SUPPLEMENTARY DATA

Supplementary Figure 1. T1D Exchange Clinic Network Centers

Map includes 76 centers in 33 states
Red dotes represent location of clinical center, some locations include more than one clinical center.

SUPPLEMENTARY DATA

Supplementary Table 1. Summary of T1D Exchange Peer Reviewed Publications

Citation/PubMed Link and Summary
Beck RW, Tamborlane WV, Bergenstal RM, Miller KM, DuBose SN, Hall CA. The T1D Exchange Clinic Registry. J Clin Endocrinol Metab. 2012;97:4383-9. http://www.ncbi.nlm.nih.gov/pubmed/22996145 **Objective:** To describe the methodology and baseline data of the T1D Exchange clinic registry. **Findings and Conclusions:** Participants ranged in age from <1 to 93 years with 50% female, 82% White Non-Hispanic, 50% used insulin pump, and 6% used continuous glucose monitoring (CGM). The registry provides a rich dataset and an opportunity to address numerous issues of relevance to clinicians and patients, including assessments of associations between patient characteristics and diabetes management factors with outcomes, that hopefully will lead to improvements in diabetes management and outcomes to improve the lives of individuals with type 1 diabetes.
Blackman SM, Raghinaru D, Adi S, Ebner-Lyon L, Chase P, Tamborlane WV, Schatz D, Block J, Litton J, Raman V, Foster NC, Kollman C, DuBose SN, Miller KM, Beck RW, DiMeglio LA. Insulin pump use in young children in the T1D Exchange Clinic Registry is associated with lower hemoglobin A1c levels than injection therapy. Pediatr Diabetes. 2014;15(8):564-72. http://www.ncbi.nlm.nih.gov/pubmed/24494980 **Objectives:** To characterize insulin pump use in young children (<6 years old) with type 1 diabetes. **Findings and Conclusions:** Wide variation in pump use was observed among T1D Exchange centers even after adjusting for parent education and household income, suggesting that prescriber preference is a substantial determinant of pump use. HbA1c was lower in pump versus injection users (7.9% vs. 8.5%). No difference in the occurrence of severe hypoglycemia in pump versus injection users was observed. These data suggest that metabolic control may be improved without increasing the frequency of severe hypoglycemia, but care should be taken as to the possibly increased risk of diabetic ketoacidosis.
Campbell MS, Schatz DA, Chen V, Wong JC, Steck A, Tamborlane WV, Smith J, Beck RW, Cengiz E, Laffel LM, Miller KM, Haller MJ. A contrast between children and adolescents with excellent and poor control: The T1D Exchange clinic registry experience. Pediatr Diabetes. 2014; 15(2):110-7. http://www.ncbi.nlm.nih.gov/pubmed/23957219 **Objective:** To identify differences in diabetes management characteristics amongst children categorized as having excellent (HbA1c <7.0%) versus poor (HbA1c ≥ 9.0%) glycemic control. **Findings and Conclusions:** After adjusting for demographic and socio-economic factors, diabetes management characteristics were still strongly associated with excellent versus poor control. The excellent control group was more likely to use an insulin pump, perform blood glucose monitoring > 4 times per day, miss fewer boluses, bolus before meals rather than at the time of the meal or after meal, use meal specific insulin to carb ratios, give more bolus insulin, and have lower total daily insulin per kg of body weight. Notably, frequency of severe hypoglycemia was similar between the groups while diabetic ketoacidosis was more common in the poorly controlled group. This knowledge may further inform diabetes care providers and patients about specific characteristics and behaviors that can be augmented to potentially improve glycemic control.

SUPPLEMENTARY DATA

Cengiz E, Xing D, Wong JC, Wolfsdorf JI, Haymond MW, Rewers A, Shanmugham S, Tamborlane WV, Willi SM, Seiple DL, Miller KM, DuBose SN, Beck RW. Severe Hypoglycemia and Diabetic Ketoacidosis among Youth with Type 1 Diabetes in the T1D Exchange Clinic Registry. Pediatric Diabetes. 2013;14(6):447-54. http://www.ncbi.nlm.nih.gov/pubmed/23469984

Objective: To examine the frequency of severe hypoglycemia and diabetic ketoacidosis in ages 2 to 25 years with type 1 diabetes ≥2 years.

Findings and Conclusions: Frequency of ≥1 severe hypoglycemic event associated with seizure or loss of consciousness occurred in 9.6% of 2-5 year old, 5.2% of 6-12 year olds, 6.3% of 13 -17 year olds and 6.9% of 18-25 year olds. Non-white race, no private insurance, and lower household income were all associated with higher frequencies of both severe hypoglycemia and diabetic ketoacidosis. Poor glycemic control increased the risk of diabetic ketoacidosis but did not protect against severe hypoglycemia in youth and young adults with type 1 diabetes.

