Diabetes and EMS:

So, what do we need to know?

STATISTICS

- Diabetes has reached epidemic proportions in the US.
- 1 in every 3 babies born today, will develop diabetes during his/her lifetime (American Diabetes Association, 2014).
- Currently, nearly 29 million Americans have diabetes, with about 11% of those with Type 2 diabetes being ***UNDIAGNOSED.***
- The US ranks 3rd in highest number of diabetics in the world.
- An additional 79 million have pre-diabetes.
- The incidence of Type 1 diabetes is increasing by 3.2% per year.
- The diagnosis for Type 1 diabetes can occur at ***ANY*** age.

Glucose and Insulin

- Glucose comes from the food we eat.
- (Glucose = sugar).
- The *preferred* fuel source for all cells is carbohydrates: NOT fat or protein.
- Insulin *must* be present, and working properly to move glucose from the bloodstream into the cells.
- When we eat food- the pancreas, and hormones in the digestive system (stomach and intestines) are stimulated to regulate the glucose.
- The glucose either ENERGIZES the cells or gets stored in the main “warehouse” (the liver).

Glucose and Insulin

During long periods of NOT eating, the liver is called upon to pour out glucose to provide energy to the cells.

The signal to STOP the pouring out of glucose is EATING FOOD.

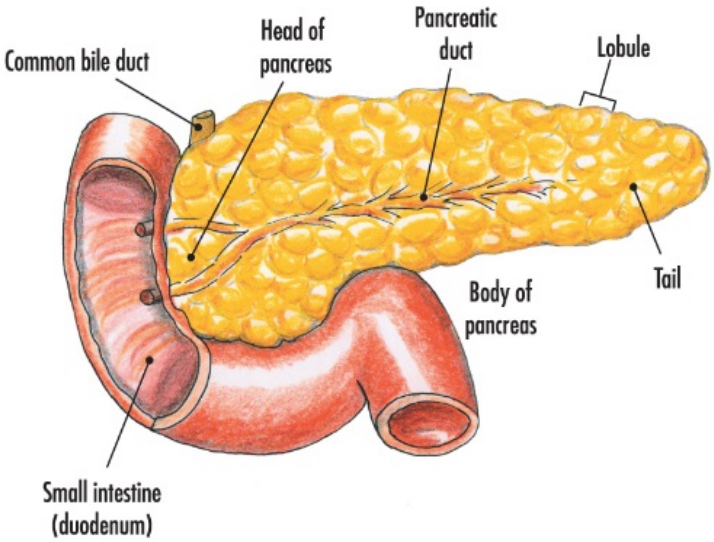
(So yes, not eating CAN raise your blood glucose MORE- and is hard on your pancreas, because it has to work HARDER when you finally do eat!)

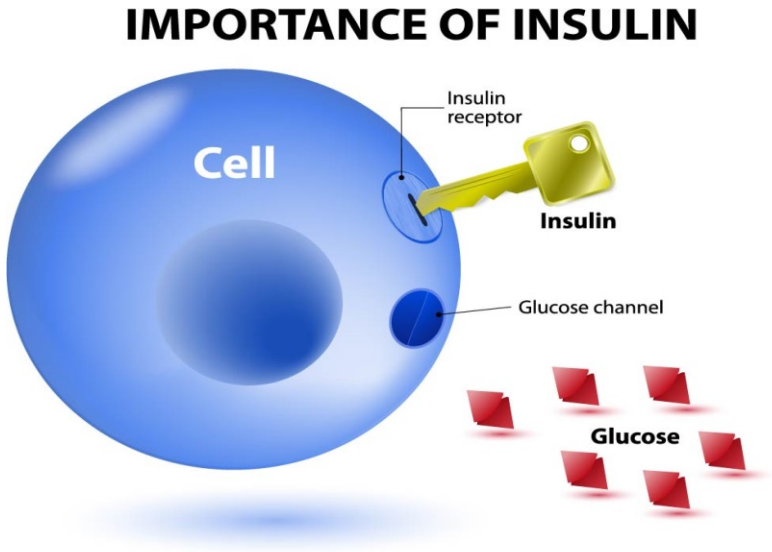
With diabetes:

- *The pancreas cannot make enough or any insulin.*
- *The insulin that IS made, cannot be used properly.*
- *The liver puts out too much sugar (leaky liver).*
- *Ultimately; the result is too much sugar in the blood*

The Role of Insulin

- The pancreas has Beta cells that make insulin.
- Insulin acts like a “key”, opening special “doors” (receptor sites) on the cells in the body.
- When the “doors” are opened, glucose can enter the cells and energize them.





Type 1 Diabetes

- Usually diagnosed in children and young adults, however, it can be diagnosed at ***ANY*** age.
- Decline in insulin begins as much as **9 years** before clinical presentation.
- Characterized by *ABRUPT* onset of clinical signs/ symptoms associated with hyperglycemia
- **Cause:** An autoimmune response that destroys the Beta Cells: therefore there is NO insulin production= *Insulin Dependent*
- The trigger can be toxins, viral, stress, trauma.
- T1 can be born with the gene, with NO family history.

