SIG Newsletter

Issue 1 Fall 2014

This marks the release of the first issue of the Semi-Annual Newsletter published by APA Div. 54/SPP Diabetes Special Interest Group. The goal of the newsletter is to share new information with SIG members from the larger diabetes community, foster collaboration among members, and support the training and mentoring of our students and fellows. In each issue, we hope to bring updates to enrich our members’ clinical, research, and training programs. Enjoy the first edition, and be on the lookout for our next release in 2015!

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In June 2014, the American Diabetes Association (ADA) eliminated previous A1C recommendations that varied by children’s age. It is now recommended that all children under 19 years of age with a type 1 diabetes diagnosis work toward maintaining an A1C less than 7.5%. The rationale for this change is that research shows that chronic hyperglycemia can lead to early complications in children. The ADA’s press release can be found at http://www.diabetes.org/newsroom/press-releases/2014/diabetes-association-sets-new-a1c-target-for-children-with-type-1-diabetes.html. The ADA’s position statement providing empirical support for this change is available free of charge at http://care.diabetesjournals.org/content/37/7/2034.
Technology Advances

The Bionic Pancreas

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“Gentleman, we can rebuild him. We have the technology… (Six Million Dollar Man, TV Series 1974-1978).” To dispel any rumors, I am not old enough to have watched this show when it was on the air, but I have seen episodes on syndication.

We live in an exciting time for innovative treatments for type 1 diabetes, including the Bionic Pancreas Glycemic Control System (BPGCS). The BPGCS consists of: two insulin pumps with the Bluetooth activated (one to deliver insulin, one to deliver glucagon), a Dexcom CGM, and an iPhone to run the control algorithm. The basic system runs like this: the Dexcom monitors a patient’s blood glucose levels and sends this information in real-time to the iPhone, which uses this information to determine if a bolus of insulin or glucagon is needed or if nothing is needed. Insulin is delivered in cases where the blood glucose levels are too high; glucagon is delivered if the blood glucose levels are too low. The system doesn’t fully account for food intake, carbohydrate counts still need to be entered by the patient, but it can determine the size of the meal and help with insulin dosing.

Clinical trials are underway using the BPGCS in adults and youths with type 1 diabetes and preliminary results are promising. Both adults and youths using the BPGCS show an improvement in mean glycemic levels. Importantly, patients’ satisfaction with the technology appears high.

Continuous glucose monitor (CGM) systems are increasingly used as a tool to help manage type 1 diabetes in pediatric settings. Frequent measurements of interstitial glucose provide a visual display of the current value and trend (i.e., increasing, decreasing, steady) on a small handheld device, which can be used to inform insulin administration. Initial studies of CGM use in children and adolescents report benefits for glycemic control and decreased hypoglycemia (1). Even as CGMs are relatively new diabetes management technology, you may hear your patients and families talking about a recent family-led innovation in CGM use. In an effort to make CGM data even more accessible and thus valuable for everyday care, a group of tech-savvy fathers came together in a grassroots effort that has been come to be known as “CGM in the Cloud” and “Nightscout” (See nightscout.github.io and https://www.facebook.com/groups/cgminthecloud/).

Together, these parents developed a series of DIY steps to transmit Dexcom G4 CGM data from the device attached to their child’s body through an android smartphone and the cloud to stream real-time to multiple devices anywhere in the world, such as mobile phones, tablets, televisions, wifi-enabled watches, and desktop computers. For parents of children with type 1 diabetes, this gives them the ability to check their child’s current blood glucose values at a glance while the child is at school, playing sports, at sleepovers, and any other time they are apart. A great deal has been written about CGM in the Cloud on the diabetes online community, using the hashtag #WeAreNotWaiting to reflect the urgency families feel to take charge of their own diabetes data. Anecdotes suggest that parents find great comfort and security in having access to this data, parents talk about the potential for CGM in the Cloud to facilitate autonomy and quality of life. A few examples among many from the diabetes online community: http://www.diabetesmine.com/we-are-not-waiting, http://sixuntilme.com/wp/2014/07/10/cgm-cloud-part/, http://www.houstonwehaveaproblemblog.com/2014/08/nightscout-cgm-in-cloud-and-how-we-roll.html, http://www.theprincessandthepump.com/2014/08/our-cgm-in-cloud-experience.html.
As with any technological advance, there is controversy and questions have been raised about privacy, accuracy, and the risk of information overload, but the overall response has been extremely enthusiastic (http://sixuntilme.com/wp/2014/07/16/cgm-cloud-personalpreferences/, http://chasinglows.org/category/cgm/cgm-in-the-cloud/, http://www.d-mom.com/cgm-in-the-cloud-nightscout/).

Developed by parents and growing exponentially due to massive interest, CGM in the Cloud is something that will increasingly play a role in many families’ management of type 1 diabetes. Research and clinical care will have to keep pace!


