Maximizing Interprofessional Practice in the Management of the Athlete with Diabetes

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Presenter Conflicts/Disclosures

No Conflict or Disclosures

- The views expressed in these slides and today's discussion are our own
- Participants must use discretion when using the information contained in this presentation

Objectives

- Identify individuals crucial to the Diabetes Interprofessional Practice Team
- Summarize research in the area of type 1 diabetes management of elite athletes
- Explain ways to manage the relationship with and expectations of the diabetic athlete and Diabetes Interprofessional Practice Team
- Assist the diabetic athlete by making practical nutrition recommendations to reduce incidence of hyper- and hypoglycemia
- Build a Diabetes Management protocol that fits the needs of their diabetic athlete and performance environment

The Athlete with Type 1 Diabetes

Youth

- Newly diagnosed
- Parental oversight in treatment
- Most opportunity for education

Adolescent

- Athlete taking on more responsibility
- Parents still involved
- Hormones kick in

Collegiate

- Athlete managing treatment for years
- Medical care is in transition
- Environment completely changed (schedule, sleep, training, academics, social, travel)

Professional

- Athlete management
- Navigating Collective Bargaining Agreement
- High stress environments

Ultimate Goal

"Allow [the athlete with type 1 diabetes] to compete on equal ground with their teammates and competitors without diabetes."

National Athletic Trainer's Association Position Statement: Management of the Athlete With Type 1 Diabetes (2007)

Diabetes care should be managed by a multidisciplinary team (ADA Standards of Care, 2019)

Team-approach leads to improvements in HgbA1c and glycemic targets (Powel et al., 2015)

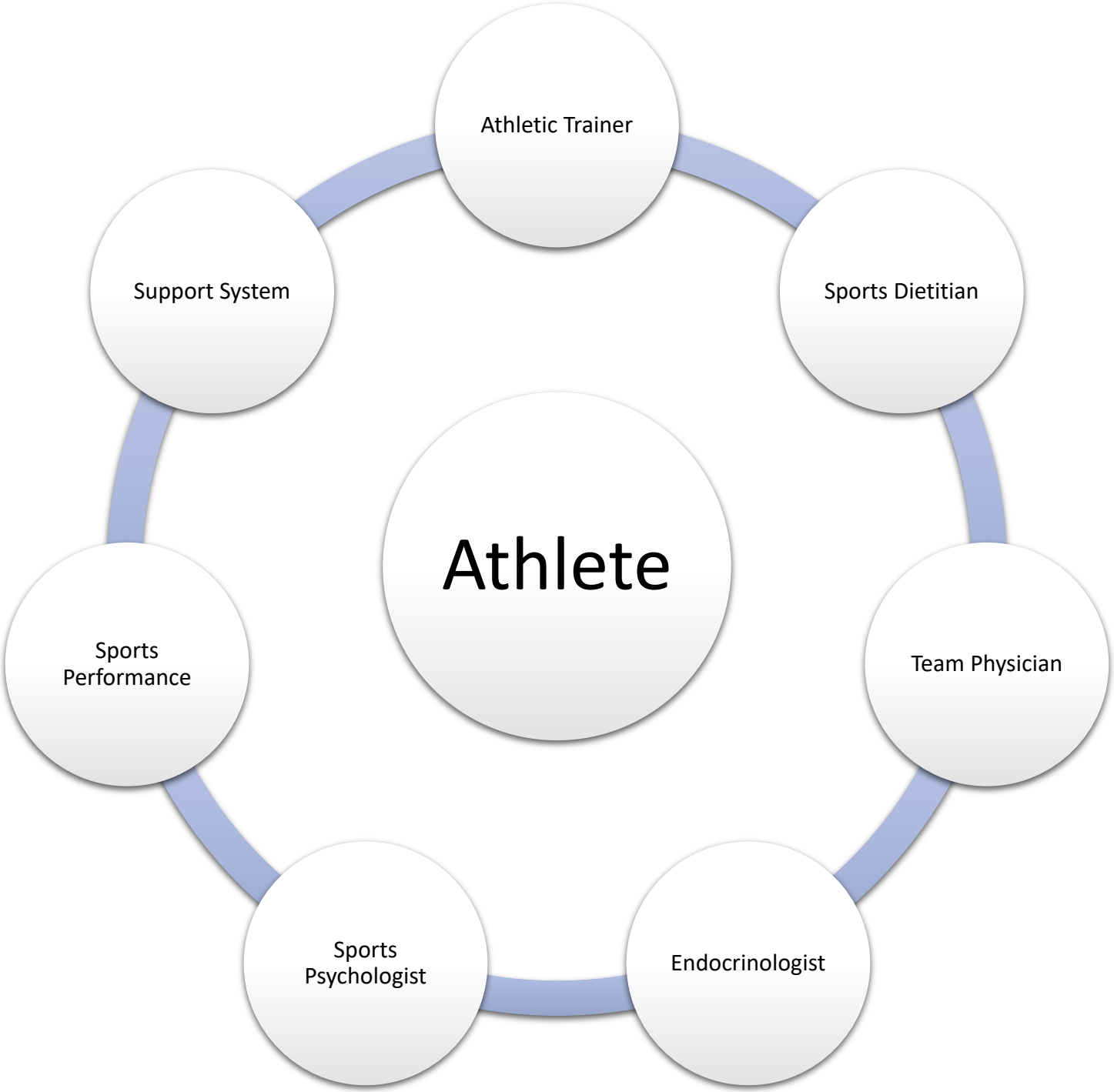
Why build a Diabetes Interprofessional Practice Team?

