Behavioral Strategies to Enhance Diabetes Management in Children and Teens: What You can Do in 5 Minutes

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Type 1 Diabetes

• One of the most common chronic childhood conditions
  • 18,000 new cases each year, and incidence is rising¹
  • Mean age of onset 10-14
  • Despite advances in treatment, estimated loss of life-expectancy of up to 13 years²

• Goal of treatment is to maintain glycemic control to prevent acute and long-term complications
  • The majority of treatment regimen is completed by child or adolescent and his/her family

¹ Hamman et al., 2015, Diabetes Care
² Katz & Laffel, 2015, JAMA
Type 1 Diabetes Tasks of Self-Management

- Blood glucose checks
- Log blood glucose numbers/Review sensor data
- Count carbohydrates
- Give meal and snack insulin
- Give long acting insulin
- Monitor for hypo and hyperglycemia
- Recognize glucose patterns and adjust insulin doses
- Communicate with providers between visits as needed
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Glycemic Control Deteriorates over Adolescence

Miller et al., 2015, *Diabetes Care*
Proportion of Pediatric Patients Meeting Treatment Goals (A1C < 7.5%)

Miller, et al., 2015, Diabetes Care
Barriers to Treatment Adherence

- Parent-child conflict
- Diabetes distress/burnout
- Insufficient sleep

1 Noser et al., 2016, *Pediatr Diabetes*
2 Hagger et al., 2017, *Diabetes Care*
3 Perez et al., 2018, *Curr Diabetes Rep*
What Can We Do?

Most evidence-based interventions to improve adherence and glycemic control in youth with T1D are time- and resource-intensive

- Behavioral Family Systems Therapy for Diabetes – 12 sessions of family-based therapy over 6 months\(^1\)
- Multisystemic Therapy for Poorly Controlled T1D – intensive, family-centered, community-based treatment over 6 months\(^2\)
- Novel Interventions in Children’s Healthcare – intensive, multicomponent behavioral health intervention including frequent text messaging, home visits, and resource access\(^3\)

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\(^1\) Wysocki et al., 2007, *Diabetes Care*
\(^2\) Ellis et al., 2012, *Ann Behav Med*
\(^3\) Barry et al., 2017, *Curr Diabetes Rep*
What Can We Do?
Brief Interventions for Health Behavior Change

• Smoking Cessation – even brief “advice” from physicians increases quit rates¹
• Evidence-based “Kernels” or “active ingredients”²
• Use metaphors, stories, humor

¹ Stead et al., 2013, Cochrane Database of Systematic Reviews
² Embry & Biglan, 2008, Clin Child Family Psychol Rev
Scenario #1

Ava is a 13 year old girl who has a hard time maintaining motivation for diabetes care. She does a great job checking her blood sugar and giving insulin for the first week or two after clinic appointments, but then she starts forgetting or missing checks and doses. Ava feels bad about these lapses, and her parents calling her “lazy.”
Brief Intervention – Use Metaphors

Vs.
Immediate vs. Delayed Consequences

• With diabetes management, there are few immediate consequences for skipping self-care, like bg checks (oil change), but there are consequences for completely skipping insulin (running out of gas).

• Reframing – look at diabetes care as an *accomplishment*, not a *failure*

• Relate to other behaviors – healthy eating, exercise, check-ups
Scenario #2

Jack is a 15 year old boy who hates diabetes and avoids talking about it, doing diabetes management in front of his peers, or bringing his supplies with him. He has missed a lot of school due to DKA and high blood glucose levels.
Avoidance and Suppression

The White Bear Problem
Sticky Note Approach

• Attention and effort is on the thing you don’t like.
• By spending some time and effort on diabetes, you have more time and energy for the things you want to do.
Scenario #3

Jade is an 8 year old girl who frequently has angry outbursts when she has to do diabetes tasks (or homework, or clean up, or get ready for bed). Her parents try to reason with her, soothe her, and then often get frustrated and yell.
Power of Strategic Attention
Scenario #4

Caleb is a high school student taking several AP classes, playing in the marching band, and working on the weekends. He feels like he can’t get a handle on his blood sugar, as he has frequent highs and lows. He tries to stay on top of diabetes management, but he is only getting 4-5 hours of sleep per night.
**Sleep and Diabetes**

- Insufficient sleep can have physiological effects:¹
  - Elevated blood glucose
  - Decreased insulin sensitivity
  - Poor glycemic control

- Poor sleep quality can have behavioral effects:
  - Poor food choices²
  - Less physical activity, more sedentary time³
  - Behavior problems⁴

¹ Yeshayahu et al., 2010, *Diabetes Care*
² Westerlund et al., 2009, *Br J Nutr*
³ Garaulet et al., 2011, *Int J Obesity*
⁴ Perfect et al., 2012, *Sleep*
Sleep Inconsistency or “Social Jetlag”

• Large sleep debt on weekdays related to early school start times, extracurricular demands
• Delayed bedtime and sleep extension on weekends creates “social jetlag” on weekdays
Inconsistent Sleep

• Variability in individual sleep time was related to poorer glycemic control and fewer BG checks

• Encouraging kids to maintain a regular sleep schedule may help improve glycemic control and diabetes management
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Questions?