Highlighting Center Excellence

Improving Depression Screening for Adolescents with Type 1 Diabetes

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The United States Preventive Task Force recommends screening adolescents for depression when adequate systems are in place to ensure accurate diagnosis and treatment [1]. This is especially important in high-risk populations, such as adolescents with Type 1 Diabetes (T1D), where the rates are 2-3 times higher than the general population [2,3]. Despite recommendations for screening, depression evaluation in pediatric diabetes centers is not widely performed. In order to address this, the urban, tertiary care Diabetes Center at the Cincinnati Children’s Hospital Medical Center (CCHMC), which serves almost 2000 patients with T1D, developed a systematic depression screening protocol [4]. This model administers the Children’s Depression Inventory (CDI) measure [5] at routine Diabetes Clinic visits. Results demonstrate this model to be feasible and have clinical significance for adolescents (aged 13-17) with T1D.

The depression screening protocol at CCHMC is available on an electronic tablet that scores and downloads results directly into the electronic medical record (EMR). Since the publication of Corathers et
al., we have initiated the screening protocol at our satellite clinic. We have also expanded the population screened to include adolescents with Type 2 Diabetes. Based upon qualitative feedback from patients and center staff about ongoing barriers to screening we have made two additional changes: 1) frequency was decreased from every Diabetes Clinic visit (quarterly) to every 6 months and 2) the survey instrument was changed from the long version of the CDI (27 items) to the short version, CDI-S (10 items). Of note, the CDI-S does not include an item about assessing suicide, but this item was added to the electronic version offered at CCHMC, with permission of the publisher.

Upon registration, the EMR identifies appropriate patients for a depression screen based upon age and diagnosis of diabetes. The nurse provides a computer tablet during clinic intake and results are available for viewing by the diabetes provider immediately within the chart encounter. A best practice alert within the EMR notifies the provider if a patient endorses suicidal ideation so that an immediate assessment can be completed by a social worker in clinic before the adolescent leaves. A scoring algorithm is present alongside the CDI-S results in the chart (depicted in the figure) to guide the provider to recommend next steps that may include a social work evaluation and/or referral to psychology. This scoring algorithm was determined using a cross-walk comparison of the CDI long and short versions and is comparable to other criteria recommendations for the use of the CDI in pediatric care [6]. Social workers provide standard documentation of their assessment, recommendations, and safety plan in the chart. Providers also record the CDI-S score and referral action in a flow-sheet in the chart.

Implications of this type of routine screening are wide reaching not only in diabetes, but in all chronic medical conditions that have similar rates of depression. Earlier identification and treatment of depression is predicted to remove barriers to adherence, improve coping skills with chronic medical conditions thus leading to more effective self-
management behaviors and improved outcomes. Future aims of the CCHMC Diabetes Center will include on-going evaluation of the established clinical guidelines and further improvements in quality of care as well as the development of appropriate routine psychosocial screening beyond depression to potentially include diabetes-related distress and resilience for adolescents with T1D using the same screening model.


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**Brief Motivational Interviewing Training for Pediatric Endocrinology Providers**

*Priscilla W Powell PhD & Barbara J Anderson PhD*

*Baylor College of Medicine & Texas Children's Hospital*

Emerging evidence suggests the potential of Motivational Interviewing (MI) to facilitate positive behavior change and improved glycemic control among youth with T1D (Channon et al., 2007; Stanger et al., 2013; Gayes & Steele, 2014). While intensive training in MI may not be feasible for health care providers due to limited time and resources, brief, targeted MI training may be an effective and acceptable introductory-level training approach (Bean et al., 2012; Soderlund et al., 2011).
We provided brief MI training to Pediatric Endocrinology providers to target provider-level outcomes of self-efficacy and confidence in helping patients and families make health behavior changes. Focus groups informed development and format of MI training which was comprised of two 2.5 hour sessions or three 1.5 hour sessions. Participants included 5 nurse practitioners, 2 Pediatric Endocrinologists, 6 Endocrine fellows, and 2 Pediatric Psychologists. Training sessions included an overview of the core tenants and fundamental skills of MI (e.g., open-ended questions, affirmations, reflections, and summary statements). Participants engaged in role playing and group activities to practice MI-consistent approaches for exploring pros and cons of behavior change, providing information, responding to sustain talk, and eliciting change talk. Upon request, a modified training program was subsequently integrated into didactic medical education curriculums for incoming Endocrinology fellows. Results from qualitative and quantitative assessment measures of provider self-efficacy and confidence obtained pre and post training will be reported in future publications.

SIG Activities

NEW! Diabetes Training Hub

The Student Members-at-Large of the Diabetes SIG are developing a training hub. The hub will contain information about programs at the internship and post-doctoral level that include diabetes-specific clinical, research, and/or didactic experience. Information collected will be readily available to SIG members and shared with the SPP listserv.

If you have information regarding applicable programs you would like included in the Hub, please complete this brief informational survey about your program: https://auburn.qualtrics.com/SE/?SID=SV_eaPzsEC3crOUYAd

Questions? Email Alana Resmini at akr0011@auburn.edu.