Multidisciplinary health care teams rely on the skills and expertise of individual providers from a range of disciplines (Powell et al., 2015)

Elite athletes with Type 1 Diabetes face unique challenges that have not yet been extensively reviewed in the literature

The Challenges

- Creating a deliberate, well-designed plan
  - What are the glycemic targets during training and competition?
  - When and how frequently are we testing blood glucose and ketones
  - Who holds all this data?
- Defining the role of each member of the IPT
  - DO NOT FORGET ABOUT THE ATHLETE
    - Patient empowerment linked with adherence to treatment and glycemic control (Powell et al., 2015)
    - Majority of diabetes care occurs outside of contact with clinicians (Powell et al., 2015)
    - Young adults prefer shared-decision making in their treatment (Wiley et al., 2014)


Athletic Trainer
Sports Dietitian
Team Physician
Endocrinologist
Sports Psychologist
Sports Performance
Support System
Athlete

Athlete

- How long have they had diabetes?
- Who is a part of their support system?
- What is their normal routine?
  - Food
  - Insulin
  - BG Check
  - Sleep
  - Training
- What does hyper- and hypoglycemia feel like to them?
- What is their knowledge of diabetes?

Our athlete…

- Denial about disease
  - Didn’t understand connection between performance
  - Didn’t want anyone to know he had diabetes
- Celiac Disease
- Confident in his knowledge of carb counting, insulin corrections, and managing around exercises
  - Underestimating carb intake
  - Comfortable with training at BGs 300+
- Technology
  - Continuous Glucose Monitor (Dexcom)
- Insulin treatment
  - Multiple daily injections (MDIs) – Lantus and Humalog
- Support system included himself

Staff Athletic Trainer

- Has more contact with the diabetic athlete than most members of the Diabetes IPT
- Plays a critical role in (NATA, 2007):
  - Prevention, recognition, and immediate care of hypoglycemia and hyperglycemia
  - Facilitating communication among the other members of the Diabetes IPT
  - Reinforcing nutrition concepts
  - Counseling on hydration
  - Helping athlete identify barriers

Staff Athletic Trainer

- Daily interactions with student-athlete
  - Treatments
  - Rehab
  - Practice/trainings
- Helped with monitoring
- Managed critical situations and modification of play based on BG levels
- “Middle Person ”
  - Able to provide insight on what is going on with the athlete outside of diabetes

Sports Dietitian

- Board Certified Sports Dietitian (CSSD)
  - Uniquely qualified to help diabetic athletes manage their nutrition around diabetes and training
- Fueling for performance and training
  - While incorporating strategies to optimize glycemic control and promote long-term health