Daniels M, Dubose SN, Maahs DM, Beck RW, Fox LA, Gubitosi-Klug R, Laffel LM, Miller KM, Speer H, Tamborlane WV, Tansey MJ. Factors Associated with Microalbuminuria in 7,549 Children and Adolescents with Type 1 Diabetes in the T1D Exchange Clinic Registry. Diabetes Care. 2013;36(9):2639-45. http://www.ncbi.nlm.nih.gov/pubmed/23610082

Objective: To examine factors associated with clinical microalbuminuria diagnosis in children and adolescents < 20 years of age with duration of type 1 diabetes ≥1 year.

Findings and Conclusions: Microalbuminuria was present in 4.4% of 7,549 participants, with a higher frequency associated with longer diabetes duration, higher mean HbA1c, older age, female gender, higher diastolic blood pressure, and lower body mass index. Since age and diabetes duration are important non-modifiable factors associated with microalbuminuria, the importance of routine screening is underscored to ensure early diagnosis and timely treatment of microalbuminuria.

Maahs DM, Hermann JM, DuBose SN, Miller KM, Heidtmann B, DiMeglio LA, Rami-Merhar B, Beck RW, Schober E, Tamborlane WV, Kapellen TM, Holl RW. Contrasting the clinical care and outcomes of 2,622 children with type 1 diabetes less than 6 years of age in the United States T1D Exchange and German/Austrian DPV registries. Diabetologia. 2014. [ePub ahead of print]. doi:10.1007/s00125-014-3272-2. http://www.ncbi.nlm.nih.gov/pubmed/24893863

Objective: To compare treatment modalities and clinical outcomes between the T1D Exchange clinic registry and DPV (Germany and Austria registry) among participants with type 1 diabetes < 6 years of age.

Findings and Conclusions: Insulin pump use was more frequent (74% v 50%) in DPV than the T1D Exchange. Mean HbA1c was lower in DPV (7.4%) than the T1D Exchange (8.2%), being lower for both among pump users and among injection users. Frequency of severe hypoglycemia did not differ between registries whereas frequency of diabetic ketoacidosis was higher in the T1D Exchange.

Miller KM, Beck RW, Bergenstal RM, Goland RS, Haller MJ, McGill JB, Rodriguez H, Simmons JH, Hirsch IB. Evidence of a Strong Association Between Frequency of Self-Monitoring of Blood Glucose and Hemoglobin A1C Levels in T1D Exchange Clinic Registry Participants. Diabetes Care. 2013;36(7):2009-14. http://www.ncbi.nlm.nih.gov/pubmed/23378621

Objective: To evaluate the relationship between number of self-monitoring blood glucose (SMBG) measurements per day and HbA1c levels across a wide age range of children and adults.

Findings and Conclusions: After adjusting for confounding factors, a higher number of SMBG measurements per day were strongly associated with a lower HbA1c level, with the association being present in all age groups and in both insulin pump and injection users. It is important for insurers to consider that reducing restrictions on the number of test strips provided per month may lead to improved glycemic control for some patients with type 1 diabetes.

SUPPLEMENTARY DATA

Miller KM, Xing D, Tamborlane WV, Bergenstal RM, Beck RW. Challenges and Future Directions of the T1D Exchange Clinic Network and Registry. J Diabetes Sci Technol 2013;7(4): 963-69. http://www.ncbi.nlm.nih.gov/pubmed/23911177

Objective: To outline the challenges encountered during the establishment of the T1D Exchange clinic registry.

Findings and Conclusions: Collecting the data and maximizing data quality within the T1D Exchange required considerable effort. Even with these efforts, certain data elements are difficult to capture in a meaningful way. A standard type 1 diabetes module used by all electronic health records could be developed based on the data collection instruments developed for the T1D Exchange clinic registry.

Nambam B, DuBose SN, Nathan BM, Beck RW, Maahs DM, Wadwa RP, Tamborlane WV, Foster NC, Miller KM, Haller MJ. Therapeutic Inertia: Underdiagnosed and Undertreated Hypertension (HTN) in Children Participating in the T1D Exchange Clinic Registry. Pediatric Diabetes. 2014. Doi:10.1111/pedi.12231. http://www.ncbi.nlm.nih.gov/pubmed/25330905

Objective: To determine the frequency of a hypertension diagnosis and treatment for hypertension in youth with type 1 diabetes.

Findings and Conclusions: Hypertension was diagnosed in only 1% (113/9362) of participants; yet, elevated blood pressure was recorded at one of two visits in 17% and at both visits in 4%. Hypertension is likely under diagnosed and undertreated in pediatric diabetes clinics. The relatively low proportion of hypertensive children receiving ACE-I therapy and reaching blood pressure goals likely identifies an important area for improving care in children with type 1 diabetes.

