

“Surprising Factor that Impact Glucose Levels & How to Manage Them”

Webinar Questions Answered by Erin Palinski-Wade, RD, CDCES, CPT

Please note that these are brief answers to complex questions and are not meant as medical advice. For more complete information, please seek medical advice from your personal healthcare professional.

- Why is the postprandial BG lower for prediabetes than diabetes?

In prediabetes, the body still produces insulin and maintains some degree of insulin sensitivity, albeit reduced compared to healthy individuals. This allows for a more effective glucose uptake after meals, resulting in lower postprandial BG levels compared to diabetes

- Can you provide insight on the benefit of a diabetic-based formulas versus non-diabetic-based formulas related to enteral nutrition? Some hospital formularies do not provide diabetic formulas and patients/families/providers tend to be concerned with the limited option. I try to explain these products are still 46% of calories from carbohydrates. Do you have research articles available to share with patients/families/provider?

This isn't an area I work in, so I do not have a lot of insight to offer, but possibly this position paper may be helpful when speaking to your hospital staff:

https://www.nestlehealthscience.com/sites/default/files/asset-library/documents/adult-enteral-nutrition/guidelines/diabetes/02_isdi_position_statement_enteral_nutrition_for_diabetes.pdf

- Is it bad if BG levels go up when exercising, or is that normal?

It is not necessarily bad... this can occur due to the stress of exercise as well as the body's response. However, a person who experiences elevated BS during exercise should test their BS frequently and understand their individual response, so they can best adjust medication and meal timing post exercise to keep blood sugar levels in a normal range.

- Can a meal's high fat content increase BG levels? I read the book Mastering Diabetes, and the authors (not RDs) argue that a high-fat meal can increase BG and decrease insulin sensitivity.

More research is needed in this area. The studies referenced by MD point to a study from the 1920s as well as a study on mice. Although high saturated fat diets may increase inflammation, which in turn may over time increase insulin resistance, generally added fat at a meal would improve post-meal glucose levels. I do recommend more plant-based fat vs animal fat for the cardiovascular benefits.

- Can you provide more information on the different types of exercise and how they may impact blood sugars differently? Cardio vs resistance training? I have heard that resistance training has a slower, but long-term impact on blood sugars and cardio exercise is more immediate with lowering the blood sugars. What are your thoughts?

Exercise impacts blood glucose levels differently: cardio (aerobic) exercise provides a rapid, immediate reduction in blood sugar by increasing glucose absorption in muscles, while resistance (anaerobic)

training may initially raise blood glucose but offers long-term benefits by improving insulin sensitivity and increasing muscle mass.

- Can you share your thoughts on endocrine disruptors with insulin sensitivity?

Phthalates, BPA, and PFAS have been linked with insulin resistance and may potentially increase the risk of T2D. Although more research is needed, this is another reason to work on reducing EDCs in the environment/diet.

- What are your thoughts on Omega 3 supplements, since some research has shown increased risk of A Fib with over 1 g/day? Plus, considering research doesn't seem to show a benefit of omega-3 supplements for heart health, while food sources do show a benefit. What if clients don't like fish?

For those at risk of Afib, increased omega-3 from whole dietary sources may be a better strategy than supplementation. If clients dislike fish, look at other forms of omega-3s in the diet such as algae, chia seeds, flax seeds, and walnuts. Also, helping clients to try a variety of fish and different cooking/seasoning options can expose them to flavors they may not have tried before.

- Has poor sleep quality been proven to contribute to decreased insulin sensitivity and increased risk of T2DM, or is it associated with those? In other words, does the research actually prove causation?

The research strongly suggests an association between poor sleep quality and decreased insulin sensitivity as well as increased risk of type 2 diabetes, but it does not definitively prove causation. More research is still needed in this area.

- How do you know whether a masters athlete's A1C is high because of training intensity and sports or foods like gels and drinks?

Using food records and a CGM may be the most helpful here to determine the impact as well as testing BS levels during exercise using gels/drinks during exercise and testing on days when they are not used to compare the results and determine the impact of the CHOs.

- How do you help individuals manage their blood sugar when they are on corticosteroids and appear to eat a balanced diet but are still hyperglycemic?

One of the most important factors is monitoring one's individual response to medication and food. Frequent blood sugar monitoring is critical and often these individuals will respond better to a lower carbohydrate meal plan while on corticosteroids.

- **Which beta blockers and antidepressants are related to insulin resistance?**

Some beta blockers, particularly non-selective ones, can potentially increase blood sugar levels. They do this by inhibiting the release of insulin from the pancreas and by blocking the breakdown of glycogen in the liver. In people without diabetes, the effect of beta blockers on blood sugar is usually minimal. However, in people with diabetes, especially those using insulin or other blood sugar-lowering medications, the impact can be more significant.

- Although type 2DM is not considered an autoimmune condition like type 1, are you see an increase in type 2 DM in those showing various autoimmune disorders (or pre-DM), and should we start to intervene with this population?

I have not seen this directly, however increased acute illness can often trigger insulin resistance/T2D in at risk individuals, which is where we did see an uptick in T2D dx after COVID.

- Does decaffeinated coffee affect blood glucose?

Generally, no, not because there is still a minimal amount of caffeine, in very sensitive individuals it can have an impact.

- Does naturally flavored sparkling water with no calories or carbohydrates, such as Waterloo or Bubly, affect blood glucose?