Sports Dietitians

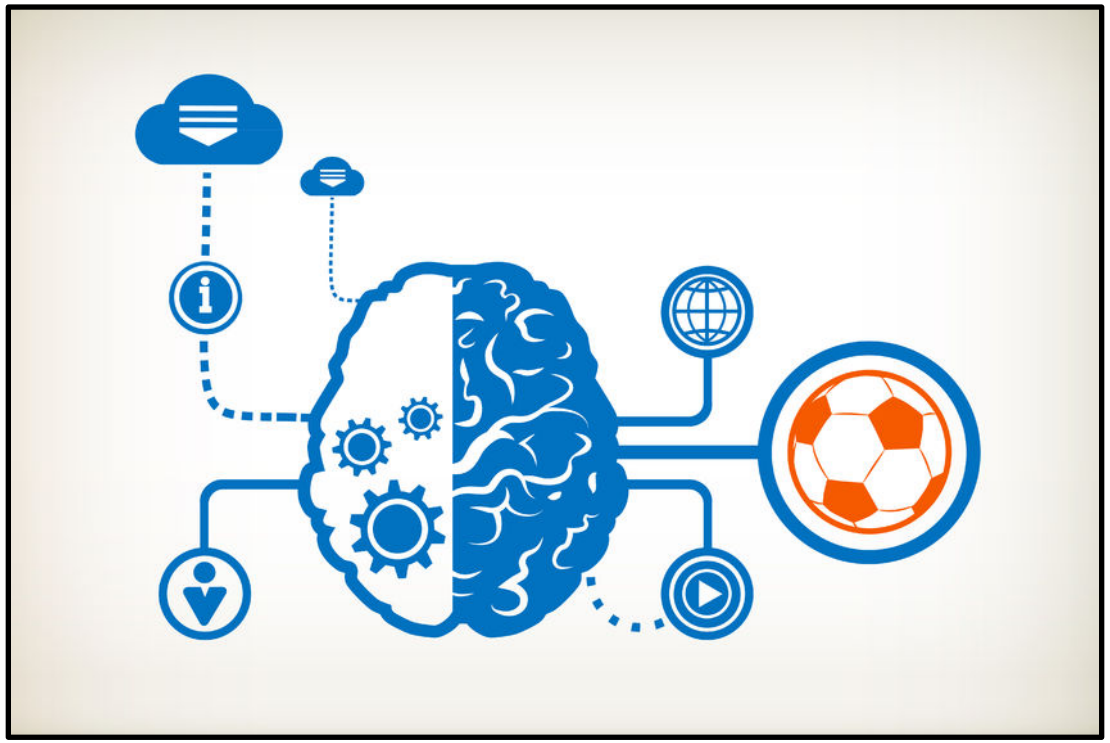
- Asset on the field/court during practices and competition
- Navigating fueling around and during training
  - Fuel available from the Fueling Station or team meals
  - Fueling when traveling
- Assist with translation of insulin therapy to practical recommendations
  - Ratios for meals/snacks
  - Carb content of meals/snacks
- Motivational interviewing to assess knowledge and barriers

Team Physician/Endocrinologist

- Medical Management
  - Insulin (How? Type? Dosage? Adjustments during activity?)
  - Long-Term Health (Eye health? Wound Care? Comorbidities?)
- Set Parameters and Expectations of Protocol
  - For the IPT
    - Communication on treatment
    - Guidelines
  - For the Student Athlete
    - Communication on barriers and changes

Sports Psychologist

- ~50% of diabetes treatment teams have a mental health provider (Powell et al., 2015)
- Can assess for (ADA Standards of Care, 2019)
  - Diabetes distress
  - Depression
  - Anxiety
  - Disordered eating
  - Cognitive capacities
  - Affect or mood
  - Attitudes about diabetes
  - Stress management



Sports Psychologist

- Identify that athlete was battling anxiety, perception of being different, and increased stress
- Working with our Sports Psychologist:
  - Athlete
    - Better management of school and sport stress
    - Navigating the feeling of being different around teammates
    - Increased awareness that diabetes needed to be managed
  - IPT
    - Perspective on the athletes struggles outside of diabetes
    - How to approach athlete on the management plan
    - How to better include the athlete in decision-making

Sports Performance (Strength and Conditioning)

- Understanding critical situations
  - How to respond for the health and safety of SA
- Potential to help bridge the gap between optimal management of diabetes and its correlation to optimal performance
  - Periodization of training