Student Spotlights

Alana Resmini, MS

Alana Resmini is a fifth year doctoral student in the clinical psychology department at Auburn University. She has been involved in diabetes research since her sophomore year as an undergraduate student at Florida State University. There, she completed an honors thesis on the objective measurement of blood-glucose monitoring adherence in children with type 1 diabetes. During graduate school, Alana has been involved with facilitating group and individual interventions in the primary care setting for adolescents and adults with diabetes. Currently, Alana serves in an educational and clinical role at East Alabama Medical Center’s Diabetes and Nutrition Center, helping youth and adults manage their diabetes treatment regimen. Additionally, she currently serves as one of the Student Members at Large within the Diabetes
Along with the other Student MALs, she is in the process of developing a diabetes-specific training resource hub for Division 54 and Diabetes SIG trainees. Her other research interests include health-related quality of life and transition to adult care in youth with food allergy and other pediatric conditions. She looks forward to pursuing additional experiences in diabetes research and training, especially during internship and postdoctoral fellowship.

Rebecca Kamody MS

The manuscript “Assessing Measurement Invariance of the Diabetes Stress Questionnaire in Youth with Type 1 Diabetes” was accepted for publication in the Journal of Pediatric Psychology (see SIG Member citations). The purpose of this manuscript was to evaluate the factor structure and measurement invariance of the Diabetes Stress Questionnaire (DSQ), a measure of diabetes-specific stress, across sex, age (<9th grade vs. ≥9th grade), and glycemic control (optimal vs. suboptimal). Both theoretical and empirical literatures support the notion that perceived diabetes-related stress impact glycemic control in adolescents with type 1 diabetes (T1D). As such, it is imperative to have a measure of this construct of diabetes-related stress that is both psychometrically sound and invariant across different groups that may be the target of interventions to improve glycemic control. For the purpose of this manuscript, data from 318 adolescent participants were pooled from four archival data sets and the ongoing Predicting Resiliency in Youth with Type 1 Diabetes (PRYDE) study in which the DSQ was completed. Confirmatory factor and measurement invariance analyses were conducted to confirm the proposed factor structure and measurement invariance across sex, age, and glycemic control. The DSQ factor structure was found to have an acceptable fit, which was invariant across sex, age, and glycemic control. The findings of this project indicate that when using the DSQ, differences in diabetes-related stress with respect to sex, age, or glycemic control can be considered meaningful. This study supports the DSQ as an evidence-based and well-established assessment of perceived diabetes stress in youth with T1D.
Publications, Presentations, & Grants

Grants

“Predicting Resiliency in Youth with Type-1 Diabetes.” The University of Memphis Faculty Research. PI: Kristoffer Berlin, PhD; 07/2013-07/2014.

“Promoting Resilience in Youth with Type 1 Diabetes: Pilot of a Strengths-Based Family Intervention to Improve Diabetes Outcomes.” Funded by the Texas Children’s Hospital Pediatric Pilot Research Fund, and by the Caroline Weiss Law Fund for Research in Molecular Medicine (Baylor College of Medicine Junior Faculty Seed Funding). PI: Marisa Hilliard, PhD; 07/2014-12/2015.

“Family Influences on Type 1 Diabetes Management in Young Children.” Funded by the Clinical and Translational Science Institute of Southeast Wisconsin. PI: Astrida Kaugars, PhD; 04/2014-3/31/2015.

UC4 DK101132: “FL3X: An Adaptive Intervention to Improve Outcomes for Youth with Type 1 Diabetes.” Pl’s: Elizabeth Mayer-Davis, PhD and Michael Seid, PhD; Co-I: Jessica Kichler, PhD; 09/30/2013 – 9/29/2018.

R01 DK100779: “Longitudinal Test of Adherence & Control in Kids New to T1 Diabetes & 5-9 Yrs Old.” PI: Susana Patton, PhD; 08/2014-7/31/2019.

Publications


Depression Screening for Adolescents: An Example from Type 1 Diabetes. Pediatrics; 132:e1395-e1402 [Epub ahead of print].


Herbert LJ, **Monaghan M**, Cogen F, **Streisand R**. (2014). The impact of parents' sleep quality and hypoglycaemia worry on diabetes self-efficacy. Behavioral Sleep Medicine, epub ahead of print.


Science and Technology, 1, 1370-1375.


Valenzuela, JM, Seid, M, Waitzfelder, B, Anderson, AM, Beavers, DP, Dabelea, DM . . . Mayer-Davis, EJ For the SEARCH for Diabetes in

Presentations


Corathers, S., Beal, S., Yi-Frazier, J., Kichler, J., Gilliam, L., Houchen, A., Watts, G., Pulliam, S., Panlasigui, N., & Pihoker, C. Confirmatory factor analysis of a novel transition to adult care readiness assessment tool for adolescents and young adults (AYA) with type 1 diabetes (T1D). To be presented at the International Society of Pediatric and Adolescent Diabetes (ISPAD) annual conference. (09/2014)


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