



**University of South Florida  
All Children's Hospital  
Department of Pediatric Endocrinology,  
Diabetes, and Metabolism**

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# What is Diabetes Mellitus?

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- High blood sugar causing one to urinate excessively

# Types of Diabetes

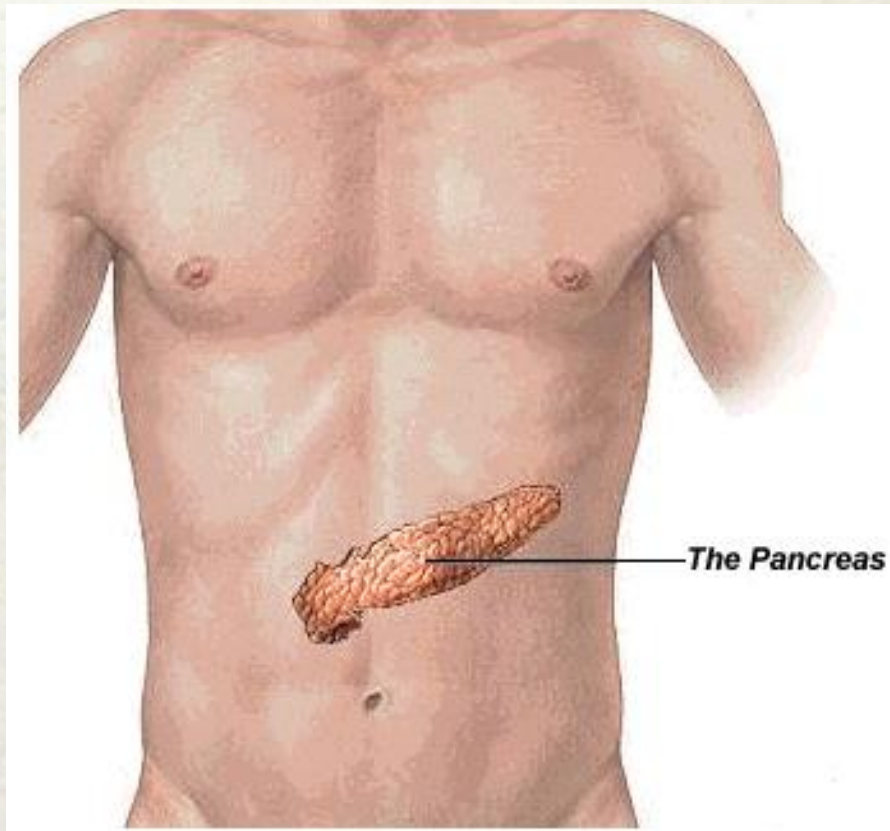
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- Type I = insulin dependent, juvenile
  - Body stops making insulin
- Type II = “adult onset,” related to insulin resistance
  - Body still making some insulin but it is not effective.

# Type I diabetes

Insulin producing cells (beta cells) in the pancreas are destroyed.

Rest of pancreas is working, helping to digest food and making other hormones.



# Type I diabetes

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- Autoimmune disease
- One's own germ fighting cells attack and destroy the beta cells of the pancreas
- Result --> NO INSULIN made
- (No evidence that Type I Diabetes is caused by eating candy or sweets)