Identifying the Support System

- Coaches
- Family Members
- Teammates
- Friends

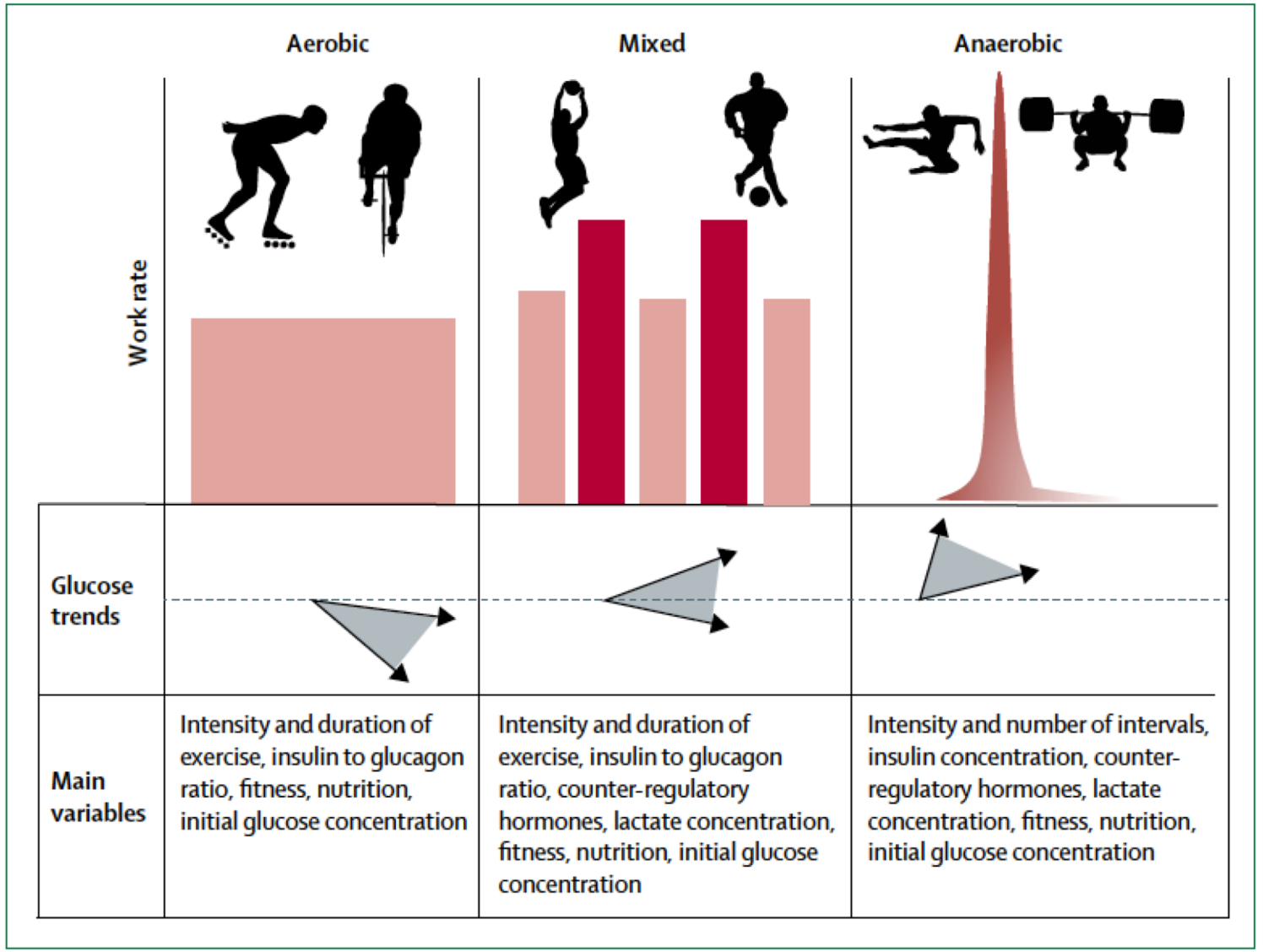
Building Policies and Procedures

- Goals
  - Keep athlete safe during athletic activity
  - Help athlete navigate hyper- and hypoglycemia around activity
  - Educate athlete in ways to manage their diabetes
- Challenges
  - Needed structure to allow for multiple clinicians to follow and provide the same recommendations
  - Flexible enough to allow for the unpredictable nature of diabetes and team sports
  - Needed to navigate the increased nutritional needs of a D1 athlete
  - Literature is lacking in sound research on Type 1 Diabetes in Elite Athletes

Activity & Blood Glucose levels

- Location of insulin delivery
- Amount of insulin in circulation
- BG before exercise
- Composition of last meal or snack
- Intensity and duration of activity