Type 1 Diabetes

Initial presenting symptoms of type 1 diabetes (usually in DKA)

- Abdominal pain—Gastroparesis
- Nausea / Vomiting
- Rapid breathing—Body's attempt to correct acidosis- blow off CO2
- Fruity breath
- polyuria, polyphagia, polydipsia
- Blood glucose > 200 mg/dl

“Medic, Medic: Female pt c/o abdominal pain”

1. What is your FIRST thought?

2. What are the possibilities?
   - » Appendicitis?
   - » Ectopic pregnancy? (or actual pregnancy)
   - » Flu/bug?
   - » Ovarian pain?
   - » Gallbladder pain?
   - » Acute presentation of Type 1 Diabetes?

Gastroparesis

- Is a disorder that affects people with both type 1 and type 2 diabetes.
- The stomach takes too long to empty its contents (delayed gastric emptying).
- The vagus nerve, that normally controls movement of food through the digestive tract, becomes damaged from years of high blood sugar.

The muscles of the stomach and intestines do not work normally, and the movement of food is slowed or stopped.

Gastroparesis

Resulting problems:

- Bacterial overgrowth because of fermented food
- The food can harden, and create a solid mass
- Either problem can cause abdominal pain, nausea, vomiting!

Do a blood sugar!

Type 2 Diabetes

- 95% of diabetics are Type 2, the most common.
- Type 2 is usually diagnosed in people over the age of 45, however, more & more children & teens are being diagnosed with type 2.
- Type 2 diabetes begins and progresses slowly. May be undiagnosed for up to 10 years.

Symptoms of T2DM

- Feeling tired (cells can't get energy)
- Increased hunger (Brain is still c/o needing energy)
- Increased thirst and urination (think they have UTI)
- Weight decrease
- Blurred vision (Sodium shifts R/T high glucose causes lens to swell)
- Dry/itchy skin, or genital itching (yeast loves sugar/yeast infections)

Type 2 Diabetes

RISK FACTORS FOR TYPE 2:

- Overweight
- Over age 45
- Hypertension
- Elevated cholesterol
- African American, Latino, Hispanic or Native American descent.
- Family history of diabetes (father/mother, etc.)
- Prior Gestational diabetes, or baby over 9 lb

Any random glucose of >200 + two or more risk factors = needs further evaluation for diabetes

“Medic, Medic! The patient thinks they have a UTI”

1. Frequent urination and hot, dry skin?
2. UTI or Hyperglycemia?
3. Is it a fever? Or hot, dry skin from high blood sugar?
4. Are they very thirsty? Signs of dehydration?
5. DO A BLOOD SUGAR.

“Medic, Medic! The patient thinks they have the Flu.”

1. “So, if they have the flu, what can I do?”
2. Is it high blood sugar or really the flu?
3. Signs of a hyperglycemic emergency are similar to the FLU: Fatigue/patient thinks they have a fever (hot dry skin), patient is thirsty.
4. KNOW THE DIFFERENCE: DO A BLOOD SUGAR!
5. Don’t leave an elderly patient at home alone with a high blood sugar.

“He can’t be having a heart attack, he doesn’t have any chest pain”

1. Neuropathy: You’ve heart about it affecting the feet. Did you know neuropathy occurs in the nerves around the heart?
2. DIABETICS DO NOT NECESSARILY HAVE CHEST PAIN - due to neuropathy.
3. ANY symptoms like dizziness, sweating, shortness of breath, jaw, or back pain, nausea / vomiting CAN be a cardiac event.
4. Diabetics have a 1.8 greater incidence of cardiac problems. Also 1.5 x greater risk for stroke.

WHAT IS HYPERGLYCEMIA?

Symptoms of Hyperglycemia

1. Increased thirst or hunger
2. Increased urination
3. Feeling more tired than usual
4. Confusion
5. Cuts & infections that are slow to heal
6. Blurred vision
7. Stomach pain (T1)
8. Nausea (T1)
9. Tingling or numbness of hands or feet
10. Dehydration
11. Symptoms may vary from person to person

Blood sugars are always elevated:

1. With any illness, or infection, cut or sore
2. With stress
3. Use of prednisone: oral or injections
4. Some OTC medicines; cough syrups
5. If they forgot to take their medicine

So, when should you check a blood sugar on a patient?

1. C/O abdominal pain, nausea and vomiting. Patients who are in their teens, 20s and 30s with no other obvious causes.
2. C/O flu-like symptoms: hot, dry skin (“I think I have a fever”) / fatigue.
3. C/O frequent urination: “I think I have a UTI”
4. ANY altered LOC

Blood glucose is a valuable tool in your assessment.

Ask the right questions; Look for the warning signs

Is the patient:

- Thirsty?
- Frequent urination?
- Fatigue?
- Stomach pain, nausea, vomiting?
- Breathing fast?
- Hot dry skin?
- Vision changes?