

## ADVANCED NUTRITION CONCEPTS

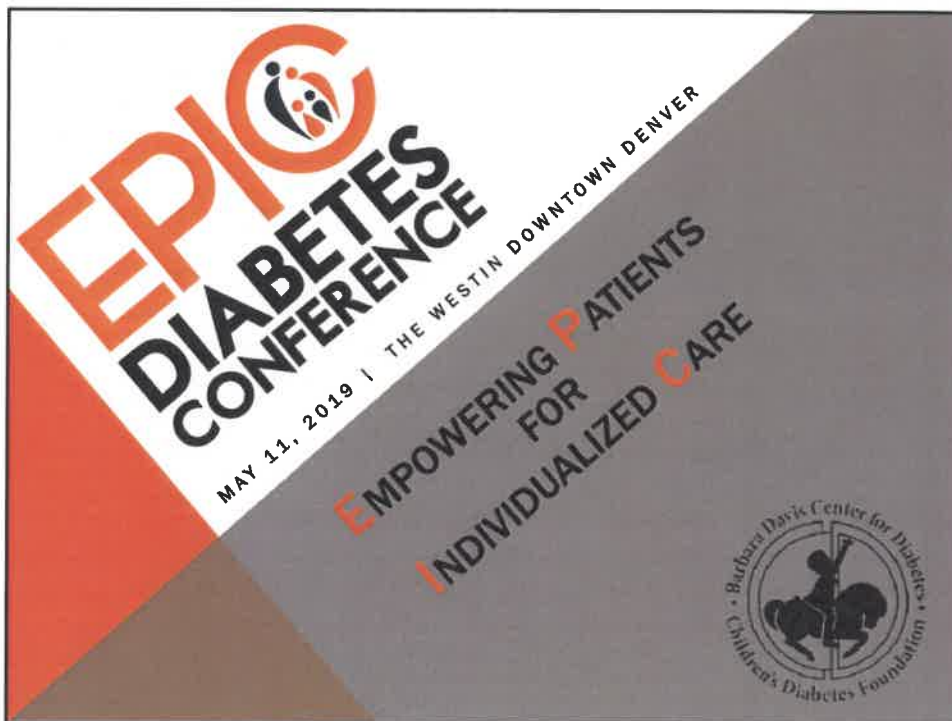


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MAY 11, 2019 | THE WESTIN DOWNTOWN DENVER

**E**MPOWERING **P**ATIENTS  
FOR  
**I**NDIVIDUALIZED **C**CARE





Conflict of Interest  
None

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WHAT TO EAT - WHY IS IT SO CONFUSING?



Mediterranean  
DASH  
Clean Vegetarian  
Gluten Free  
Plant Based  
Vegan Keto  
Paleo  
Intermittent Fasting  
Low Fat  
MyPlate  
Raw Diet

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## CONTROL AND BALANCE

### Glucose control

Limit variability

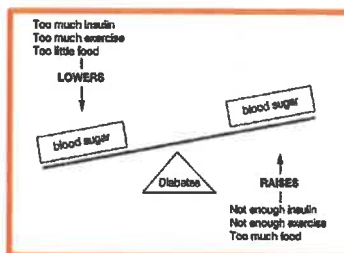
Avoid Hypoglycemia

Intake for needs, not to feed insulin

### Calorie balance

Budget and Food Availability

Preferences



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### Special Circumstances

Growth

Food Allergies and Intolerances

Pregnancy

Other Medical Needs

Gastroparesis

Ageing

### Change Behaviors and Management When Using New Technology

Timing of Boluses

Count **all** carbohydrates

Basal - Bolus Balance

How to treat hypoglycemia



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## BEYOND CARBOHYDRATES

Protein and fat do have an effect on post meal glucose rise

Glucose rise can be delayed about 90 minutes

Without carbohydrates, at least 65g Protein is needed to produce significant effect

Fat reduces the post meal glucose response 2-3 hours after eating and delays the peak glucose response due to delayed gastric emptying.

Additional insulin may be required for high Protein/fat meals

There are marked *individual differences* in the effect of fat and protein on post meal glucose

Further research is needed to identify the impact of fat/protein

(More Math! ☺)



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## KETO DIET

- **Tell your Health Care Team**
- **Be prepared to reduce insulin**
- **Check Ketones – blood test is best**
  - Normal/negative                      less than 0.6 mmol/L
  - Small to moderate                    0.6 - 1.5 mmol/L
  - High (Large)                            1.6 - 3.0 mmol/L
  - Very high                                greater than 3.0 mmol/L
- **ALWAYS treat low glucose with simple carbs**
- **Drink LOTS of water (more than 2 quarts per day)**



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## **PREGNANCY**

**Carbohydrate needs increase**

**Protein needs increase at week 20**

**Calorie needs may not increase until second trimester and then only slightly**

**Insulin needs change all through out pregnancy**

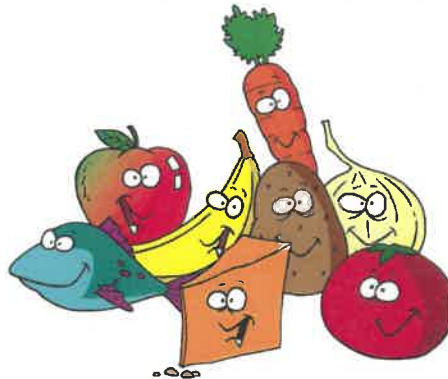
**Nutrient needs increase**

**Be very aware of sodium and empty calories**

**Normal Pregnancy Guidelines still apply also**



**THANKS!!**



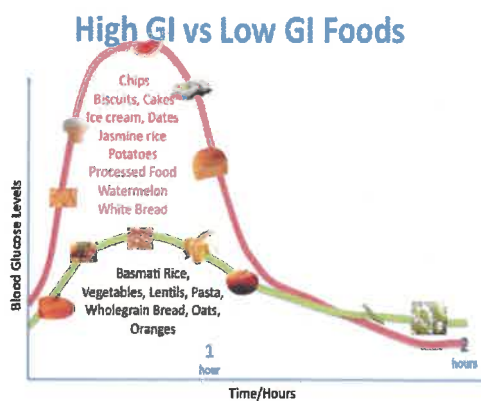
## INSULIN ADJUSTMENT BASED ON TIMING AND DURATION

	Activity Within 2 Hours After Meal	Activity Before or Between Meals
Short Duration (<90 Minutes)	<p>↓ Mealtime Bolus</p>	Snack Prior to Activity
Long Duration (>90 Minutes)	<p>↓ Mealtime Bolus</p> <p>↓ Basal Rate</p> <p>Snack at regular intervals</p> <p>Watch for delayed-onset hypoglycemia</p>	<p>Snack Prior to Activity</p> <p>↓ Basal Rate (if using pump)</p> <p>Snack at regular intervals</p> <p>Watch for delayed-onset hypoglycemia</p>

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## GLYCEMIC INDEX (LOAD)

- How quickly glucose absorbed, alters blood sugar and then returns to normal
- Not provided on food labels/not always intuitive
- Glycemic Index vs Load



## IMPACT OF PROTEIN AND FAT

- Affect blood glucose to a lesser extent
- Take longer to digest
- Enhance satiety
- Type of fat matters (unsaturated > saturated)
- Emphasize lean protein sources