Simmons JH, Chen V, Miller KM, McGill JB, Bergenstal RM, Goland RS, Harlan DM, Largay JF, Massaro EM, Beck RW. Differences in the Management of Type 1 Diabetes among Adults Under Excellent Control Compared with Those Under Poor Control with the T1D Exchange Clinic Registry. Diabetes Care. 2013;36(11):3573-7. http://www.ncbi.nlm.nih.gov/pubmed/24026543

Objective: To identify characteristics and diabetes management techniques in adults with type 1 diabetes differentiating those under excellent glycemic control (HbA1c $< 6.5\%$) from those with poorer control (HbA1c $\geq 8.5\%$).

Findings and Conclusion: Excellent control was associated with more frequent self-monitoring of blood glucose (SMBG), giving mealtime boluses before a meal rather than at the time of or after a meal, performing SMBG before giving a bolus, and less frequently missing an insulin dose. Frequency of severe hypoglycemia was similar between groups while diabetic ketoacidosis was more common in the poorly-controlled group. Diabetes self-management related to insulin delivery, glucose monitoring, and lifestyle tend to differ comparing adults with type 1 diabetes under excellent control and those under poorer control. Future studies should focus upon modification of diabetes management skills in adult type 1 diabetes patients with suboptimal glycemic control

Trief PM, Xing D, Maahs D, Foster NC, Maahs DM, Kittelsrud J, Olson BA, Young LA, Peters AL, Bergenstal RB, Miller KM, Beck RW, Weinstock R. Depression in Adults in the T1D Exchange clinic registry. Diabetes Care. 2014;37(6):3573-7. http://www.ncbi.nlm.nih.gov/pubmed/24855157

Objective: To determine the frequency of depression and factors associated with depression among adults with type 1 diabetes.

Findings and Conclusions: Adults with probable major depression (ranged from 5% to 10% depending on definition used) had worse clinical outcomes than those not depressed. HbA1c was higher in the depressed vs. not depressed groups ($8.4\pm1.7\%$ vs. $7.8\pm1.4\%$). Occurrence of ≥ 1 episode of diabetic ketoacidois (11% vs. 4%) and ≥ 1 severe hypoglycemic event (18% vs. 9%) in the past 3 months was higher among depressed participants. Whether identification and treatment of depression improves diabetes outcomes requires study. Depression is common in type 1 diabetes and better identification and treatment of this co-morbid condition is needed.

SUPPLEMENTARY DATA

Weinstock RS, Xing D, Maahs DM, Michels A, Rickels MR, Peters AL, Bergenstal RM, Harris B, DuBose SN, Miller KM, Beck RW. Severe Hypoglycemia and Diabetic Ketoacidosis in Adults with Type 1 Diabetes: Results from the T1D Exchange Clinic Registry. J Clin Endocrinol Metab. 2013;98(8):3411-9. http://www.ncbi.nlm.nih.gov/pubmed/23760624

Objective: To determine frequency of and factors associated with the occurrence of severe hypoglycemia (seizure or loss of consciousness) and diabetic ketoacidosis in adults with type 1 diabetes.
Findings and Conclusions: Severe hypoglycemia was strongly associated with diabetes duration, with 18.6% of those with diabetes >40 years having an event in the past 12 months. Frequency of severe hypoglycemia was lowest in those with HbA1c levels of 7.0% to 7.5%, being higher in those with HbA1c levels <7.0% or >7.5%. Frequency of diabetic ketoacidosis increased with higher HbA1c levels, with 21.0% of those with HbA1c >10.0% having an event in the past 12 months. Diabetic ketoacidosis, most common in those with HbA1c >10.0%, should be largely preventable. In contrast, severe hypoglycemia, most frequent with diabetes ≥40 years duration, cannot be abolished given the limitation of current therapies. To reduce severe hypoglycemia in adults with longstanding diabetes, consideration should be given to modifying HbA1c goals, particularly in patients with very low HbA1c levels.

Wong JC, Foster NC, Maahs DM, Raghinaru D, Bergenstal RM, Ahmann AJ, Peters AL, Bode BW, Aleppo G, Hirsch IB, Kleis L, Chase P, DuBose SN, Miller KM, Beck RW, Adi S. Real-time continuous glucose monitoring (CGM) among participants in the T1D Exchange clinic registry. Diabetes Care. 2014;37(10):2702-9. http://www.ncbi.nlm.nih.gov/pubmed/25011947

Objective: To assess the frequency of continuous glucose monitor (CGM) use, factors associated with its use, and the relationship of CGM with diabetes outcomes.
Findings and Conclusions: Nine percent of participants used CGM (6% of children <13 years, 4% of adolescents 13-17 years, 6% of young adults 18-25 years, and 21% of adults ≥26 years). CGM use was more likely with higher education, higher household income, private health insurance, longer duration of diabetes, and use of insulin pump. CGM use was associated with slightly lower HbA1c in children (8.3% vs 8.6%) and adults (7.7% vs 7.9%). Only 27% of users downloaded data from their device at least once per month. Among participants who used CGM at baseline, 41% discontinued within one year. CGM use in the T1D Exchange is uncommon but associated with lower HbA1c in some age groups especially when used more frequently. Factors associated with discontinuation and infrequent use of retrospective analysis of CGM data should be considered in developing next-generation devices and education on CGM use.