No, but it would be a source of hydration, so in someone who improves hydration by using these beverages, it can help.

- What do you recommend for someone with diabetes who works a night shift and has already addressed other aspects that affect blood sugar management but still can't get their A1C down and can't change their work hours?

This would depend on what changes they have already made. Making sure the sleep they do get is quality sleep, tracking food intake/timing versus blood sugar and making sure they are incorporating physical activity can all help.

- Do you ever find using a CGM helpful for those who don't have DM or pre-DM?

Yes, this can be beneficial for energy balance as well as athletic performance.

- Based on the post-meal hours it takes for glucose to return to normal, what would you say to people about snack timing? It seems like it would be better not to have any.

I encourage snacks as it helps with appetite regulation and portion control at meals. However, the amount of carbs and macronutrient composition of each meal/snack might vary depending on the CHO of the previous meal/snack and the current BS levels.

- Any specific apps that you see help glucose regulation, including lifestyle mods?

I love MyFitnessPal for food tracking and using smart watches for tracking PA/heart rate. For glucose, I usually recommend selecting a CGM or monitor that is able to sync with the food tracking app of preference for the patient.

- What would you offer to help gestational diabetics who are struggling with sleep and fasting blood sugar levels?

Look at the composition of the evening snack... often adding protein can help. Ensuring a good source of magnesium at meals may help to improve sleep and also looking at sleep positioning and avoiding foods that can trigger acid reflux in the evening can improve overall sleep. Regular physical activity can also help if appropriate for the individual.

- What is the TIR recommendation with someone without diabetes, is it less than 140?

Yes, and at least 70% of the day.

- Apple cider vinegar before meals is a trend I'm seeing on social media- what are your thoughts on this for pre-diabetes?

The acetic acid in ACV may help improve fullness after meals and slightly lower post-meal BS levels...however it should be diluted, and individual blood sugar response should be monitored.

- Do certain foods, regardless of carb/fiber composition, spike blood sugars more than others? Some clients can eat 15g of pretzels with no problem, but it will spike if they eat a piece of bread (15 g carbs) or grapes. Is there a reason for this?

This can be due to the type of carbohydrate (for instance sourdough has a lower GI than refined flour like bread may have). It can also be due to portion and timing.

- Can you speak more about health insurance coverage for CGM? Does the endocrinologist order it annually? What's the typical cost?

This depends on the individual's medical insurance.

- What guidelines do you give for adequately using a CGM to learn the impact of diet and exercise on blood glucose? How long after exercising do you see the effect on blood glucose?

Use the CMG in combination with tracking physical activity and diet to understand your body's response to both. With exercise, the response can be immediate for hours after. Some people can even see a change in BS as much as 24 hours later so monitoring individual response is important to understand one's individual response.

- Would you take the blood sugar immediately after eating? [in reference to the +30 difference from before to after eating]

No this would be 1-2 hours after eating, starting at the first bite of the meal.

- When a client is on multiple medications that are supposedly lowering their blood sugar, I'm wondering what other strategies are other than, of course, having them be more mindful of their nutrition, stress, and sleep. I know that RDs can't make decisions about reducing the medications.

This would depend on the patient. Often exercise, improved diet quality, meal timing, weight loss, and stress/sleep management all work together to improve BS and over time the patient may be able to drop some/all medications (for T2D)

- For clients with food insecurity/ lack of food access, what are your strategies/recommendations for them to better control BG?

Consider counseling on budget friendly foods, looking at local food pantries and educating on meal planning based on what food is available.

- If stress can raise BS, and the body working harder in cold weather can lower BS, could these two "cancel each other out" - resulting in normal blood sugar?

I have not seen these studies so I cannot speak to whether this would happen or not 😊

- Is using HA1C the newer way of screening for GDM?

It is being explored as a screening tool, but not yet being used as a replacement for current screening methods.

- What form of Mg has been studied to support BG levels? Glycinate, oxide, citrate?

Studies have shown that magnesium oxide and citrate can improve blood glucose regulation and insulin sensitivity, however magnesium citrate may offer better absorption.

- Is magnesium glycinate as well tolerated as magnesium citrate?

Yes, it is less likely to cause digestive issues such as diarrhea or stomach discomfort compared to magnesium citrate.

- Do you recommend psyllium powder to help with BG? Also, would you recommend supplementation without having recent labs drawn?

I do like psyllium powder as a way to boost fiber at meals, however I still would recommend aiming for total fiber to come from a variety of foods. In the case of supplementation, this would depend on the supplement. I wouldn't need labs to recommend a fiber supplement, but would want labs before recommending vitamin D, etc.

- Do you recommend using Inositol as a supplement?

This can be beneficial when it comes to improving fasting glucose levels and insulin sensitivity if tolerated by the patient.

- What foods do you recommend for increasing magnesium intake?

Edamame, dark chocolate, spinach, almonds, avocado, and black beans

- In your experience, have you seen a reversal of T2DM in patients who no longer need medication?

Yes, I have had many patients accomplish this, however it can take years of regular work to achieve this for some. I just had one patient, who I've been working with for a decade, get off all her medication!

- I work with the elderly population in long-term care. Are there different time-in-range goals for that subset?

Yes, for older adults, the TIR is recommended at 50% or more with the range between 70-180mg/dL to balance improved glycemic response with a lower risk of hypoglycemia.

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