(Riddell et al., 2017)



Monitoring Blood Glucose During Activity

Starting BG	Recommended glucose management
Urgent Low (<80 mg/dL)	✓ Must be held from activity or removed from participation until BG is >80 and trending up ✓ Use a finger stick to confirm blood glucose level if CGM is being used ✓ Ingest 10-20 g of glucose before starting exercise ✓ Monitor closely for hypoglycemia during exercise
Below target (80-99 mg/dL)	✓ Ingest 10-20 g of glucose before starting exercise ✓ If in exercise, should be removed from participation ✓ Use a finger stick to confirm blood glucose level if CGM is being used ✓ BG should continue to trend up prior to entering activity ✓ Monitor closely for hypoglycemia during exercise
Near target (100-119 mg/dL)	✓ Ingest 10 g of glucose ✓ Can continue anaerobic exercise and high intensity interval training sessions

Adapted from Riddell et al., 2017 & Shugart et al., 2010

Monitoring Blood Glucose During Activity

Starting BG	Recommended glucose management
At target (120-250 mg/dL)	✓ Can continue aerobic exercise ✓ Can continue anaerobic exercise and high intensity interval training sessions, but BG could rise ✓ Consider insulin bolus
Above target (251-300 mg/dL)	✓ Can continue anaerobic and aerobic exercise ✓ Consider insulin bolus
Urgent high (≥300 mg/dL)	✓ Check for ketones at the next natural break in activity if BG has been >300 mg/dL for approximately 30 minutes or more ✓ If BG is ≥ 350 mg/dL, activity should be immediately halted to check ketones ✓ Check ketones as specified below

Adapted from Riddell et al., 2017 & Shugart et al., 2010

Monitoring During Activity

- Checking BG every 30-45 minutes
  - Glucometer vs Continuous Glucose Monitoring (CGM)
  - Communicating those numbers with the team
- Checking for signs and symptoms of hyper- or hypoglycemia
  - Rapid blinking
  - Dropped balls
- Ensuring enough supplies
  - Insulin
  - Glucometer strips
  - Gloves
  - Alcohol wipes

Scenario 1:
Continuous Glucose Monitoring vs Finger Stick

- Wireless
- Able to identify trends
- Needs to be calibrated every 12 hours
  - Can be used for treatment decisions
- Sensors can pop off easily
  - Do you have finger sticks in place to cover?
  - New sensors take 2 hours to calibrate
- Who (if anyone) is managing this data?

- Requires more equipment and “hands-on” approach
- Glucometer needs to be charged
- Sharps container
- Can eliminate human error seen with CGM

Photo: http://flickrhivemind.net

Scenario 2: Extreme Weather

- Glucometers like to be warm and dry
  - Reading won't work in the cold
  - How will you keep the equipment dry?
    - Medical tent
    - Waterproof cases
- Drying off and warming up the athlete's fingers
  - Cold hands = No blood

Scenario 3:
The Kickoff Effect

- Adrenaline spike (epinephrine)
  - 100 point spike in BG in one hour
  - Anticipation of the event or the event itself
- Can take a good trending pre-game and throw it out the window
  - Athlete may want to “stack” insulin to prevent spike → can lead to an extreme low
  - Understand the athlete’s response in high stress environments
    - Work with Endo to adjust insulin appropriately

Scenario 4:
The Athlete Wants to be at Target Now

Too High

- Stacking of Insulin
  - Need 1.5-2 hours to see if working
  - Total insulin action time is 3-4 hours
- Leads to extreme lows during activity or recovery period

Too Low

- Over consumption of carbohydrates
  - Recommendation is 10-20 g, wait 15 minutes
  - Avoid using batch made sports drinks
- Can lead to a quick rebound
  - If doing mixed/anaerobic training, BG can go even higher

Take Home Points

- Get to know your athlete
- Don’t be an island
  - Build your Interprofessional Practice Team
- Understand patient goals
- Be flexible
- Develop and continually review policies and procedures
- Value communication
- Celebrate successes

Resources

- Academy of Nutrition and Dietetics Find an Expert
  - https://www.eatright.org/find-an-expert
- American Psychological Association Psychologist Locator
  - https://locator.apa.org
- Different Types of Insulin
- Comprehensive List of Carb Foods
- Signs of Hyperglycemia
- Signs of Hypoglycemia

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Questions?

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