Wood JR, Miller KM, Maahs DM, Beck RW, DiMeglio LA, Libman IM, Quinn M, Tamborlane WV, Woerner SE. Most youth with type 1 diabetes in the T1D Exchange clinic registry do not meet American Diabetes Association or International Society for Pediatric and Adolescent Diabetes clinical guidelines. Diabetes Care. 2013;36(7):2035-7. http://www.ncbi.nlm.nih.gov/pubmed/23340893

Objective: To assess the proportion of youth with type 1 diabetes under the care of pediatric endocrinologists in the U.S. meeting targets for HbA1c, blood pressure, BMI, and lipids.
Findings and Conclusions: American Diabetes Association HbA1c targets of <8.5% for <6 years old, <8.0% for 6-<13 years old, and <7.5% for 13-<20 years old were met by 64%, 43%, and 21% of participants, respectively. The majority met targets for BP and lipids, and two-thirds met BMI goal of <85th%. Despite advances in technologies and strategies for care, achieving HbA1c targets remains a significant challenge for the majority of youth in the T1D Exchange registry. Moreover, a large number of youth with diabetes already have additional vascular disease risk factors at a young age. This analysis suggests further transformations to improve pediatric diabetes care are needed to prevent future complications of diabetes.

SUPPLEMENTARY DATA

Supplementary Table 2. Comparison of Enrollment Characteristics in Participants With and Without a Recent Annual Update Among 22,265 Participants with Diabetes Duration of ≥ 1 Year at Enrollment*

	2-5 yrs old		6 - 12 yrs old		13 - 17 yrs old		18 - 25 yrs old		26 - 49 yrs old		≥50 yrs old	
	Yes Annual Update N=154	No Annual Update N=522	Yes Annual Update N=4061	No Annual Update N=1282	Yes Annual Update N=3213	No Annual Update N=2364	Yes Annual Update N=1689	No Annual Update N=1998	Yes Annual Update N=2553	No Annual Update N=1647	Yes Annual Update N=1810	No Annual Update N=972
Age at Enrollment years - mean±SD	4.1±1.0	4.1±1.0	9.6±1.9	9.7±1.9	14.7±1.4	15.3±1.3	20.4±2.2	20.2±2.1	37.4±6.9	36.9±7.1	60.0±7.5	60.3±8.1
Gender: Female - *N(%)*	42%	42%	48%	49%	50%	50%	48%	47%	55%	52%	52%	54%
Race/Ethnicity- *N(%)*												
White Non-Hispanic	81%	77%	78%	75%	78%	76%	84%	80%	90%	87%	95%	93%
Black Non-Hispanic	5%	6%	6%	8%	5%	7%	3%	6%	4%	5%	2%	3%
Hispanic or Latino	7%	10%	11%	9%	11%	9%	9%	10%	3%	5%	1%	1%
Other	6%	6%	6%	7%	5%	6%	4%	4%	3%	3%	1%	2%
Use of Insulin Pump	50%	47%	58%	56%	56%	52%	56%	50%	61%	60%	58%	59%
Use of Continuous Glucose Monitoring	4%	6%	4%	3%	3%	3%	5%	4%	15%	15%	15%	15%
HbA1c - mean±SD	8.2±1.0	8.3±1.0	8.3±1.2	8.4±1.3	8.7±1.6	8.9±1.8	8.3±1.6	8.7±1.9	7.7±1.3	7.9±1.5	7.6±1.1	7.7±1.2

*Participants pregnant at the time of enrollment or annual update and who have a history of pancreas or islet cell transplant were excluded

