller to drive the protocol(s), thereby ensuring patient safety while simultaneously increasing access to knowledgeable health personnel and reducing the need for unnecessary specialist intervention. The study focused on a cohort of 979 pediatric patients that used a diabetes pager service that directed calls to the certified Pedi-Flite dispatcher. Study end points included incidence of diabetic ketoacidosis as well as cost savings associated with unnecessary referrals, emergency department (ED) visits, and hospital admissions. During the 2-year study period, 30% of patients used the pager system, and these patients were significantly less likely to have hospital admissions than nonusers. Further, referrals were not needed for more than half of the 587 Pedi-Flite calls that were received during the study period. The cost savings associated with avoided ED visits and hospital admissions were estimated at \$760,000. The investigators point out that this approach to provision of pediatric diabetes care could be implemented in other geographic areas, and it could also be used to expand the role of allied health personnel in care management in other disease areas. These results are particularly noteworthy because of their implications for improving diabetes care without substantial cost increases. — Helaine E. Resnick, PhD, MPH

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Franklin et al. Real-time support of pediatric diabetes self-care by a transport team. *Diabetes Care* 2014;37:81–87

## High CVD Risk in Young-Onset Diabetes

In this issue of *Diabetes Care*, a new report from Luk et al. (p. 149) examines the risk of both large- and small-vessel complications in a cohort of diabetic adults who were diagnosed before the age of 40 years. The study highlights the particularly high risk of complications among overweight type 2 diabetic patients who are diagnosed at a young age. The new report, which draws on data from an established diabetes registry in Hong Kong, not only permits comparisons between type 1 diabetic and overweight type 2 diabetic patients but also contains significant numbers of normal-weight individuals with type 2 diabetes, all of whom were diagnosed before the age of 40 years. End-stage renal disease (ESRD) and cardiovascular disease (CVD) outcomes including coronary heart disease, stroke, and peripheral arterial disease were ascertained over 9 years, and these outcomes were examined in relation to diabetes type and obesity. The results showed that despite the fact that all patients were diagnosed at younger ages, both normal-weight and overweight type 2 diabetic patients had significantly higher renal and CVD morbidity than their type 1 diabetic counterparts, with the overweight type 2 diabetic patients having the worst profiles. Relative to the patients with type 1 diabetes, those with type 2 diabetes were 15 times more likely to experience a CVD event, and they were more than 5 times as likely to progress to ESRD. Although these results were present after adjusting for key factors such as age, sex, and diabetes duration, the excess risk observed in the type 2 diabetic group was eliminated after adjustment for BMI, blood pressure, and lipids—a finding that suggests that these factors were responsible for the increased risk. The authors go on to point out that management of blood pressure and lipids in this cohort was suboptimal, indicating opportunities to improve management of metabolic factors that could help reduce the excess risk of unfavorable outcomes in this population. — Helaine E. Resnick, PhD, MPH

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Luk et al. Prospective study on the incidences of cardiovascular-renal complications in Chinese patients with young-onset type 1 and type 2 diabetes. *Diabetes Care* 2014;37:149–157

## DCCT/EDIC Marks 30 Years of Progress in Type 1 Diabetes

As the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications (DCCT/EDIC) reaches 30 years of clinically relevant translational research in diabetes, this issue of *Diabetes Care* features a compilation of articles (pp. 5, 8, 9, 17, 24, 31, 39, and 44) that highlights the methods and major findings of these seminal studies of type 1 diabetes. The DCCT (1982–1993) followed 1,441 type 1 diabetic subjects for an average of 6.5 years to ascertain the occurrence of diabetes complications among participants who received either intensive therapy (INT) or conventional therapy (CON). EDIC began observational follow-up of the DCCT cohort at the conclusion of the active intervention period with the goal of understanding the long-term impact of the DCCT's interventions on advanced stages of both small- and large-vessel complications. Results of the DCCT were impressive: more than 99% of the cohort was retained during follow-up, and participants in the INT arm achieved a median HbA<sub>1c</sub> of 7.2% with substantial reductions in early microvascular complications relative to CON participants, whose median HbA<sub>1c</sub> was 9.1%. In nearly 2 decades of the EDIC follow-up, results show a durable impact of the INT intervention despite a loss of glycemic separation between the two former arms of the DCCT. During the DCCT, incident microalbuminuria was reduced by 39%, and during the EDIC follow-up, this end point was reduced by 59% in people previously assigned to INT. Similarly, both peripheral neuropathy and cardiovascular autonomic neuropathy were reduced by 64% and 45% among INT participants during the DCCT trial period, and the incidence of both outcomes remained lower in this group during EDIC. Among DCCT participants without diabetic retinopathy (DR) at baseline, assignment to the INT group reduced DR onset by 76%, and it reduced progression by 54% among those with baseline DR. During the EDIC follow-up, further progression of DR was reduced by more than 50% among people who were assigned to INT during the DCCT. Finally, assignment to the INT group during the DCCT was associated with thinner carotid intima-media thickness, less coronary calcium, and lower risk of myocardial infarction, stroke, and cardiac death during EDIC. DCCT/EDIC not only proved that intensive glucose control had a favorable short-term impact on diabetes complications but also showed that this impact persisted over nearly 2 decades following cessation of the trial. This ongoing work continues to provide convincing evidence supporting the benefits of intensive glucose control in type 1 diabetes and serves as a model for translational research in diabetes. — *Helaine E. Resnick, PhD, MPH*

Cefalu et al. The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study at 30 years: the “gift” that keeps on giving! *Diabetes Care* 2014;37:5–7

Zinman et al. The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study: 30th anniversary presentations. *Diabetes Care* 2014;37:8

Nathan; for the DCCT/EDIC Research Group. The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study at 30 years: overview. *Diabetes Care* 2014;37:9–16

Aiello; 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. *Diabetes Care* 2014;37:17–23

de Boer; for the DCCT/EDIC Research Group. Kidney disease and related findings in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study. *Diabetes Care* 2014;37:24–30

Martin et al.; for the DCCT/EDIC Research Group. Neuropathy and related findings in the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study. *Diabetes Care* 2014;37:31–38

Lachin et al.; for the DCCT/EDIC Research Group. Update on cardiovascular outcomes at 30 years of the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications study. *Diabetes Care* 2014;37:39–43

Gubitosi-Klug; 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. *Diabetes Care* 2014;37:44–49