# What is insulin?

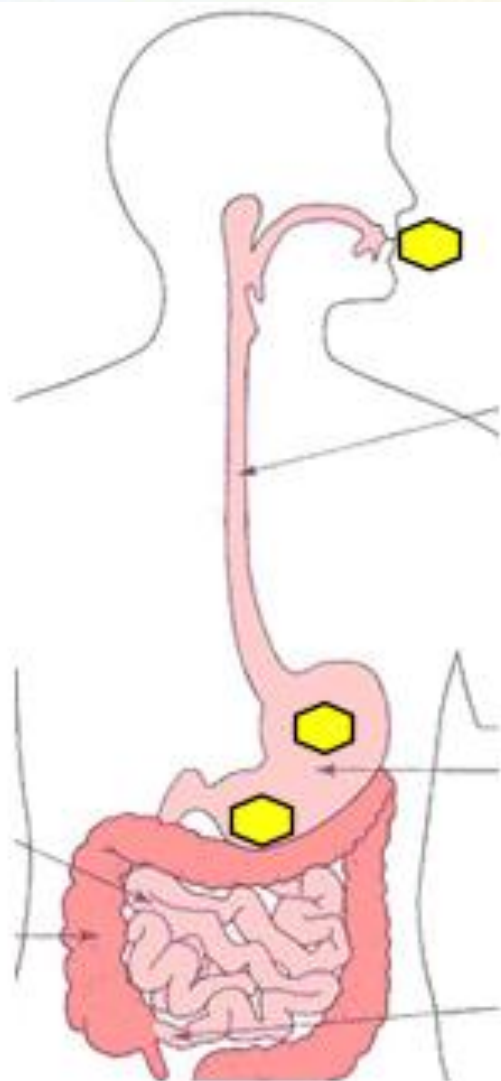
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- Insulin is a hormone (chemical message)
- It helps the body use carbohydrate (starches, sugars) for energy
- Without it, the food and drink that you take in are not used properly and the body will begin to waste away.
- Insulin is very important for growth.

# Normally...

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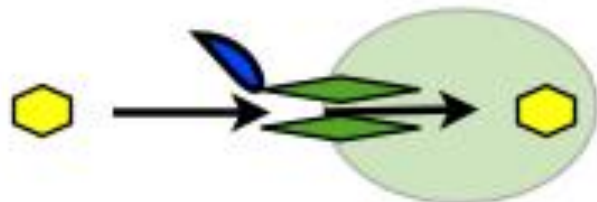
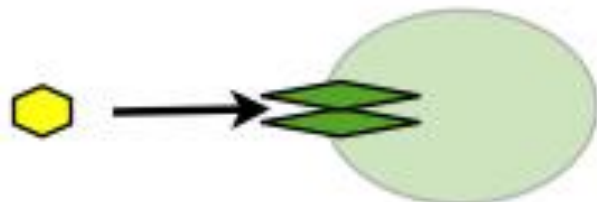
- We eat food (sugars)
- The sugar is absorbed into cells of the muscle and liver for ENERGY
- To absorb the sugar - we need insulin
- Insulin opens the gate to let sugar into our cells



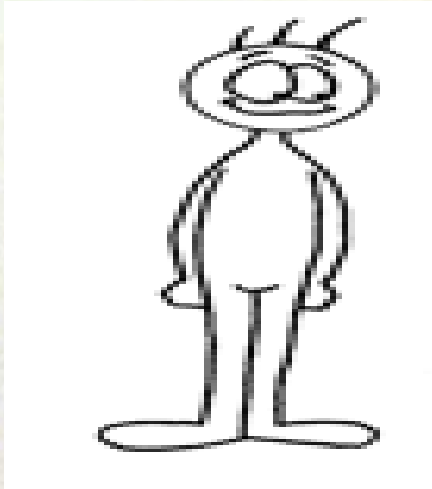
 Food: Sugar

 Insulin

 Gate



# Insulin



- Insulin is important for keeping blood sugar normal, growth in height and weight, building muscle, having plenty of energy, and feeling well.

# What happens if there is no insulin?

- The body starts to break down fat for energy
- Breakdown of fat creates ketones
- Ketones can cause acid build up
- Symptoms of high ketones:
  - Stomach ache, nausea, vomiting or loss of appetite



# How do we manage diabetes?

- Type I
  - **INSULIN! INSULIN! INSULIN!**
  - Food, exercise
- Type II
  - Food, exercise, pills, insulin
- Both types: Monitor blood sugars

# Checking Blood Sugars

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- Before breakfast, lunch, dinner, and bedtime
- Any other time you don't feel well, with prolonged exercise, or when ill
- Keep a log book



# Target Blood Sugars?

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- 80-180 (Target may change over time)
- Hypoglycemia (low sugar)
  - Symptoms: shaky, anxious, sweaty, confused, moody, difficult to arouse, OR seizure
- Hyperglycemia (high sugar)
  - Symptoms: thirst/hunger, increased urination, blurry vision, or no symptoms