SUPPLEMENTARY DATA

Supplementary Table 3. Insulin types in Pump Users and Injection Users

	Overall	2-5 yrs old	6 - 12 yrs old	13 - 17 yrs old	18 - 25 yrs old	26 - 49 yrs old	≥50 yrs old
Pump Users	**N=9530**	**N= 146**	**N=2131**	**N=2810**	**N=1555**	**N=1625**	**N=1263**
Glulisine	296 (3%)	5 (3%)	63 (3%)	57 (2%)	38 (2%)	79 (5%)	54 (4%)
Lispro	4017 (42%)	65 (45%)	880 (41%)	1081 (38%)	612 (39%)	789 (49%)	590 (47%)
Aspart	4952 (52%)	72 (49%)	1120 (53%)	1577 (56%)	847 (54%)	739 (45%)	597 (47%)
Humulin R or Novolin R	18 (<1%)	0	0	3 (<1%)	1 (<1%)	7 (<1%)	7 (<1%)
Injection Users	**N=6281**	**N=87**	**N=1136**	**N=2008**	**N=1277**	**N=940**	**N=833**
Short/Rapid Acting							
Glulisine	116 (2%)	1 (1%)	11 (1%)	32 (2%)	24 (2%)	32 (3%)	16 (2%)
Lispro	3181 (51%)	51 (59%)	587 (52%)	979 (49%)	631 (49%)	488 (52%)	445 (53%)
Aspart	2622 (42%)	28 (32%)	487 (41%)	862 (43%)	554 (43%)	380 (40%)	331 (40%)
Humalin R or Novolin R)	49 (1%)	0	0	3 (0%)	4 (<1%)	18 (2%)	24 (3%)
U500 Human R Regular	3 (<1%)	0	2 (<1%)	0	0	0	1 (1%)
Long Acting							
Detemir	562 (9%)	14 (16%)	127 (11%)	159 (8%)	107 (8%)	78 (8%)	77 (9%)
Glargine	5203(83%)	68 (78%)	917 (81%)	1664 (83%)	1069 (84%)	791 (84%)	694 (83%)
Degludec	2 (<1%)	1 (1%)	0	0	1 (<1%)	0	0
Intermediate Acting							
Humalin N (NPH)	219 (3%)	3 (3%)	52 (5%)	67 (3%)	27 (2%)	31 (3%)	39 (5%)
Novolog N (NPH)	157 (2%)	2 (2%)	35 (3%)	39 (2%)	24 (2%)	31 (3%)	26 (3%)
Premix							
Humalog 50/50	18 (<1%)	0	4 (<1%)	6 (<1%)	6 (<1%)	2 (<1%)	0
Humalog 75/25	49 (1%)	0	5 (<1%)	25 (1%)	16 (1%)	2 (<1%)	1 (<1%)
Humalin 50/50	3 (<1%)	0	1 (<1%)	2 (<1%)	0	0	0
Humalin 70/30	37 (1%)	0	7 (1%)	20 (1%)	8 (1%)	1 (<1%)	1 (<1%)
Novolin 70/30	21 (<1%)	0	1 (0%)	15 (1%)	2 (<1%)	1 (<1%)	2 (<1%)
Novolog 70/30	41 (1%)	0	6 (1%)	15 (1%)	11 (1%)	4 (<1%)	5 (1%)

SUPPLEMENTARY DATA

Appendix 1.

A listing of the T1D Exchange Clinic Network sites with participating principal investigators (PI), co-investigators (I) and coordinators (C) ordered by the number of participants recruited per site as of August 1, 2012 is included below:

Philadelphia, PA Children's Hospital of Philadelphia (n=1451) Steven Willi (PI); Terri Lipman (I); Tammy Calvano (C); Olena Kucheruk (C); Pantea Minnock (C); Chau Nguyen (C) **Aurora, CO Barbara Davis Center for Childhood Diabetes** (n=1440) Georgeanna Klingensmith (PI); Carolyn Banion (I); Jennifer Barker (I); Cindy Cain (I); Peter Chase (I); Sandy Hoops (I); Megan Kelsy (I); Georgeanna Klingensmith (I); David Maahs (I); Cathy Mowry (I); Kristen Nadeau (I); Jennifer Raymond (I); Marian Rewers (I); Arleta Rewers (I); Robert Slover (I); Andrea Steck (I); Paul Wadwa (I); Philippe Walravens (I); Philip Zeitler (I); Heidi Haro (C); Katherine Manseau (C) **Syracuse, NY SUNY Upstate Medical University** (n=1301) Ruth Weinstock (PI); Roberto Izquierdo (I); Umair Sheikh (I); Patricia Conboy (C); Jane Bulger (C); Suzan Bzdick (C) **New York City, NY Naomi Berrie Diabetes Center, Columbia University P&S** (n=1249) Robin Goland (PI); Rachelle Gandica (I); Lindsay Weiner (I); Steve Cook (C); Ellen Greenberg (C); Kevin Kohm (C); Sarah Pollack (C) **Ann Arbor, MI University of Michigan** (n=927) Joyce Lee (PI); Brigid Gregg (I); Meng Tan (I); Kimberly Burgh (C); Ashley Eason (C) **Aurora, CO University of Colorado/Denver, Barbara Davis Center for Childhood Diabetes** (n=897) Satish Garg (PI); Aaron Michels (I); Lisa Myers (C); **Indianapolis, IN Riley Hospital for Children, Indiana University School of Medicine** (n=859) Linda DiMeglio (PI); Tamara Hannon (I); Donald Orr (I); Christy Cruz (C); Stephanie Woerner (C) **Boston, MA Children's Hospital Boston** (n=836) Joseph Wolfsdorf (PI); Maryanne Quinn (I); Olivia Tawa (C) **Portland, OR Harold Schnitzer Diabetes Health Center at Oregon Health and Science University** (n=793) Andrew Ahmann (PI); Jessica Castle (I); Farahnaz Joarder (I); Chris Bogan (C); Nancy Cady (C); Jennifer Cox (C); Amy Pitts (C); Rebecca Fitch (C); Brad White (C); Bethany Wollam (C) **Atlanta, GA Atlanta Diabetes Associates** (n=742) Bruce Bode (PI); Katie Lindmark (C); RaShonda Hosey (C) **Buffalo, NY University Pediatric Associates** (n=673) Kathleen Bethin (PI); Teresa Quattrin (I); Michelle Ecker (C) **Los Angeles, CA Children's Hospital Los Angeles** (n=605) Jamie Wood (PI); Lily Chao (I); Clement Cheung (I); Lynda Fisher (I); Debra Jeandron (I); Francine Kaufman (I); Mimi Kim (I); Brian Miyazaki (I); Roshanak Monzavi (I); Payal Patel (I); Pisit Pitukcheewanont (I); Anna Sandstrom (I); Marisa Cohen (C); Brian Ichihara (C); Megan Lipton (C) **Grand Rapids, MI Helen DeVos Children's Hospital Endocrinology and Diabetes** (n=576) Ayse Cemeroglu (PI); Yaw Appiagyei-Dankah (I); Maala Daniel (I); Daniel Postellon (I); Michael Racine (I); Michael Wood (I); Lora Kleis (C); **Seattle, WA University of Washington, Diabetes Care Center** (n=569) Irl Hirsch (PI); Anthony DeSantis (I); DC Dugdale (I); R Alan Failor (I); Lisa Gilliam (I); Carla Greenbaum (I); Mary Janci (I); Peggy Odegard (I); Dace Trence (I); Brent Wisse (I); Emily Batts (C); Angela Dove (C); Deborah Hefty (C); Dori Khakpour (C); Jani Klein (C); Kristen Kuhns (C); Marli McCulloch-Olson (C); Christina Peterson (C); Mary Ramey (C); Marissa St. Marie (C); Pam Thomson (C); Christine Webber (C) **Idaho Falls, ID Rocky Mountain Diabetes & Osteoporosis Center, PA** (n=557) David Liljenquist (PI); Mark Sulik (PI); Carl Vance (PI); Tiffany Coughenour (I); Chris Brown (C); Jean Halford (C); Andrea Prudent (C); Shanda Rigby (C); Brandon Robison (C) **Morristown, NJ BD Diabetes Center at Goryeb Children's Hospital** (n=542) Harold Starkman (PI); Tymara Berry (I); Barbara Cerame (I); Daisy Chin (I); Laurie Ebner-Lyon (I); Frances Guevarra (I); Kristen Sabanosh (I); Lawrence Silverman (I); Christine Wagner (I); Marie Fox (C) **Stanford, CA Stanford University School of Medicine, Division of Pediatric Endocrinology** (n=525) Bruce Buckingham (PI); Avni Shah (I); Kimberly Caswell (C); Breanne Harris (C) **Minneapolis, MN International Diabetes Center/Park Nicollet Adult Endocrinology** (n=514) Richard Bergenstal (PI); Amy Criego (I); Greg Damberg (I); Glenn Matfin (I); Margaret Powers (I); David Tridgell (I); Cassie Burt (C); Beth Olson