# Hypoglycemia -- too much insulin

- Treat with: juice, cake icing, glucose tabs



- If unconscious/seizure - Glucagon



# Hyperglycemia - not enough insulin

- Treat with insulin, water, and if no ketones present, exercise



- Check urine for ketones - treat with extra insulin



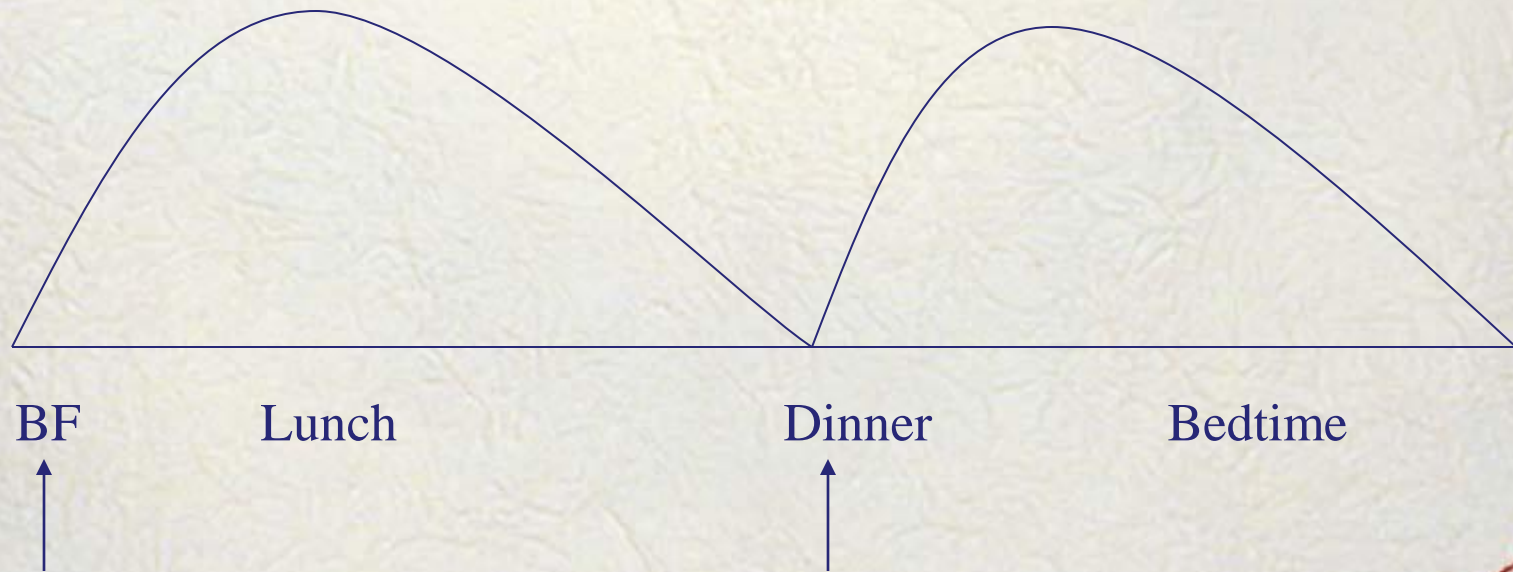
# How do we treat?