(C); LeeAnn Thomas (C) **Boston, MA Joslin Diabetes Center- Pediatric** (n=451) Sanjeev Mehta (PI); Michelle Katz (I); Lori Laffel (I); Joanne Hathway (C); Roxanne Phillips (C) **New Haven, CT Yale Pediatric Diabetes Program** (n=398) Eda Cengiz (PI); William Tamborlane (I); Darryll Cappiello (C); Amy Steffen (C); Melinda Zgorski (C) **Los Angeles, CA University of Southern California - Community Diabetes Initiatives** (n=365) Anne Peters (PI); Valerie Ruelas (C) **Durham, NC Duke University Medical Center - Pediatric Endocrine Division** (n=364) Robert Benjamin (PI); Deanna Adkins (I); Juanita Cuffee (C); Amber Spruill (C) **Minneapolis, MN International Diabetes Center/Park Nicollet Pediatric Endocrinology** (n=357) Richard Bergenstal (PI); Amy Criego (I); Greg Damberg (I); Glenn Matfin (I); Margaret Powers (I); David Tridgell (I); Cassie Burt (C); Beth Olson (C); LeeAnn Thomas (C) **Chicago, IL Northwestern University** (n=352) Grazia Aleppo-Kacmarek (PI); Teresa Derby (C); Elaine Massaro (C); Kimberly Webb (C) **Charlottesville, VA University of Virginia Health System** (n=342) Christine Burt Solorzano (PI); Mark DeBoer (I); Helen Madison (C) **St. Louis, MO Washington University** (n=342) Janet McGill (PI); Lori Buechler (C); Mary Jane Clifton (C); Stacy Hurst (C); Sarah Kissel (C); Carol Recklein (C) **Iowa City, IA University of Iowa Children's Hospital** (n=327) Eva Tsalikian (PI); Michael Tansey (I); Joanne Cabbage (C); Julie Coffey (C); Sarah Salamati (C) **Kansas City, MO Children's Mercy Hospital** (n=323) Mark Clements (PI); Sripriya Raman (I); Angela Turpin (I); Jennifer Bedard (C); Cyndy Cohoon (C); Aliza Elrod (C); Amanda Fridlington (C); Lois Hester (C); **Detroit, MI Henry Ford Health System** (n=316) Davida Kruger (PI); Andreana Tassopoulos **Gainesville, FL University of Florida** (n=306) Desmond Schatz (PI); Michael Clare-Salzler (I); Kenneth Cusi (I); Colleen Digman (I); Becky Fudge (I); Mike Haller (I); Collette Meehan (I); Henry Rohrs (I); Janet Silverstein (I); Sujata Wagh (I); Miriam Cintron (C); Eleni Sheehan (C); Jamie Thomas (C) **Orange, CA Children's Hospital of Orange County** (n=305) Mark Daniels (PI); Susan Clark (I); Timothy Flannery (I); Nikta Forghani (I); Ajanta Naidu (I); Christina Reh (I); Peggy Scoggin (I); Lien Trinh (I); Natalie Ayala (C); Rebeca Quintana (C); Heather Speer (C) **Columbus, OH Central Ohio Pediatrics Endocrinology and Diabetes Services** (n=303) William Zipf (PI); Diane Seiple (C) **Sioux Falls, SD Avera Research Institute** (n=281) Julie Kittelsrud (PI); Ashutosh Gupta (I); Vikki Peterson (C); Ashley Stoker (C) **San Diego, CA University of California** (n=280) Michael Gottschalk (PI); Marla Hashiguchi (C); Katheryn Smith (C) **Tampa, FL University of South Florida Diabetes Center** (n=276) Henry Rodriguez (PI); Craig Bobik (C); Danielle Henson (C) **Nashville, TN Vanderbilt Eskind Diabetes Clinic** (n=276) Jill Simmons (PI); Amy Potter (I); Margo Black (C); Faith Brendle (C) **Cleveland, OH Case Western Reserve University** (n=251) Rose Gubitosi-Klug (PI); Beth Kaminski (I); Susan Bergant (C); Wendy Campbell (C); Catherine Tasi (C) **Oklahoma City, OK University of Oklahoma Health Sciences Center Dept. of Pediatric Diabetes and Endocrinology** (n=243) Kenneth Copeland (PI); Joni Beck (I); Joane Less (C); Jill Schanuel (C); Jennifer Tolbert (C) **San Francisco, CA University of California, San Francisco Medical Center (UCSF)** (n=237) Saleh Adi (PI); Andrea Gerard-Gonzalez (I); Stephen Gitelman (I); Nassim Chettout (C); Christine Torok (C) **Seattle, WA Seattle Children's Hospital** (n=226) Catherine Pihoker (PI); Joyce Yi-Frazier (I); Susan Kearns (C) **Pittsburgh, PA Children's Hospital of Pittsburgh of UPMC** (n=217) Ingrid Libman (PI); Vicky Bills (C); Ana Diaz (C); Julie Duke (C) **Minneapolis, MN University of Minnesota** (n=204) Brandon Nathan (PI); Antoinette Moran (I); Melena Bellin (I); Shannon Beasley (C); Anne Kogler (C); Janice Leschyshyn (C); Kara Schmid (C); Anne Street (C) **Greenville, SC Greenville Hospital System Pediatric Endocrinology** (n=196) Bryce Nelson (PI); Carrie Frost (C); Erin Reifeis (C) **Houston, TX Baylor College of Medicine / Texas Children's Hospital** (n=187) Morey Haymond (PI); Fida Bacha (I); Maria Caldas-Vasquez (I); Sara Klinepeter (I); Maria Redondo (I); Rosa Berlanga (C); Teresa Falk (C); Elizabeth Garnes (C); Janette Gonzalez (C); Cecilia Martinez (C); Mariam Pontifes (C); Ronald Yulatic (C) **Ocean Springs, MS The Diabetes Center, PLLC** (n=187) Kathleen Arnold (PI); Traci Evans (I); Sharon Sellers (C) **Salt Lake City, UT University of Utah - Utah Diabetes Center** (n=181) Vandana

Raman (PI); Carol Foster (I); Mary Murray (I); Vandana Raman (I); Trina Brown (C); Hillarie Slater (C); Karen Wheeler (C) **Worcester, MA University of Massachusetts Medical School** (n=179) David Harlan (PI); Mary Lee (I); John-Paul Lock (I); Celia Hartigan (C); Lisa Hubacz (C) **Durham, NC University of North Carolina Diabetes Care Center** (n=179) John Buse (PI); Ali Calikoglu (I); Joseph Largay (I); Laura Young (I); Helen Brown (C); Vinnie Duncan (C); Michelle Duclos (C); Julie Tricome (C) **Sioux Falls, SD Sanford Research/USD** (n=178) Verdayne Brandenburg (PI); Julie Blehm (I); Julie Hallanger-Johnson (I); Dawn Hanson (C); Corliss Miller (C); Jennifer Weiss (C) **Columbus, OH The Research Institute at Nationwide Children's Hospital** (n=168) Robert Hoffman (PI); Monika Chaudhari (I); David Repaske (I); Elizabeth Gilson (C); Jesse Haines (C) **Billings, MT St. Vincent Healthcare/Internal Medicine and Diabetes** (n=165) Justen Rudolph (PI); Charles McClave (I); Doris Biersdorf (C) **Bismarck, ND Medcenter One** (n=156) Anthony Tello (PI); Julie Blehm (I); Donna Amundson (C); Rhonda Ward (C) **Philadelphia, PA University of Pennsylvania School of Medicine/Rodebaugh Diabetes Center** (n=156) Michael Rickels (PI); Cornelia Dalton-Bakes (C); Eileen Markman (C); Amy Peleckis (C); Nora Rosenfeld (C) **Cincinnati, OH Cincinnati Children's Hospital Medical Center** (n=148) Lawrence Dolan (PI); Sarah Corathers (I); Jessica Kichler (I); Holly Baugh (C); Debbie Standiford (C) **Spokane, WA Rockwood Research Center, P.S.** (n=132) Jeanne Hassing (PI); Jennifer Jones (I); Stephen Willis (I); Stephen Willis (I); Carol Wysham (I); Lisa Davis (C) **Baltimore, MD Johns Hopkins University Pediatric Endocrinology** (n=120) Scott Blackman (PI); Kimber-Lee Abel (C); Loretta Clark (C); Andrea Jonas (C); Ellie Kagan (C) **Miami, FL University of Miami, Diabetes Research Institute** (n=119) Jay Sosenko (PI); Carlos Blashke (C); Della Matheson (C) **Rapid City, SD Regional Health Clinical Research** (n=118) Rachel Edelen (PI); Thomas Repas (I); Denise Baldwin (C); Trista Borgwardt (C); Christina Conroy (C); Kelly DeGrote (C); Rod Marchiando (C); Michelle Wasson (C) **Jacksonville, FL Nemours Children's Clinic** (n=116) Larry Fox (PI); Nelly Mauras (I); Ligeia Damaso (C); Kim Englert (C) **Cleveland, OH Cleveland Clinic Department of Endocrinology, Diabetes and Metabolism** (n=111) Marwan Hamaty (PI); Laurence Kennedy (I); Michelle Schweiger (I); Pantelis Konstantinopoulos (C); Carolyn Mawhorter (C); Amy Orasko (C); Denise Rose (C) **Tallahassee, FL Tallahassee Memorial Diabetes Center** (n=108) Larry Deeb (PI); Kim Rohrbacher (C) **Findlay, OH Blanchard Valley Medical Associates** (n=100) Leroy Schroeder (PI); Amanda Roark (C) **Milwaukee, WI The Medical College of Wisconsin/ Children's Hospital of WI** (n=99**)** Omar Ali (PI); Joanna Kramer (C); Donna Whitson-Jones (C) **Nashville, TN Vanderbilt Eskind Diabetes Clinic** (n=98) Amy Potter (PI); Margo Black (C); Faith Brendle (C) **Vallejo, CA Kaiser Permanente** (n=74) Heidi Gassner (PI); Sobha Kollipara (I); Vicky Bills (C); Julie Duke (C) **Paterson, NJ St. Joseph's Children's Hospital** (n=53) Katerina Harwood (PI); Vijaya Prasad (I); Judy Brault (C)