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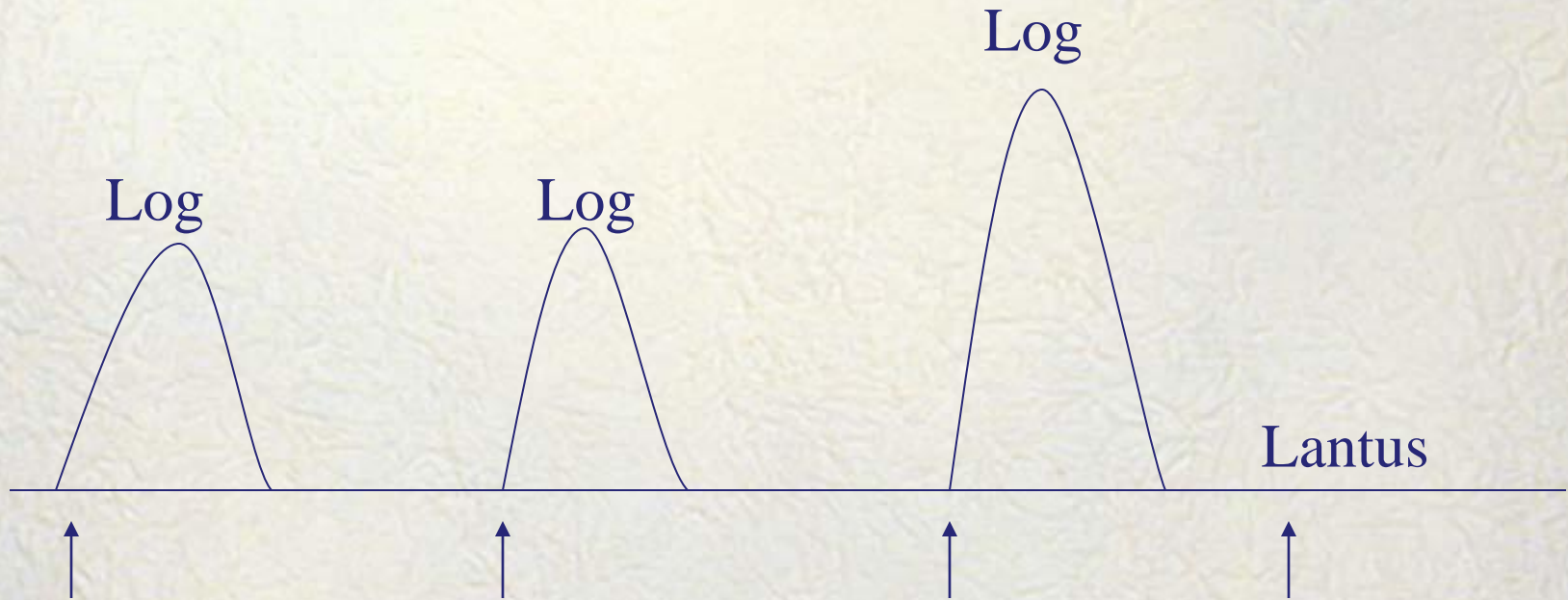
- **INSULIN**
  - Several different types
    - Long acting vs. short acting
    - Steady level vs. peaks
- The dose, type, and timing will change over time as your child's blood sugar levels change

# Types of Insulin: NPH

- Twice a day injection



# Basal-Bolus/ Lantus-Log



Lantus is the basal insulin

Log is to cover high blood sugars and meals

# Why treat?

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- Short-term/ Immediate complications
  - Diabetes Ketoacidosis (DKA)
  - Poor growth, not feeling well
- Long-term complications
  - Eyes
  - Heart
  - Kidneys
  - Nerves

# Diabetes Ketoacidosis

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- Not enough insulin for what the body needs
- Body breaks fat down to form ketones
- Causes acid build up
- Symptoms -
  - Belly pain, vomiting, deep breathing, sleepy
  - Ketones in urine are positive
- Call nurse/doctor on call



# Are Complications Preventable?

- Yes! Keeping blood sugars as close to normal as possible can prevent the long term complications
- Hemoglobin A1C is 3 month average of blood sugars
- Target HbA1C <7%

# What about food?

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- Limit the concentrated sweets (juice, candy)
- Your child still needs carbohydrates to grow
- You may learn to count the grams of carbohydrate in food and drink
- No other restriction

# Clinic Visits

- Every 3-4 months
- Bring to clinic
  - Meter and logbook
  - Questions
  - Completed school and camp forms to be signed
  - Prescription refills needed



# At the visit....

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- Hemoglobin A1C, urine test, blood sugar
- Height and weight measurements
- General health assessment
  
- Other things that we test for:
  - Yearly blood tests to check thyroid, cholesterol, kidney function
  - Annual dilated eye exam (beginning 5 years after diagnosis)

# Research

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- Trialnet

- To test first degree family members to look for markers of type I diabetes.
- Research studies to try to prolong honeymoon period
- Research studies to try to prevent diabetes in family members at increased risk

**Jennifer Steinbrueck, RN:** [jennifer@steinbrueck.org](mailto:jennifer@steinbrueck.org)

- Diamyd

- To prolong the honeymoon phase; studying vaccine vs. placebo
- Newly diagnosed within 3 months, 10 yrs and older

**Denise Fife, RN:** [dafife@tgh.org](mailto:dafife@tgh.org)

813-230-9194 (c)

# **USF Diabetes Center**

- 13220 USF Laurel Dr, 1st FL, MDC 62, Tampa, FL 33612
- [www.health.usf.edu/medicine/diabetes](http://www.health.usf.edu/medicine/diabetes)
- Research, Education, and Clinical Services
- **PSYCHOLOGY: Dr. Laura Williams**
  - (813) 974-3313(fax); (813) 974-2201(ph)

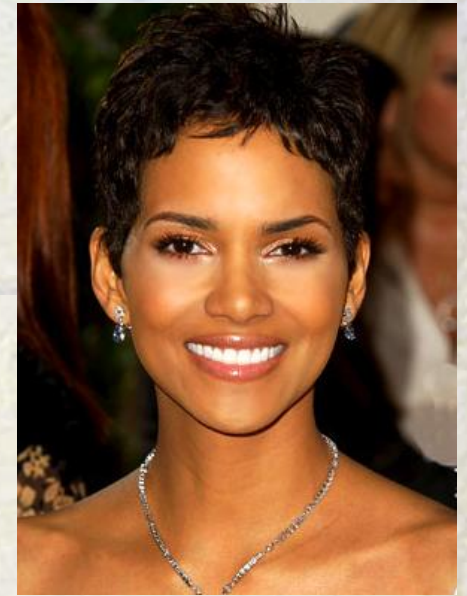
# Faculty and Staff

- Faculty
  - Dorothy Shulman, MD, Division Chief
  - John Malone, MD
  - Frank B. Diamond, MD
  - E. Verena Jorgensen, MD
  - Pallavi Iyer, MD
- Fellows
  - Alicia Diaz-Thomas, MD
  - Suzanne Jackman, MD
  - Grace Dougan, MD
- Diabetes Nurse Educator
  - Nancy Elliott, RN, CDE
- Social Work
  - Tara Saraceno, MSW

- Diabetes Nurse: 727-767-8633
- After Hours: 813-974-2201  
(5 pm - 8 AM) 888-873-3627
- Scheduling: 813-974-2583
  
- Main Clinic Phone: 727-767-4237
- Main Clinic Fax: 727-767-4219
- Social Worker: 727-767-3788
- Nutrition at ACH 727-767-3068
- Nutrition at USF 813-974-5768

# Clinic Sites

- All Children's
  - St. Petersburg, 601 Fifth Street South
  - Sarasota, 5881 Rand Blvd
  - New Port Richey, 4443 Rowan Road
  - Lakeland, 3310 Lakeland Hills Blvd
  - Tampa, 12220 Bruce B. Downs Blvd
- USF
  - CMS, 13101 Bruce B. Downs
  - South Tampa, 2 Tampa General Circle



# Where Can I find More Information

- [www.diabetes.org](http://www.diabetes.org)
- [www.jdrf.org](http://www.jdrf.org)
- [www.floridadiabetescamp.org](http://www.floridadiabetescamp.org)
- [www.calorieking.com](http://www.calorieking.com)
- [www.dlife.com](http://www.dlife.com)
- [www.DiabetesTeenTalk.com](http://www.DiabetesTeenTalk.com)
- [www.diabeteskidsandteens.com](http://www.diabeteskidsandteens.com)



# To purchase a diabetes ID bracelet

- [www.stickyj.com](http://www.stickyj.com)
- [www.sweetnessdesigns.com](http://www.sweetnessdesigns.com)
- [www.idtags.com](http://www.idtags.com)
- [www.americanmedical-id.com](http://www.americanmedical-id.com)

